Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary Zimmerman
Filer:	Jonathan Daniel Hall
Attorney Docket Number:	103771-500

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**785**

Electronic Acknowledgement Receipt

EFS ID:	39175324
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary Zimmerman
Customer Number:	27267
Filer:	Jonathan Daniel Hall
Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	16-APR-2020
Filing Date:	
Time Stamp:	11:20:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$785
RAM confirmation Number	E20204FB21278542
Deposit Account	231665
Authorized User	Jonathan Hall
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS.pdf	1895291 667c753258c787cc0d5dfbf1392caf856c3e20ef	no	7
Warnings:					
Information:					
2	Specification	Specification.pdf	3350662 e2a98e85f240fec6a7a041f62e8e7b04bc046715	no	57
Warnings:					
Information:					
3	Claims	Claims.pdf	54550 c57c2c43fa5eb0c3dde683c72b54df31ffaa5814	no	1
Warnings:					
Information:					
4	Abstract	Abstract.pdf	21951 50367257621a3ea18ac3a4c240d2d4884f3edc45	no	1
Warnings:					
Information:					
5	Drawings-only black and white line drawings	Drawings.pdf	215746 b63f0e9dbea65e5a03872d4fcccafce5d26d9e76	no	14
Warnings:					
Information:					
6	Preliminary Amendment	Prem_Amend.pdf	143920 23d19d46bb260066aac7386e80a2a994a035dd2f	no	3
Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	34650 fc4fa662df730d8d79700170a424ea4ec095d3d6	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	5716770	

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/14 (12-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Gary	E.	Zimmerman	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
New York	NY	US

Mailing Address of Inventor:

Address 1	799 Park Avenue
Address 2	
City	New York
State/Province	NY
Postal Code	10021
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Richard	D.	Wu	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Chicago	IL	US

Mailing Address of Inventor:

Address 1	600 N. Fairbanks Ct. #2803
Address 2	
City	Chicago
State/Province	IL
Postal Code	60611
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Gabriel	Jorge	Gironda	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

City	Austin	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	601 E. Oltorf Street #426		
Address 2			
City	Austin	State/Province	TX
Postal Code	78704	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	27267		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS		
Attorney Docket Number	103771-500	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	14	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	27267		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	15678453	2017-08-16
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15678453	Division of	14606931	2015-01-27	10268995	2019-04-23

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14606931	Claims benefit of provisional	61932495	2014-01-28

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[j] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	Six Trees Capital LLC		
Mailing Address Information For Applicant:			
Address 1	445 Park Avenue		
Address 2	9th Floor		
City	New York	**State/Province**	NY
Country	US	Postal Code	10022
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	103771-500
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

Organization Name	Six Trees Capital LLC		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	445 Park Avenue		
Address 2	9th Floor		
City	New York	**State/Province**	NY
Country i	US	Postal Code	10022
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

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NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Jonathan D Hall/			Date (YYYY-MM-DD)	2020-04-14
First Name	Jonathan	Last Name	Hall	Registration Number	67130

Additional Signature may be generated within this form by selecting the Add button. Add

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent C o o p eration Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FIELD

[0001] This non-provisional application claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title, whose contents are hereby incorporated by reference herein.

[0002] The present invention generally relates to systems, product programs and methods of using the same for optimizing the distribution of financial assets among financial accounts via a fully-automated approach that does not require user intervention on an ongoing basis. The present invention further relates to systems, product programs, and methods of using the same for automated management of financial assets, including the transfer of financial assets between financial accounts according to a set of rules that optimize the distribution of the financial assets among those accounts according to certain criteria, and subject to certain constraints.

BACKGROUND

[0003] In many economies, financial institutions, for example, banks, brokerage firms and credit unions, offer account holders interest payments at set interest rates for maintaining financial assets in accounts operated by such financial institutions. However, these set interest rates may vary over time depending on overall financial markets and each financial institution's need for deposits, and may differ from one financial institution to another. The current scheme of interest return on financial assets stored in various financial accounts provides challenges to an account holder in managing multiple accounts and optimizing the allocation of his or her financial assets among such accounts to obtain the best overall interest return, while

simultaneously maximizing the degree to which such assets are kept safe via diversification and deposit insurance schemes, such as that provided by the Federal Deposit Insurance Corporation (FDIC).

[0004] For example, many traditional "brick and mortar" financial institutions offer personal checking accounts at comparatively low or zero interest rates, but provide substantially instantaneous access to financial assets in those checking accounts. In today's world of electronic banking, such checking accounts may be configured to allow for ingoing and/or outgoing transfer of financial assets to and from other accounts via batch electronic transfers such as Automated Clearing House (ACH) transfers or wire transfers such as FedWire transfers. One feature of ACH transfers is that they may also be provided with mechanisms to reverse erroneous or unauthorized transfers within a designated period such as 60 days.

[0005] In contrast to low or zero interest bearing checking accounts, other financial institutions, such as online banking institutions, may be attractive in that they offer to a user savings accounts with higher interest rates than their "brick and mortar" counterparts, but sometimes place restrictions on access to financial assets by a user, for example, by requiring a waiting period for funds to clear or transfer, or by placing limitations on the method by which such funds may be transferred or accessed. At present, many of these online banking institutions allow for funds to be transferred into or out of their online savings accounts via ACH transfers, which they provide to their customers free of charge. In some cases, online banking institutions also provide for the ability to send or receive funds via wire transfers.

[0006] Since interest rates may be subject to frequent and/or unpredictable fluctuations among various financial institutions, account holders must continuously monitor, plan, and/or effect transfers of financial assets among their various accounts in order to gain the maximum

benefit of interest rates offered across different financial accounts at a given time. Moving funds from one account to another can often require multiple steps, careful coordination, and mathematical adjustments to the amounts being transferred due to the time that elapses in the process of making such funds transfers.

[0007] Prior attempts to optimize returns on financial assets using, for example, automated cash sweep systems, have sought to allocate cash across multiple accounts so as to provide increased FDIC insurance protection, but not necessarily to optimize interest yield.

[0008] For example, there are prior art cash sweep systems that operate as "brokered deposit" systems. Such brokered deposit systems involve deposits that are sold from bank to bank. Since such deposits are characterized as a lower tier of capital from a regulatory perspective, optimization systems involving such brokered deposits are less attractive, since banks are only willing to pay below-market interest rates for such deposits.

[0009] Among the inventive concepts incorporated in the system described herein, the optimization of interest earnings among a user's accounts is structured differently from such brokered deposit systems. Since i) the user's accounts are conventional deposit accounts that they hold directly in their own names, ii) the banks cannot dictate the extent to which they receive funds, and iii) the banks do not pay a fee to receive such funds, these deposits are not considered by the regulators to be "brokered." As such, these deposits receive a higher interest rate than funds that are subject to brokered deposit systems. Optimizing the distribution of financial assets among such conventional deposit accounts thus provides higher yields to the user, while simultaneously affording the banks more favorable regulatory treatment as it relates to these deposits.

[00010] Prior art sweep systems using brokered deposit accounts are also deficient in that they may not provide full insurance to the account holder/user, since the account holder/user may have outside deposits or CDs at the same institutions that serve as program banks under the brokered deposit system, and overlapping deposits may result in the user inadvertently exceeding the deposit insurance coverage limits. On the other hand, the invention disclosed herein permits the account holder/user to easily and directly control overall limits on a per bank basis, thereby providing control and reducing the likelihood that there will be uninsured deposits.

[00011] Still further, in prior art cash sweep systems, the accounts are not directly held by the user and therefore cannot be directly accessed by the user without coordination with the cash sweep administrator. Further, if the main bank controlling, for example, the brokered deposit network were to fail, the user would lose access to the funds being held by the related banks involved in the brokered deposits for a period of time.

[00012] Accordingly, there is a need for a financial management system that can avoid the deficiencies of prior art systems. These deficiencies are obviated by the invention described herein, in which all accounts are not only optimized, but at all times are directly accessible to the user/account holder without needing to coordinate with a third party.

[00013] The financial management system disclosed herein can determine the optimal allocation of financial assets across different financial accounts set up by a user/account holder, and then instruct or facilitate the transfer of financial assets among multiple accounts to allocate an account holder's financial assets in an optimal manner so that the user receives the maximum available amount of interest return on the financial assets disposed across the various accounts, subject to the constraints imposed by simultaneously maximizing FDIC insurance coverage, or

any other such constraints that may be set by the user or administrator of the financial management network.

[00014] The disclosed financial management system can be configured to allocate an account holder's financial assets among the different accounts to be optimized subject to additional or alternative factors or constraints, such as keeping assets within insurance limits set by deposit insurance schemes or other purchased insurance products, keeping within transfer limits imposed by the banks and/or minimum and/or maximum account balances as may be required by financial institutions or desired by the user, maintaining checking account balances at specified deposit levels and/or to provide a user with other advantages that different types of financial accounts have to offer.

[00015] The disclosed financial management system can operate in an at least a partially automated manner to effect such financial transfers with little or no monitoring and/or intervention by the user/account holder and/or at no marginal cost to the user per transfer effected.

[00016] As detailed further herein, a unique and inventive concept of the underlying architecture of the system disclosed herein is that any transfers of funds required to achieve optimized interest returns originate as requests made by online banks through the Automated Clearing House (ACH) for either an ACH credit to the user's linked checking account or as an ACH debit that pulls funds from the checking account.

[00017] Significantly, among the many inventive concepts included in the disclosed system, the checking account at the hub of the disclosed system is passive in that the checking account does not control the flow of funds into or out of the checking account. Advantageously, this arrangement avoids funds transfer limitations often imposed by brick-and-mortar banks, as

well as fees that are normally charged for funds transfers from a checking account. Because transfers are handled by the online banks who assume the costs for such ACH transfers, there are no costs incurred by the user of the disclosed system.

SUMMARY

[00018] As used herein and as will be clear from the context, the term "account" may refer to the account holder's account *per se,* or to the associated physical interface that permits the account to be electronically accessed by either the user or the financial management system disclosed herein. Further, the terms "user," "client," "account holder," "customer," and "member" are used interchangeably in this disclosure

[00019] According to an exemplary embodiment, a financial management system is disclosed, comprising a first financial management network that connects a checking account, a first savings account, and a second savings account. The financial management network comprises at least one data store, a processor and a product program for implementing the desired transactions, as further discussed herein. The financial management network, checking account, first savings account, and second savings account are each interconnected along a data network.

[00020] In an exemplary embodiment, the checking account is associated with a first interest rate.

[00021] In an exemplary embodiment, the first savings account is associated with an interest rate that is higher than the first interest rate.

[00022] In an exemplary embodiment, the second savings account is associated with an interest rate that is equal to or higher than the first interest rate.

[00023] In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

[00024] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among one or more of the checking account, first savings account, and second savings account.

[00025] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets in one or more of the checking account, first savings account, and second savings account.

[00026] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets to be transferred between one or both of the first savings account and second savings account and the checking account.

[00027] In an exemplary embodiment, the one or more rules determine an allowable amount of transfers of financial assets between one or both of the first savings account and second savings account and the checking account over a given period of time.

[00028] In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

[00029] In an exemplary embodiment, the credentials include one or more of: a login name, a login password, an account number, a routing number, a name, an address, a telephone number, an email address, information relating to a third party financial institution, a PIN number, and answers to a one or more predetermined questions.

[00030] In an exemplary embodiment, the processor is configured to determine an allocation of financial assets among the checking account, first savings account, and second savings account, based upon a relative priority of the checking account, first savings account, and second savings account subject to the one or more rules.

[00031] According to an exemplary embodiment, a financial management network is disclosed that utilizes links that a user/account holder has established between a checking account, and one or more savings accounts. Such links are made accessible to the financial management system which can then instruct transfers between the linked accounts in the manner disclosed herein.

[00032] In an exemplary embodiment the financial management network comprises at least one data store, and one or more processors for implementing a product program as further disclosed herein. Each of the financial management network, checking account, and one or more savings accounts are interconnected along a data network.

[00033] In an exemplary embodiment, the one or more processors are configured to apply one or more rules stored in the at least one data store to instruct at least one savings account of the one or more savings accounts to initiate a transfer of financial assets between the checking account and the respective savings account.

[00034] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among the checking account and the one or more savings accounts.

[00035] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising a data store, a processor and a product program ; (b) linking a checking account to the financial management network; (c) linking a first savings

account to the checking account and to the financial management network; (d) linking a second savings account to the checking account and to the financial management network; (e) providing one or more rules to the product program; and (f) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account, first savings account, and second savings account according to a relative priority assigned to the checking account, first savings account, and second savings account subject to the one or more rules.

[00036] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets between one or more of the first savings account and second savings account and the checking account according to an optimization algorithm.

[00037] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to the checking account from one or more of the first savings account and second savings account according to the optimization algorithm.

[00038] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to one or more of the first savings account and second savings account from the checking account according to the optimization algorithm.

[00039] In an exemplary embodiment, the optimization algorithm determines a relative priority among the savings accounts at least partially based upon an interest rate associated with each of the first savings account and second savings account.

[00040] In an exemplary embodiment, the optimization algorithm determines the relative priority based at least partially on one or more factors including: an objective customer service rating, a subjective customer service rating, an associated fee, an account limit, a transfer limit, and historical interest rates or historical interest rate volatility.

[00041] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising at least one data store, one or more processors and a product program; (b) linking a checking account to the financial management network; (c) linking one or more savings accounts to the checking account and to the financial management network; (d) providing one or more rules to the product program; and (e) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account and the one or more savings accounts according to a relative priority assigned to the checking account and/or the one or more savings accounts subject to the one or more rules, and (f) individually instructing some or all of a user's online savings banks to send cash to the checking account and/or pull cash from the checking account.

BRIEF DESCRIPTION OF THE DRAWINGS

[00042] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein:

[00043] FIG. 1 is a schematic diagram of a financial management system according to an exemplary embodiment of the present disclosure;

[00044] FIG. 2 is a schematic diagram illustrating linked financial accounts in the financial management system of FIG. 1.

[00045] FIG. 3 is a schematic diagram of the financial management network of FIG. 1;

[00046] FIG. 4A is a schematic view of an exemplary embodiment of the image layer of the client interface shown in FIG. 1.

[00047] FIG. 4B is a schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[00048] FIG. 4C is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[00049] FIG. 4D is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[00050] FIG. 4E is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[00051] FIG. 5 is a process diagram of steps a user may take to configure the financial management system of FIG. 1 for use, according to an exemplary embodiment of the present disclosure;

[00052] FIG. 6A is an operational flow chart of the financial management system of FIG. 1 according to an exemplary embodiment of the present disclosure:

[00053] FIG. 6B is a flow chart of the area of detail identified in FIG. 6A as S203;

[00054] FIG. 6C is a flow chart of the area of detail identified in FIG. 6A as S205; and

[00055] FIG. 6D is a flow chart of the area of detail identified in FIG. 6A as S208.

DETAILED DESCRIPTION

[00056] In embodiments, the present invention generally relates to systems, product programs, and methods of using the same for managing multiple financial asset accounts, determining the optimal allocation of financial assets across financial accounts and the automated transfer of financial assets between a first financial account and at least one second financial account so that the financial assets are allocated in an optimal manner among the

financial accounts according to certain criteria and without ongoing user intervention. As used herein, the term financial account will be understood to include a collection of one or more units of a financial asset having an associated monetary value, such as a currency. Financial accounts may be collections of financial assets that are held, maintained, and/or otherwise managed by a financial institution, such as a bank, brokerage firm or credit union. In embodiments, a financial account may be, for example, a checking account or savings account or money market fund account. As described herein, an interest rate refers to a percentage increase, or in the event of a negative interest rate, a percentage decrease, of the value of the financial assets in an account at set intervals of time, effected via deposits to the financial account called interest payments. Interest payments in financial accounts such as checking and savings accounts may be in the form of, for example, cash. In embodiments, interest payments may be in a form dependent upon the type of financial account to which they are applied, for example, yields in the form of coupons on bonds and/or bills in the case of a money market fund.

[00057] In embodiments, the present invention further relates to systems, product programs, and methods of using the same for allocating and transferring financial assets between a first financial account and at least a second financial account according to an optimization algorithm so that a user's financial assets are distributed across the financial accounts in a manner such that the financial assets receive the maximum amount of interest payments available as determined by the respective interest rates of the financial accounts within boundary conditions or constraints that may be user-selected and/or imposed by a financial institution or other body, such as the system administrator.

[00058] In embodiments, a boundary condition may be a requirement imposed by the financial institution that a minimum amount of assets be maintained in in one or more of

accounts 300, 400a, 400b, 400c, e.g., a minimum account balance. In other embodiments, such boundary condition could relate to a minimum account balance that a user desires to keep in his/her account, irrespective of the requirements imposed by the financial institution. A minimum account balance may be, for example, $1 USD. Such a boundary condition may be placed on one or more of accounts 300, 400a, 400b, 400c, for, example, by the user, by a financial institution, or by a default setting of product program 110, and may differ across different accounts.

[00059] In embodiments, a boundary condition may be a maximum amount of financial assets in one or more of accounts 300, 400a, 400b, 400c, e.g., a maximum account balance. In embodiments, a maximum account balance may correspond to a financial asset limit independent of financial management system 1000, for example, a government or third-party insurance limit, such as the maximum FDIC insurance limit (which currently stands at $250,000 USD, but which may change from time to time). In such embodiments, the boundary condition may be set at a margin of safety below the reference financial asset limit, for example, $249,500 USD in the case of the FDIC insurance limit for an individual account, such that principal plus accrued interest remain below the FDIC insurance limit. In embodiments, such a boundary condition may correspond to a maximum financial asset limit as specified by a third- party financial institution, for example, $1,000,000. Accordingly, such a boundary condition may be placed on one or more of accounts 300, 400a, 400b, 400c, for, example, by the user, by a financial institution, or by a default setting of product program 110, and may differ across different accounts. In embodiments, such a boundary condition may correspond to the user's maximum desired balance, which may be higher or lower than the default boundary condition set by product program 110.

[00060] In embodiments, a boundary condition may be a maximum and/or minimum amount of financial assets that may be transferred into and/or out of a given financial account, e.g., a transfer limit. In embodiments, such a boundary condition may apply to either or both incoming and outgoing transfers of financial assets on anyone of accounts 300, 400a, 400b, and 400c. In embodiments, the boundary condition may apply to any given period of time, for example, one day, one week, or one month, to name a few. In embodiments, the boundary condition may apply to a limit on ingoing and/or outgoing transfers occurring in a single transfer of financial assets, for example, a maximum outbound transfer of $150,000 USD, or a maximum inbound transfer of $250,000 USD, or a maximum daily transfer limit of $500,000 USD, and may differ across different accounts.

[00061] In embodiments, a boundary condition may be a maximum number of transfers of financial assets to be initiated over a given period of time. In embodiments, such a boundary condition may correspond to a limit set by a financial institution, such as a maximum of six transfers with respect to a given financial account before associated fees are incurred.

[00062] In embodiments, a boundary condition may depend upon a different variable, for example, a minimum difference in interest rates associated with two financial accounts and/or a minimum difference in financial assets in two financial accounts before a transfer of financial assets there between is initiated.

[00063] Turning to FIG. 1, an exemplary embodiment of a financial management system is generally designated 1000. Financial management system 1000 may be an interconnection of elements that comprise at least a financial management network 100, a client interface 200, and interfaces to a first financial account, such as a checking account 300, and one or more second financial accounts, such as savings accounts 400a, 400b, 400c. Although the presently-described

exemplary embodiment includes three savings accounts, it will be understood that, in embodiments, a financial management system 1000 may be linked to any number of savings accounts and/or other types of financial accounts through their associated computer interfaces.

[00064] Financial management network 100, client interface 200, account interfaces 300, 400a, 400b, 400c, and/or any component thereof, may be interconnected along one or more electronic data networks 1100, for example, a wired and/or wireless data communication system such as the World Wide Web, a mobile data network, and/or local intranet, to name a few. In embodiments, a financial management system may be an interconnection of elements that comprise any number, combination, and/or separation of elements described above.

[00065] Financial management network 100 may include web servers, application servers and databases as described herein, for implementing a multi-tier web application that includes access and security restrictions between the web servers, application servers and databases. For example, the application servers and databases can be accessed on the internet only by system administrators using specialized software and virtual private networks that communicate using SSL certificates with tightly controlled access lists.

[00066] As described further herein, financial management system 1000 is configured so that financial management network 100 periodically analyzes changing conditions among the one or more of savings accounts 400a, 400b, 400c, and checking account 300 that may impact the optimum allocation of funds among the accounts. For example, interest rates payable by the accounts, FDIC insurance limits, maximum/minimum account limits, transfer limits and the like may periodically change for some or all of the accounts. Such changing conditions are periodically monitored by the financial management network 100 to determine the optimal allocation of a user's financial assets among checking account 300 and savings

accounts 400a, 400b, 400c to receive the benefit of the highest interest rates available subject to any or all of the constraints described above in any combination or separation, subject to any and/or all of the boundary conditions described above in any combination or separation. Such optimal allocation may be made in accordance with a particular schedule or automatically when a changing condition occurs that impacts on the optimal allocation.

[00067] The financial management network may then instruct one or more of the interfaces for savings accounts 400a, 400b, 400c to initiate a transfer of financial assets indirectly there between, through a corresponding crediting and debiting action on checking account 300 as an intermediary to achieve this optimized distribution of the user's financial assets.

[00068] In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account 400a is instructed to initiate a transfer of financial assets M_1, into checking account 300 (through a debiting action). In a separate, second step, savings account 400c is instructed to initiate a transfer of financial assets M_1 into savings account 400c from the checking account 300 (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

[00069] The above-described processes of financial management network 100 may be at least partially automated so that a user may attain the benefits of an optimized allocation of his

or her financial assets across savings accounts 400a, 400b, 400c, without spending a substantially increased amount of time and effort monitoring these accounts.

[00070] In embodiments, financial management system 1000 may include any number of savings accounts. Accordingly, in embodiments, financial management system 1000 may link a single savings account and a single checking account. In embodiments, financial management system may include more than one checking account. In embodiments, financial management system 1000 may include any number of financial accounts, including, for example, checking accounts, savings accounts, brokerage accounts or money market fund accounts in any combination or separation.

[00071] In the exemplary embodiment shown, checking account 300 may be maintained by a traditional banking institution, and savings accounts 400a, 400b, and 400c may be maintained by respective online banking institutions. Accordingly, checking account 300 may be a financial account with a low or zero value interest rate i_1, and savings accounts 400a, 400b, and 400c may be a financial account with respective interest rates i_2, i_3, i_4 that are each greater than the interest rate i_1 of checking account 300. In this manner, financial assets stored in savings accounts 400a, 400b, and/or 400c may be supplemented by interest payments at a greater percentage than would be earned by a corresponding amount of financial assets stored in the checking account 300 during a comparative interval of time. Interest rates i_2, i_3, i_4 may each be substantially similar to one another, may have different values, and/or may fluctuate over time so that interest rates i_2, i_3, and i_4, do not necessarily have a constant relative relationship. In embodiments, checking account 300 and savings accounts 400a, 400b, 400c may be different financial accounts at the same third party institution that have different associated interest rates $i_{2,}$, $i_{3,}$ $i_{4..}$ It will be understood that, in embodiments, accounts 300, 400a, 400b, 400c may be

different types of financial accounts and may use different currencies. For example, each account may be a non-commercial account, a commercial account, a trust account, an escrow account, a non-profit, foundation or endowment account, or any other type of account that can be accessed by the financial management network 100 in accordance with this disclosure.

[00072] Each of accounts 300, 400a, 400b, 400c includes financial assets to which a user/account holder has access, and to which other individuals or entities may have access when authorized by a user/account holder. A user may include, for example, a single account owner, one or more joint account owners, or one or more persons acting on behalf of an at least partial account holder, such as a proxy or trustee, financial advisor, private wealth manager, and/or an automated system acting upon instructions provided by a user, being one or more of the above, to name a few. For example, the user might be an individual, a couple, a financial advisor administering the system on behalf of an individual or a couple, or a CFO or treasurer of a company who has authority to act on behalf of that entity's accounts.

[00073] As shown, savings accounts 400a, 400b, 400c are linked across data network 1100 through checking account 300. Referring additionally to FIG. 2, checking account 300 is linked between each of accounts 400a, 400b, 400c so that checking account 300 may act as a hub through which financial assets may be transferred indirectly between savings accounts 400a, 400b, 400c. The savings accounts may be viewed as connected to the checking account hub as various spokes. By using such hub-and-spoke architecture, rather than making transfers directly between savings accounts, the disclosed system is able to avoid limitations that may be imposed on transfers from savings account (e.g., certain banking regulations in the United States currently limit savings accounts to no more than 6 outbound transfers per month).

[00074] Furthermore, by using such hub-and-spoke architecture in which transfers are made through previously-verified ACH links between the checking account at the hub and the savings accounts at the spokes, the presently disclosed system is highly secure. In accordance with this architecture and as disclosed herein, the financial management network 100 does not originate funds transfers, but only acts as agent for the user/account holder, providing instructions on the user's behalf to the user's savings banks to make the funds transfers along ACH conduits that the user has setup with each online account and whose security has been previously verified by the user and the banks. For example, it is not possible for someone who may breach other robust security measures built into the disclosed financial management system 1000 and/or financial management network 100 to link their own online account and syphon funds away from the user/account holder, since the breaching party will not be able to complete the trial deposit verification procedures currently in place by banks for confirming the secure linking together of new accounts, since access to the user's checking account is also required to confirm trial deposits (or other mechanisms typically used to confirm rightful ownership of accounts).

[00075] Accordingly, financial assets may be transferred between savings accounts 400a, 400b, 400c by using checking account 300 as an intermediary. For example, an amount of financial assets M, may be transferred between savings account 400a and savings account 400c in a two-step process: in a first step, financial assets M_1, are transferred from savings account 400a to checking account 300; in a separate, second step, financial assets M, are transferred to savings account 400c from checking account 300. A lapse in time between the first step and second step described above may be associated with, for example, the length of time that the checking account 300 or an intermediary funds transfer network, such as the ACH

network or FedWire, takes to process the transfer in the first step, along with the amount of time that the system described herein takes to i) confirm that the first step has been completed successfully and ii) refresh user account balances and recalculate the required funds transfers for the second step, taking into account any changes in relevant account balances between the first and second step.

[00076] Each of accounts 300, 400a, 400b, 400c may retain financial assets so that a substantially large number of possible distributions of a user's financial assets is possible. As described above, it may be desirable to redistribute financial assets among savings accounts 400a, 400b, 400c, for example, to gain the benefit of a higher interest rate offered on one account, or to help maintain the level of financial assets in some or all of the accounts above a minimum value or below a maximum value, for example, to stay below an insurance program limit, such as FDIC insurance, or to stay above a minimum balance requirement (either for the avoidance of account fees or to keep an account open).

[00077] Accordingly, financial management network 100 is configured to implement an optimization algorithm to provide a user with the optimum distribution of financial assets across savings accounts 400a, 400b, 400c and checking account 300 so that the user's financial assets in financial management network 100 are eligible for the greatest amount of interest payments offered on savings accounts 400a, 400b, 400c and checking account 300, subject to the aforementioned constraints.

[00078] In embodiments, financial management network 100 may be at least partially automated so that financial management network 100 can send instructions to implement financial transfers between accounts 300, 400a, 400b, 400c without requiring direct input from a user. In such embodiments, financial management network 100 may be governed by a set of

rules or conditions chosen by the user and/or persons or entities authorized by the user, including the system administrator. As described further herein, financial management network may be provided with a variable level of automation so that a user is afforded a degree of direct control over the operation of financial management network 100.

[00079] Still referring to FIG. 1, client interface 200 is an access point configured to transmit data between a user and at least financial management network 100 along data network 1100. In embodiments, client interface 200 may additionally be configured to transmit data directly between a user and checking account 300 and/or savings accounts 400a, 400b, and/or 400c. In embodiments, client interface 200 may be, for example, a desktop or terminal computer, or may be a mobile device incorporating a computer such as a smartphone, PDA, wearable computer, laptop computer, or tablet computer. It will be understood that any device capable of connecting to data network 1100 may be configurable as a suitable client interface.

[00080] Client interface 200 includes a display 210 that is configured to provide data from financial management network 100 in a format visually accessible to a user, such as letters, numbers, symbols, and/or graphics, to name a few. In embodiments, display 210 may be, for example, a video monitor, a screen, or a projector. Client interface 200 also includes at least one input device 220 through which a user may input data to at least financial management network 100 along data network 1100. In embodiments, input device 220 may be, for example, a keyboard, mouse, keypad, touchpad, voice recognition program, motion sensor and/or other input device capable of sending data to financial management network 100 through data network 1100 in response to a corresponding physical input and/or visual input and/or audible input. In embodiments, a client interface 200 may include additional and/or alternative features for the receipt and input of data there through. Still further, in

embodiments, the financial management network 100 may provide information and receive instructions via an API, for example connected to the computer system of a financial advisor, rather than via human input. In embodiments, a display and input device may together be provided on a client interface, for example, through one or more capacitive touchscreens. In this regard, a user may access and/or input information directly to financial management network 100, checking account 300, and/or savings account 400, and/or may indirectly access and/or input information to checking account 300 and/or savings account 400 via financial management network 100 through client interface 200.

[00081] Turning to FIG. 3, financial management network 100 may comprise a product program 110, a credential data store 120, and rule data store 130. In embodiments, financial management network 100 may include a single data store, or any number, combination, and/or separation of elements described above.

[00082] Product program 110 may be an application or software operable via one or more processors 112. In embodiments, product program 110 may comprise a computing environment having one or more real and/or virtual data servers to provide network-based services to a user, such as a cloud computing environment, and provides a hub that is connected between credential data store 120, rule data store 130, client interface 200, checking account 300, and savings accounts 400a, 400b, 400c along data network 1100.

[00083] Referring additionally to FIG. 4A, product program 110 includes a visual layer 114 that is transmitted through data network 1100 to at least client interface 200. Visual layer 114 may be, for example, an application layer or website configured to be displayed on display 210 of client interface 200. In this manner, display 210 of client interface 200 and visual layer 114 of product program 110 are together configured to communicate to display

data input and/or output by product program 110 in a manner accessible to the user as described above.

[00084] Accordingly, visual layer 114 may include one or more indicia 116 that may include for example, letters, numbers, colors, patterns, and/or symbols, to name a few. Visual layer 114 may also include one or more input fields 18 in which a user may input data through control device 220, for example, letters, numbers, symbols, and/or markings such as radio buttons, check boxes, or text boxes. Data supplied from input fields 118 are transmitted to product program 110 through data network 1100.

[00085] Credential data store 120 and rule data store 130 are repositories of data connected to product program 110 along data network 1100. Either or both of credential data store 120 and rule data store 130 may be configured as a database, for example, a relational database or key- value data storage system. Credential data store 120 and/or rule data store 130 may be supported on one or more network-based environments that may comprise one or more virtual and/or physical servers, for example, a cloud computing environment. Credential data store 120 and rule data store 130 may be supported on a common cloud computing environment or separate cloud computing environments. In embodiments, data associated with financial management system 1000 may be stored on a single data store, two data stores as shown, or, in embodiments, any number of data stores. In embodiments, data associated with financial management system 1000 may be stored on multiple data stores, for example, for security purposes so that data is compartmentalized to inhibit unauthorized access. In embodiments, data may be transmitted to data stores 120, 130 by a user through client interface 200 or by another path through product program 110, for example, data input by a user or system administrator or via an API.

[00086] Credential data store 120 may include data associated with information capable of accessing any of checking account 300, savings accounts 400a, 400b, 400c. For example, credentials such as account numbers, routing numbers, challenge questions that may be posed by an account interface and associated answers, login names, passwords, PIN codes, e-mail addresses, contact telephone numbers, digital certificates, and/or web cookies, to name a few of the credentials that may need to be provided to gain access to a user's checking and/or savings accounts.

[00087] Accordingly, data stored on credential data store 120 may comprise confidential information, for example, information deemed secure by a user so that only the user and/or user-approved individuals and/or entities that are intended to be privy to such information may be granted access. In embodiments, one or more electronic security measures 122 may be incorporated into the architecture of credential data store 120 and/or product program 110, and/or may be disposed upstream of credential data store 120 along data network 1100 to inhibit unauthorized access to information associated with data stored on credential data store 120.

[00088] Rule data store 130 may include data that determines the configuration, scheduling, and/or sequence of operations of financial management network 100 with respect to accounts 300, 400a, 400b, and 400c. In this manner, rule data store 130 may store data associated with information supplied by a user through client interface 200 in the form of, for example, rules, boundary conditions, schedules, limits, tasks, commands, applications, and/or action identifications, to name a few.

[00089] Data associated with information relating to boundary conditions described above with respect to one or more accounts 300, 400a, 400b, 400c may include, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii)

a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few. All such boundary conditions may be set by a user, a user's financial advisor, a financial institution, governmental or other body or by product program 110.

[00090] Data associated with information relating to a sequence of operations of financial management network 100 may include, for example, a length of time associated with initiating and/or restricting one or more actions of product program 110, for example, the cessation of further transfer of financial assets between savings accounts 400a, 400b, 400c and checking account 300, identifying the value of interest rates i_1, i_2,i_3, and/or, from information sources associated with, or independent from, third-party financial institutions, and/or providing data to a user through client interface 200, for example, information relating to checking account 300 and/or savings accounts 400a, 400b, 400c and/or prompting a user to input data through client interface 200.

[00091] In this manner, program product 110 is configured to take one or more actions and/or restrict one or more actions on at least savings accounts 400a, 400b, 400c based at least in part upon data received from rule data store 130. Such one or more actions may include the transfer of financial assets from one or more savings accounts 400a, 400b, 400c to checking account 300 and/or the transfer of financial assets to one or more of savings accounts 400a, 400b, 400c from checking account 300.

[00092] In the exemplary embodiment shown, program product 110 instructs one or more of savings accounts 400a, 400b, 400c to initiate a transfer of financial assets with respect to checking account 300. In this manner, program product 110 is configured to initiate the transfer of financial assets between savings accounts 400a, 400b, 400c and checking account 300 solely by initiating crediting and debiting actions on checking account 300 from the perspective of the savings accounts 400a, 400b, 400c so that no financial transfers are required to be initiated from checking account 300. Financial transfers may be implemented via the Automated Clearing House (ACH) network, or another method of electronic funds transfer known by those skilled in the art of the present disclosure.

[00093] In this regard, financial management network 100 may be configured such that program product 110 may initiate and/or restrict one or more actions on one or more of savings accounts 400a, 400b, 400c based on data stored in rule data store 130. In this manner, a set of rules may be stored in rule data store 130 in advance of a financial transfer so that the financial management network is at least partially automated to implement financial transfers based on the rules in rule data store 130. In this manner, financial management network 100 is configured such that a user is not required to continuously monitor and/or implement financial transfers among accounts 300, 400a, 400b, 400c. Such an automated configuration allows financial management network 100 to provide instructions for the implementation of a greater number of financial transfers without direct user input than might be practical for a user to perform directly, and with greater discipline. Accordingly, financial management network 100 affords a user the benefit of an increased and/or finer control of the distribution of financial assets across accounts 300, 400a, 400b, 400c, for example, to optimize the amount of interest earned on the financial assets in accounts 300, 400a, 400b, 400c without requiring additional

time or effort by the user, and/or to ensure that financial assets are distributed across accounts 300, 400a, 400b, 400c to in a manner to be maximally covered by one or more insurance programs such as FDIC. Additionally or alternatively, financial management network 100 may afford a user such control to allocate the financial assets in accounts, 300, 400a, 400b, 400c in an optimized manner to take advantage of other beneficial factors, for example, available insurance coverage and/or maintaining a checking account at target balance.

[00094] It will be understood that, in embodiments, a financial management system may include a first financial account having a first interest rate and one or more additional financial accounts having respective interest rates that are greater than the first interest rate. A financial management network may be associated with such financial management systems so that financial assets may be transferred between the first financial account and any or each of the other financial account(s) in any combination or separation as described above.

[00095] Referring additionally to FIG. 5, a process diagram of steps a user engages in to configure financial management system 1000 for use is illustrated in accordance with an exemplary embodiment of the present disclosure.

[00096] With additional reference to FIG. 4A, in a first step S 101, a user accesses the product program 110 through client interface 200 so that an image layer 114 of the product program can appear on display 210 to relay data to the user. A user may access product program 110, for example, by entering a website URL into an internet browser, selecting a shortcut to such website URL via an icon on a smartphone, tablet computer, wearable computer or similar device, or initiating a software application.

[00097] In a second step S 102, a user registers an account with product program 110 by providing data to product program 110 through client interface 200 over data network

1100. In embodiments, a user may provide data to product program 110 that is associated with information such as, for example, an e-mail address, telephone number, username, password, and/or biographical information such as name, address, and/or date of birth, to name a few, as well as personal demographic information such as age, occupation, income, approximate balance of financial assets, to name a few. The data provided by the user in step S202 is received by the product program 110 and transmitted to credential data store 120 over data network 1100 so that a user thereafter may re-submit such data, or a portion thereof, through client interface 200 to access additional features of the product program 110. In embodiments, client interface 200 may store such data, for example, in a web browser or local storage medium, so that this data can be transferred from its stored location to product program 110 upon command by a user. In embodiments, this data may be stored on a different data store.

[00098] In embodiments, second step S102 or another step in the configuration of financial management system 1000 may include a user providing data to product program 110 through client interface 200 associated with information needed to setup an account at more than one financial institution and/or more than one account at a single financial institution. In this manner, financial management system 1000 may be configured to facilitate a user in registering, for example, for multiple financial accounts through a single, common application and/or substantially simplified registration process as compared to individual registration processes associated with different financial institutions and/or financial accounts.

[00099] With additional reference to FIG. 4B, in a third step S103, data is provided to product program 110 that is associated with information related to checking account 300. Such information may include, for example, login name and password, account numbers, routing

numbers, names, addresses, third party financial institution information, PIN numbers, answers to challenge questions, a contact telephone number or email address, and/or other identification and/or access information, as well as the client's desired target checking account balance. The data provided in step S203 may be stored in credential data store 120 and/or rule data store 130 in any combination or separation. In embodiments, such data may be associated with, for example, public information on the third party financial institution associated with checking account 300 and/or a history of one or more transactions or statuses of checking account 300. In embodiments, such data may be associated with information relating to, for example, account numbers, routing numbers, PIN numbers, and/or other access information associated with checking account 300.

[000100] With additional reference to FIG. 4C, in a fourth step S104, data is provided to product program 110 that is associated with information related to savings accounts 400a, 400b, 400c. Such information may be substantially similar to the types of information provided in step S103 with regard to checking account 300, and may accordingly be stored in credential data store 120 and/or rule data store 130 in any combination or separation as described above in step S104. In embodiments, a user may supply information related to any of accounts 300, 400a, 400b, 400c described over the course of a single connection session with product program 110, or over any number of sessions. It will be understood that a process for configuring a financial management system for use will include any number of additional steps relating to the input of data relating to identification and/or access information of a financial account in accordance with the number of financial accounts associated with the financial management system.

[000101] In a fifth step S105, data is provided to product program 110 that is associated with information related to a rules for transferring assets between checking account 300 and one

or more of savings accounts 400a, 400b, 400c. Such rules may include, for example: i) a minimum or target account balance set by a user, financial institution, or other body; ii) a minimum or maximum limit of financial assets in a financial account set by a user, product program 110, a financial institution, or other body; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time as set by a user, financial institution, or governmental or other body; iv) a maximum number of financial transfers that may be performed over a given period as set by a user, financial institution, or governmental or other body; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts as set by a user or by product program 110; and/or vii) a minimum difference in financial assets required before initiating a transfer of financial assets between financial accounts as set by a user or product program 110, to name a few.

[000102] It will be understood that the data supplied to product program 110 may in whole or in part be supplied by a source other than a user, for example, a financial advisor or system administrator or by one or more default settings of product program 110. It will be understood that the steps described above to configure financial management system 1000 may be completed in any order, combination, or separation as described above. In embodiments, such a process may include additional and/or alternative steps.

[000103] Turning to FIG. 6A, and still referring to FIG. 1, an operational flow chart of a process of financial management system 1000 is illustrated in accordance with an exemplary embodiment of the present disclosure. It will be understood that this operational flow chart may be applicable to financial management system 1000 or any other financial management system based on the inventive concepts disclosed herein.

[000104] In a first step S201, input data is provided to product program 110 to initiate an optimization process which will culminate in the transfer of financial assets between one or more of savings accounts 400a, 400b, and 400c and checking account 300. Input data may be provided substantially in real-time, for example, by a user or system administrator, and/or may be stored data in rule data store 130 to be input under certain conditions, such as a scheduled task. For example, a first instance of the optimization process described herein may be initiated by a user through client device 200, and one or more successive instances of the optimization process may be initiated by product program 110 as a scheduled task. If no data instructing product program 110 to initiate a transfer is supplied to product program 110, first step S201 may be repeated. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of first step S201 so that step S201 can only repeat following a set interval of time and/or a predetermined condition is met. A successive iteration of first step S201 may also be initiated by a user or system administrator on an *ad hoc* basis. For example, a client or his/her financial advisor may access the financial management network 100 to manually initiate an optimization in between scheduled optimizations.

[000105] If an optimization process is to be initiated, product program 110 retrieves data relating to one or more of accounts 300, 400a, 400b, and/or 400c in a second step S202. Data relating to one or more of accounts 300, 400a, 400b, and/or 400c may be transferred over data network 1100 directly from a third party financial institution, and/or or may be supplied by another source such as an independent reporting service or by the system administrator or via an API (application program interface) . Data relating to one or more of accounts 300, 400a, 400b, and/or 400c may be associated with information such as, for example, a corresponding interest rate i_1, i_2, i_3, i_4, and/or one or more account balances.

[000106] In a third step S203, processor 112 of product program 110 applies one or more rules from rule data store 130 to the data obtained from the one or more of accounts 300, 400a, 400b, and/or 400c in step S202 to determine the optimal allocation of financial assets across financial accounts 300, 400a, 400b, 400c in a first-step optimization algorithm, as described further herein. Accordingly, step S203 yields a set of data relating to an allocation of financial assets that may be different from the allocation of financial assets retrieved from step S202.

[000107] In a fourth step S204, product program 110 determines the net amount of transfers of financial assets across accounts 300, 400a, 400b, 400c in order to arrive at the optimized allocation of financial assets determined in step S203. As described above, in embodiments, financial management system 1000 is configured to instruct transfers of financial assets in two steps: a first set of one or more transfers of financial assets from any one or more of savings accounts 400a, 400b, 400c; and a second set of one or more transfers of financial assets into any one or more of savings accounts 400a, 400b, 400c from checking account 300.

[000108] Accordingly, in a fifth step S205, product program 110 determines the optimum set of transfers of financial assets to be initiated from one or more of savings accounts 400a, 400b, 400c, into checking account 300 as described further herein.

[000109] In a sixth step S206, one or more of savings accounts 400a, 400b, 400c are instructed to initiate a transfer of financial assets into checking account 300 in amounts determined in step S205. In embodiments, step S206 may include transfers from one or more of savings accounts 400a, 400b, 400c. In embodiments, step S206 may involve no transfers of financial assets from any of savings accounts 400a, 400b, 400c, as described further herein.

[000110] In embodiments, instructions provided to savings accounts 400a, 400b, 400c may require the product program 110 to retrieve credentials from credential data store 120 to

first access savings accounts 400a, 400b, 400c. In embodiments, checking account 300 may also be accessed in a similar manner. In embodiments, one or more of accounts 300, 400a, 400b, 400c may involve more than one level or layer of credential input on the part of product program 110, e.g., to satisfy multi-level or multi-factor authentication protocols.

[000111] For example, some financial institutions and banks will recognize a login from an unauthorized client computer and prompt the user/account holder to provide further authentication in addition to the account holder's username and password before allowing access to the account holder's account. Such multi-factor authentication protocols may involve a bank's website indicating that it will be transmitting a pre-determined or random authentication code to the user's cell phone by voice or text, or by email to the user's email address, which cell phone number and email address the user or system administrator has previously entered in his user data on the bank's website when the account was initially set up. The user must then retrieve the transmitted code from his landline phone or cell phone or from his email provider within a preset limited time period and correctly enter the code on the bank's website before being permitted to continue with the user login.

[000112] Comparably, a financial institution that manages one or more of accounts 300, 400a, 400b, 400c may detect access to an account by a new origination point along data network 1100, e.g. a point other than client device 200, and may require a response, answer, and/or code to be input in response to an inquiry before permitting connection of an account to the financial management network 100. Typically, such a response, answer, and/or code is provided by a user through client device 200 or another device connected to the relevant account.

[000113] However, in such a case, product program 110 may be configured to communicate directly with one or more of accounts 300, 400a, 400b, 400c as a proxy for the user, for example, to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses. Such communication between product program 110 and one or more of accounts 300, 400a, 400b, 400c may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few. Accordingly, product program 110 (in certain embodiments, via a selected third-party vendor) may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts 300, 400a 400b, 400c on behalf of the account holder, without intervention by the account holder or user.

[000114] In particular, with respect to multi-factor authentication, the financial management network 100 implements unique and inventive concepts that permit it to act as proxy for the user and respond to any multi-factor authentication that may be required for account access in a way that does not require user intervention, while simultaneously maintaining rigid security measures to avoid unauthorized access to the user's accounts by other parties. For this purpose, and to the extent necessary, a limited power of attorney is provided by the user/account holder to the financial management network 100 to permit the administrators of the financial management network 100 to act as agent for the user/account holder.

[000115] As described herein, the one or more processors of the financial management network 100 perform multiple processes that permit an account holder to access account

information across his various accounts and that permit the financial management network 100 to interface with banks holding the one or more user accounts, and in particular to permit the financial management network 100 to login as the user by using the user's credentials stored in credential data store 120. Once logged into a user's account, these processes can verify the accounts that are linked, fetch balances, instruct transfers, prepare transaction histories, retrieve 1099-INT tax forms or other client communications provided by the associated banks.

[000116] To reduce latencies and provide a high performance processing framework, the financial management network 100 may be configured to run multiple processes in parallel. For example, multiple processes may be executed to provide headless web browsers that are used to navigate to and interact with the websites of multiple banks at the same time, for example to fetch balances, send funds transfer instructions, retrieve year-end 1099-INT tax statements, and the like.

[000117] As noted above, processes may also be implemented by the financial management network 100 to handle multi-factor authentication required by some banks and financial institutions before permitting account access, without user intervention. To enable the financial management network 100 to directly respond to a multi-factor authentication request within the user present, the following procedure is implemented.

[000118] When a user first links an account to the financial management network 100, the user supplies their username and password to the financial management network 100, and a process within the financial management network 100 controls a web browser and uses the user's credentials to attempt to log in to the bank's website holding the account.

[000119] If the bank responds to the log in attempt by issuing challenge questions or by requiring additional multi-factor authentication such as entry of a code sent to the user, then

the financial management network 100 will prompt the user for the additional information that the bank website has requested.

[000120] For example, after a user links an American Express savings account to the financial management network 100 for the first time, the financial management network 100 will attempt to log in to the American Express savings account using the provided username and password.

[000121] If the web page indicates that additional multi-factor authentication is required, for example, input of a code that is sent to the user's cell phone or email address, then a process running within the product program 110 will present to the user the list of email addresses and/or phone numbers that is stored on the American Express site to which the authentication code can be sent, and will prompt the user to select one of the listed addresses or phone numbers. The process then passes the selected option to the American Express site so that the site sends the code using the selected option. Once received by the user at his selected address or phone number, the user enters the code into the financial management network 100, which then forwards the code to the American Express site to respond to the multi-factor authentication request and gain access to the site. Once the product program 110 has access to the American Express site, it adds to the user data stored by the site an additional multi-factor authentication endpoint, e.g., an additional phone number or email address, that is accessible either directly by the product program 110 or, in some cases, via a third-party software service provider, and to which subsequent authentication codes may be sent.

[000122] Upon subsequent log ins by the product program 110 to the American Express site when the user is not present, the product program 110 can selected the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing

description, e.g. a phone number known to the product program 110, which the product program 110 (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program 110 can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts.

[000123] To enhance security, the credential data store 120 is formed as an encrypted key/value database to protect the users' sensitive data which may include email addresses, user names, passwords, account numbers, PIN numbers, security questions and answers, and the like. In some embodiments, data is encrypted before it is passed to the credential data store 120, and the data is further encrypted in credential data store 120 before being stored.

[000124] To further enhance security and protect against unauthorized acts that may compromise critical operations, the financial management system 100 may, through product program 110 or through other means, implement a two-man rule algorithm, for example as may be implemented using Shamir's Secret Sharing algorithm, to require that any such critical operations be authorized by at least two persons having appropriate authority.

[000125] Reverting back to FIG. 6A, in a seventh step S207, product program 110 retrieves data relating to one or more of accounts 300, 400a, 400b, and/or 400c. Data relating to one or more of accounts 300, 400a, 400b, and/or 400c may be transferred over data network 1100 directly from a third party financial institution, and/or may be supplied by another source such as an independent reporting service, or by the system administrator. Data relating to one or more of accounts 300, 400a, 400b, and/or 400c may be associated with information such as,

for example, an interest rate i_1, i_2 ,i_3, i_4, and/or one or more account balances. Accordingly, step S207 is substantially similar to step S202 described above.

[000126] Step S207 is performed again after the transfers of financial assets in step S206 because one or more conditions of any of accounts 300, 400a, 400b, 400c may have changed following step S206. In particular, the transfers of financial assets initiated in step S206 may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account 300 due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, 300, 400a, 400b, 400c, for example, a change in the FDIC insurance limit or other user-set constraints such as maximum, minimum or target account balances.

[000127] In an eighth step S208, a second-step optimization algorithm is applied to the information gathered in step S207 to ensure that the transfers of financial assets into savings accounts 400a, 400b,400c originally determined in step S204 will satisfy the rules in rule data store 130. Accordingly, the second step optimization algorithm applied in step S208 is similar to the first- step optimization algorithm applied in step S203, but relates to optimizing the second-step transfers into one or more of savings accounts, 400a, 400b, 400c originally determined in step S203.

[000128] If no conditions affecting one or more of accounts, 300, 400a, 400b, 400c have occurred since the first-step financial transfers were initiated in step S206, the second-step financial transfers may proceed as originally determined in step S204. However, if one or more conditions affecting one or more of accounts, 300, 400a, 400b, 400c have occurred in the interim, the second-step optimization algorithm may adjust the second-step financial transfers to

compensate for these changed conditions according to the rules in rule data store 130. In this manner, steps S207 and S208 together serve as a verification and/or adjustment of the second-step financial transfers originally determined in step S204.

[000129] In a ninth step S209, one or more of savings accounts 400a, 400b, 400c are instructed to initiate a transfer of financial assets out from checking account 300 in amounts determined in step S208. In embodiments, step S209 may include transfers into one or more of savings accounts 400a, 400b, 400c from checking account 300. In embodiments, step S209 may involve no transfers of financial assets into any of savings accounts 400a, 400b, 400c from checking account 300, for example, due to a lack of available financial assets that may be determined in step S208 due to a changed condition of one or more of accounts 300, 400a, 400b, 400c between steps S206 and S207 or due to changes in interest rates or other user-set constraints.

[000130] In a tenth step S210, the process may terminate following the last instructed financial transfer in step S209 and confirmation that the recipient accounts have received their intended transfers. For example, the financial management network 100 may periodically (e.g., daily) check the account balances and account activity in the recipient accounts to confirm that the intended transfers have been completed. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of step S210 and step S201 so that step S201 can only repeat following a set interval of time and/or a predetermined condition is met after step S210 is complete. In embodiments, a user or system administrator may manually trigger another optimization before such interval or predetermined condition is met.

[000131] Turning to FIG. 6B, the first-step optimization algorithm shown in step S203 of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[000132] In a first step S203a of the first-step optimization algorithm, the product program 110 determines the available financial assets for optimization by deducting from the sum of the account balances in step S202 (FIG. 6A) the minimum account balances for each of accounts 300, 400a, 400b, 400c according to the rules stored in rule data store 130. Accordingly, in step S203a, product program 110 determines the remaining financial assets in all of accounts 300, 400a, 400b, 400c after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device 200, a system administrator, or by a default setting of product program 110.

[000133] In a second step S203b, product program 110 determines whether sufficient financial assets are available for optimization. In embodiments, a positive, nonzero value determined in step S203a may be sufficient for optimization. In embodiments, sufficient financial assets for optimization may be determined by a rule in rule data store 130, for example, a minimum difference in financial assets between two given accounts for a transfer of financial assets to occur. If sufficient financial assets are unavailable for optimization, the process may be terminated.

[000134] If sufficient financial assets are available for optimization, product program 110 may proceed to rank order savings accounts 400a, 400b, 400c to determine the priority order in which available financial assets will be transferred for optimization in a third step S203c. Savings accounts 400a, 400b, 400c may be rank ordered by interest rate, descending from the

highest interest rate. In embodiments, savings accounts 400a, 400b, 400c may be rank ordered by a different factor.

[000135] In a fourth step S203d, two or more of savings accounts 400a, 400b, 400c may have an identical value for a factor by which savings accounts 400a, 400b, 400c are rank ordered, for example, an identical interest rate. In such embodiments, financial management network 100 may utilize subjective and/or objective tiebreaker factors or rules stored in rule data store 130 to determine which of the one or more savings accounts offering the same interest rate should be given priority for a given financial transfer. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or rate volatility, to name a few.

[000136] In embodiments, savings accounts 400a, 400b, 400c may be rank-ordered by a different factor, or by a combination of factors that may or may include interest rates as described above. Such different factors may be subjective and/or objective, for example, so that one account may be rank-ordered lower than another account having a higher interest rate.

[000137] Once savings accounts 400a, 400b, 400c have been rank ordered, the first-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S203a into the first rank-ordered savings account according to the rules in rule data store 130 in a fifth step S203e. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store 130 may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account , such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial

assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period ; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or product program 110.

[000138] Accordingly, in step S203e, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S204 (FIG. 6A).

[000139] If the first-ranked savings account cannot by itself receive all available financial assets for optimization, the process proceeds to a sixth step S203f in which product program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program 110 then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S204 (FIG. 6A).

[000140] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to a seventh step S203g, in

which product program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program 110 then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S204 (FIG. 6A).

[000141] In this manner, financial management system 1000 provides an optimization process with a "waterfall" configuration that first determines an available pool of financial assets for optimization, and proceeds to prepare to instruct a transfer of the maximum amount of financial assets allowed by a set of boundary conditions sequentially into accounts that are rank-ordered, for example, by interest rate. It will be understood that, in embodiments, steps 203e, 203f, 203g, may continue corresponding to the number of savings accounts included in a financial management system.

[000142] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to an eighth step S203h, in which product program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S203h may override a maximum account limit applied in step S203e. In embodiments, product program 110 may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts 400a, 400b, 400c according to the rules in rule data store 130, such that any

excess funds would be transferred to (or remain within) checking account 300. The process then proceeds to step S204 (FIG. 6A).

[000143] Turning to FIG. 6C, the first-step transfers of financial assets shown in step S205 of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[000144] Following the determination in step S204 (FIG. 6A) of the net amount of financial assets to be transferred into checking account 300 for the first step of optimization, product program 110 proceeds to determine the available amount of financial assets in savings accounts 400a, 400b, 400c for transfer into checking account 300 in a first step S205a. Product program 110 makes such a determination by deducting from the savings account balances retrieved in step S202 (FIG. 6A) the minimum account balances for each of accounts 400a, 400b, 400c according to the rules stored in rule data store 130. Accordingly, in step S203a, product program 110 determines the remaining financial assets in accounts 400a, 400b, 400c after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device 200, a system administrator, or by a default setting of product program 110. If no financial assets are available for transfer in the first-step of optimization, the process may proceed directly to step S208 (FIG. 6A).

[000145] If sufficient financial assets are available for transfer into checking account 300 in the first-step of optimization, product program proceeds to determine the priority order in which available financial assets will be transferred out of savings accounts 400a, 400b, 400c. The priority order for the transfer of financial assets into checking account 300 may be the reverse of the rank order determined in step S203c (FIG. 6B) so that financial assets are first pulled from

the lowest-ranked savings account. In embodiments, savings accounts 400a, 400b, 400c may be ordered by a different factor.

[000146] In a third step S205c, product program 110 proceeds to determine if it is possible to transfer all the available financial assets for the first-step of optimization from the third rank- ordered savings account according to the rules in rule data store 130 in a fifth step S203e. In an exemplary embodiment, such rules may comprise a minimum account balance for the third-rank ordered savings account, for example, a user-defined or financial institution-defined minimum account balance. In other embodiments, the rules applied from rule data store 130 may include, for example: for example: i) a minimum account balance; ii) a minimum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts ; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program 110.

[000147] Accordingly, in step S205c, the first-step optimization algorithm determines whether the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization under the rules in rule data store 130. If product program 110 determines that the third-ranked savings account can send all available financial

assets required for transfer in the first step of optimization, the process proceeds to step S206 (FIG. 6A).

[000148] If the third-ranked savings account cannot by itself send all available financial assets required for optimization by itself, the process proceeds to a fourth step S203d in which product program 110 determines the maximum amount of available financial assets that can be transferred out of the third-ranked savings account, and any remaining available financial assets for transfer into checking account 300 thereafter. Product program 110 then determines whether the second-ranked savings account can send all remaining financial assets required for transfer under the rules in rule data store 130. If product program 110 determines that the second-ranked savings account can send all available remaining financial assets for transfer, the process proceeds to step S206 (FIG. 6A).

[000149] If the second-ranked savings account cannot by itself send all remaining available financial assets required for optimization by itself, the process proceeds to a fifth step S203e, in which product program 110 determines the maximum amount of remaining financial assets for transfer that can be transferred from the second-ranked savings account, and any remaining available financial assets required for optimization thereafter.

[000150] In a sixth step, product program 110 then determines that the remaining financial assets for transfer will be transferred out of the first-ranked savings account. The process then proceeds to step S206 (FIG. 6A).

[000151] Turning to FIG. 6D, the second-step optimization algorithm shown in step S208 of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[000152] The second-step optimization algorithm begins in a similar manner to the first-step optimization algorithm described above, in that product program 110 determines the available amount of financial assets for transfer in the second-step of optimization (S208a); whether sufficient financial assets are available for the transfers in the second step of optimization (S208b); rank-orders the savings accounts 400a, 400b, 400c (S208c); and determines whether any tie-breaking rules need to be applied to complete the rank-ordering of savings accounts 400a, 400b, 400c (S208d). Accordingly, and as described above, the second-step optimization algorithm verifies the preliminary determination of financial assets to be transferred into one or more of savings accounts 400a, 400b, 400c from checking account 300 in step S204 because one or more conditions of any of accounts 300, 400a, 400b, 400c, or such other conditions described below, may have changed following step S206. In particular, the transfers of financial assets initiated in step S206 may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account 300 due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, 300, 400a, 400b, 400c, for example, a change in the FDIC insurance limit or a change in user settings.

[000153] In the event that no intervening conditions have affected accounts 300, 400a, 400b, 400c, the second step transfers may proceed in the manner originally determined in step S204 (FIG. 6A). However, if one or more conditions of one or more of accounts 300, 400a, 400b, 400c have changed since the determination in step S204, product program 110 proceeds to adjust for such changes in the manner described below.

[000154] In a fifth step S208e, the second-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S203a into the first rank-ordered savings account according to the rules in rule data store 130 in a fifth step S203e. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store 130 may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program 110.

[000155] Accordingly, in step S208e, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S209 (FIG. 6A).

[000156] If the first-ranked savings account cannot by itself receive all available financial assets for optimization by itself, the process proceeds to a sixth step S208f in which product

program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program 110 then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S209 (FIG. 6A).

[000157] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to a seventh step S208g, in which product program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program 110 then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store 130. If product program 110 determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S209 (FIG. 6A).

[000158] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to an eighth step S208h, in which product program 110 determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S203h may override a maximum account limit applied in step S208e. In embodiments, product program 110 may be

configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts 400a, 400b, 400c according to the rules in rule data store 130, such that any excess funds would remain in checking account 300. The process then proceeds to step S209 (FIG.6A).

[000159] In the manner described above, the optimization algorithm of financial management network 1000 is configured to adjust for changing conditions that may affect one or more of accounts 300, 400a, 400b, 400c. Accordingly, if such an adjustment results in one or more instructed financial transfers to be constrained by one or more boundary conditions, for example, transfer limits, one or more optimization algorithms or processes may need to be run in order to fully optimize a user's financial assets across accounts 300, 400a, 400b, 400c. Such additional optimization algorithms may be run immediately, after a specific period of time has elapsed, or the system may wait until the next regularly-scheduled optimization.

[000160] In other embodiments, the instructions to transfer funds between accounts 300, 400a, 400b, and 400c may be repeated in the midst of the optimization to overcome boundary conditions (such as maximum daily transfer limits) rather than waiting until the end to re-run the entire optimization again. For example, if the financial management network 100 determines that a transfer of $500,000 is required, but the daily transfer limit is $250,000, the financial management network 100 may perform two transfers of $250,000 each in succession on the same or on subsequent days, as part of the first or second step transfer process, rather than repeat the entire optimization process just to effect the second transfer of $250,000.

[000161] Referring additionally to FIGS. 4C and 4D, an exemplary embodiment of the application of the optimization algorithm described above is illustrated as seen by a user on the image layer 114. In the exemplary embodiment shown, the optimization algorithm determines

the optimized distribution of the user's assets by generating a rank order of one or more savings accounts according to relative interest rates. In embodiments, image layer 114 may be configured to display relative interest rates of savings accounts other than, or in addition to, savings accounts in which a user has financial assets.

[000162] As shown in the exemplary embodiment of FIG. 4C, account 1, account 2, account 3, account 4, and account 5 are listed in descending order according to their respective interest rates. However, as shown, account 1 and account 2 have an identical interest rate of 0.90%, and account 3 and account 4 have an identical interest rate of 0.85%. In such instances, financial management network 100 may utilize subjective and/or objective factors to determine which of the one or more savings accounts offering the same interest rate should be given priority for financial transfers. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or interest rate volatility, to name a few. Such factors may be input into rule data store 130, for example, by a system administrator. In the exemplary embodiment shown, account 1 is given priority over account 2 because account 1 does not impose a limit on account balances, whereas account 2 limits account balances to a maximum of $1,000,000. In. this manner, the optimization algorithm is operable to distribute an amount of financial assets across two or more accounts so that the financial assets are deposited into a highest-ranked financial account that offers the combination of highest rates and least restrictive policies, and/or into a descending hierarchy of financial accounts subject, to rules applied by product program 110 as described above. In embodiments, the optimization algorithm or display / list of accounts may prioritize financial accounts according to a different factor.

[000163] Turning to FIG. 4D, another exemplary embodiment of a financial management system is illustrated, and includes a checking account 500 linked between a first, second, third, and fourth savings account 600a, 600b, 600c, 600d, respectively. Once the optimization algorithm has determined the optimized allocation of financial assets across available savings accounts, the product program 110 instructs savings accounts 600a, 600b, 600c, and/or 600d to initiate transfers of financial assets in one or more steps in series. In the exemplary embodiment shown, the optimization algorithm has determined that a total of $125.33 USD should be transferred into checking account 500 from savings accounts 600a and 600b, and a total of $8,763.52 USD should be transferred into savings accounts 600c and 600d from checking account 500. In this manner, the optimization algorithm has determined that financial assets in the amount of $8,763.52 USD should be transferred into savings accounts 600c and 600d, for example, to take advantage of a higher interest rate associated with those savings accounts, and that a portion ($125.33 USD) of these financial assets should be removed from savings accounts 600a and 600b through checking account 500, for example, due to a lower interest rate associated with those savings accounts. The optimization algorithm has also determined the relative amounts of financial assets to be transferred from each of savings accounts 600a ($0.31) and 600b ($125.02 USD) for the transfer of $125.33 USD into checking account 500, and the relative amounts of financial assets to be transferred to each of savings accounts 600c ($3,558.78) and 600d ($5,204.74) in accordance with various boundary conditions determined by rules stored in rule data store 130 or otherwise provided through product program 110, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account ; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a

maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body or by product program 110. The optimization algorithm has also determined that the net transfer of funds out of checking account 500 ought to be positive, reflecting the fact that the balance of financial assets in checking account 500 immediately prior to the initiation of the optimization exceeded a previously specified desired minimum or target balance for such checking account 500.

[000164] In accordance with the embodiments described above, the transfers occur in two separate steps: in a first step, an amount of $0.31 USD is instructed to be transferred from savings account 600a to checking account 500 in parallel with a transfer of $125.02 USD from savings account 600b to the same checking account 500; in a second step, an amount of $3,558.78 USD is instructed to be transferred into savings account 600c from checking account 500 in parallel with a transfer of $5,204.74 USD into savings account 600d from checking account 500. As described above, the transfers illustrated in the second step are subject to a second-step optimization algorithm as a check against a changed property of one or more of accounts 500, 600a, 600b, 600c, 600d, for example, a change in account limits, a change in the amount of financial assets disposed in an account, a change in the FDIC maximum insurance limit, and/or a change in interest rates associated with savings accounts 600a, 600b, 600c, 600d.

[000165] It will be understood that any point between or during any of the steps described above, product program 110 may provide to a user through client interface 200 information

relating to the processes described above substantially in real-time or with any amount of delay, for example the status of each transfer, confirmation codes and/or numbers relating to a transfer of financial assets between any of the accounts described above.

[000166] It will be understood that the steps described above are exemplary according to the present disclosure, and are not intended to be limiting. A financial management network may include greater, fewer, and/or alternative steps to those disclosed above.

[000167] In embodiments, financial management system 1000 may be configured to implement a truncated, extended, and/or modified version of the optimization process described above, for example, so that different variables of the optimization algorithm may be optionally input by the user or by product program 110. In an exemplary embodiment, a user may designate an amount of financial assets to be optimally allocated into savings accounts 400a, 400b, and 400c from checking account 300. Accordingly, with additional reference to FIG. 4C, visual layer 114 may provide one or more inputs 119 to a user to designate such an amount of financial assets to be transferred, With reference to FIG. 6D, product program 110 may then proceed to optimize the distribution of the financial assets from checking account 300 designated by the user in the manner described above. In this manner, financial management system 1000 is configured to instruct an automated or intelligent transfer of funds from checking account 300 into savings accounts 400a, 400b, and/or 400c from checking 300 in an optimized manner.

[000168] In another embodiment, and with reference to FIG. 6C, a user may designate an amount of financial assets for product program 110 to instruct to be transferred from one or more of savings accounts 400a, 400b, 400c into checking account 300 in an optimized manner. In this manner, a user may directly supply to product program 110 the amount of financial assets

to be transferred from one or more of savings accounts 400a, 400b, 400c into checking account 300, which may otherwise be determined by product program 110 as the "first-step" transfers in step S204 (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into checking account 300, product program 110 institutes steps S205a through S205e as shown in FIG. 6C.

[000169] Similarly, in another embodiment, and with reference to FIG. 6D, a user may designate an amount of financial assets for product program 110 to instruct to be transferred into one or more of savings accounts 400a, 400b, 400c from checking account 300 in an optimized manner. In this manner, a user may directly supply to product program 110 the amount of financial assets to be transferred into one or more of savings accounts 400a, 400b, 400c, from checking account 300 which may otherwise be determined by product program 110 as the "second-step" transfers in step S208 (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into savings accounts 400a, 400b, 400c, product program 110 institutes steps S208a through S208h as shown in FIG. 6D.

[000170] In another embodiment, the product program 110 determines an optimized distribution of financial assets across accounts 300, 400a, 400b, 400c, but does not automatically effect transfers of the funds through financial management network 100. Rather, a user may opt to implement the financial transfers necessary to achieve such a distribution without using financial management network 100, for example, by implementing one or more electronic funds transfers among accounts 300, 400a, 400b, 400c, by for example, ACH, wire transfer, credit transfer, or another modality of electronic funds transfer.

[000171] While the financial management network 100 in exemplary embodiments has been described as optimizing financial assets among accounts by having one checking account

acting as the hub and multiple savings accounts on the spokes, by using the inventive concepts described herein, financial systems that have different hub-spoke configurations may also be implemented and the distribution of financial assets optimized among their accounts. For example, the financial management system 1000 may also include configurations in which there may be more than one account at the hub of the system.

[000172] For example, funds may be moved and optimized between a brokerage account and a checking account that both act as passive accounts forming the hub of the system and other accounts on the spokes that initiate transfers of funds into and request transfers of funds out from such two hub accounts. In such embodiment, the user may be able to set two different target balances for the respective checking and brokerage accounts.

[000173] Based on the inventive concepts disclosed herein, in such systems having two or more accounts at the hub, transfers may be effected automatically between these hub accounts as well as between the hub accounts and other accounts on the spokes of the financial management system 1000 to optimize the financial return among all of the accounts based upon requests initiated at the spoke accounts for transfers into and out of the hub accounts.

[000174] In other embodiments, transfers between the multiple hub accounts (for example, a checking account and a brokerage account) may be initiated automatically, or manually by a user, as a means of moving funds between the two hub accounts via transfers to and/or from the accounts on the spokes (for example, online savings accounts.) As a result of the inventive concept described herein, funds may be transferred out of one of the hub accounts in an amount that would otherwise exceed the daily transfer limits imposed by that account, since the transfer is effected as an ACH credit to the spoke account, rather than as an outbound transfer from the hub account.

[000175] In embodiments, transfers of financial funds may occur indirectly between savings accounts through an intermediary checking account as described above, or a user may opt, either within or without financial management network 100, to transfer financial assets directly between savings accounts without passing through a checking account. In such embodiments, ACH, or a modality of electronics fund transfer other than ACH, such as wire transfer or credit transfer, may be advantageous as wire transferred- or credit-transferred financial assets are processed substantially in real-time as compared to ACH, which typically occurs over a two-to- three day period. Because such transfers may be accompanied by a fee, such methods may be beneficial in embodiments where associated fees are relatively small relative to the amount of financial assets being transferred and the potential for enhanced interest income on these assets.

[000176] While this invention has been described in conjunction with the embodiments outlined above, many alternatives, modifications and variations will be apparent to those skilled in the art upon reading the foregoing disclosure. Accordingly, the exemplary embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention, which is defined by the following claims.

WHAT IS CLAIMED:

1. A method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

(1) accessing, via one or more processors, the online account using the account holder's credentials;

(2) receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

(3) transmitting the request to the account holder and receiving the response thereto from the account holder;

(4) transmitting the account holder's response to the online account to satisfy the multi-factor authentication request;

2. The method of Claim 1, further comprising the steps of:

(5) storing one or more of the account holder's endpoints for the online account in a database associated with the online account;

(6) utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

3. The method of claim 2, wherein the endpoint includes an email address, a landline phone number, or a cellular phone number.

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

ABSTRACT

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account, by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

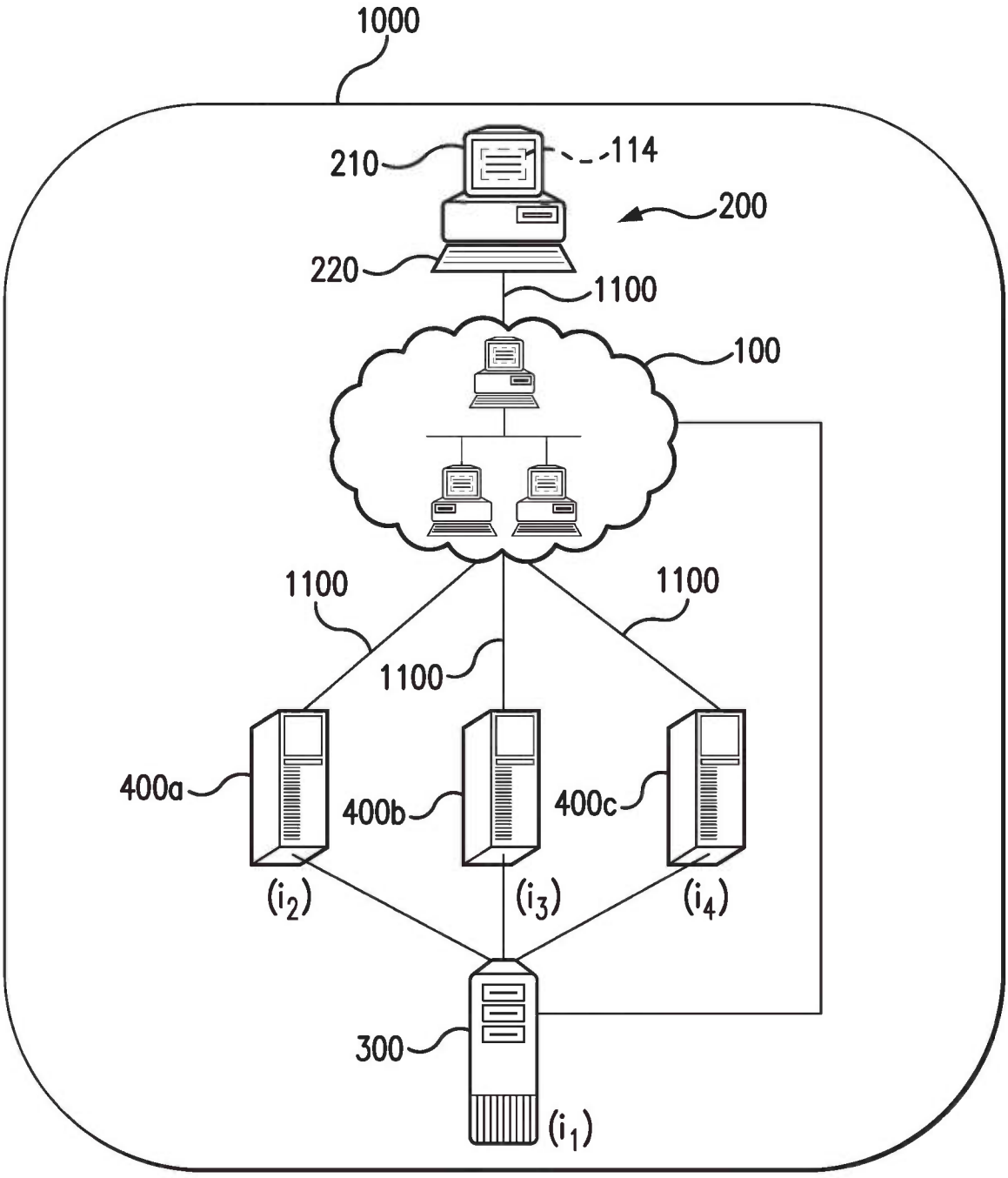

1000
210
114
200
220
1100
100
1100
1100
1100
400a
400b
400c
(i_2)
(i_3)
(i_4)
300
(i_1)

FIG. 1

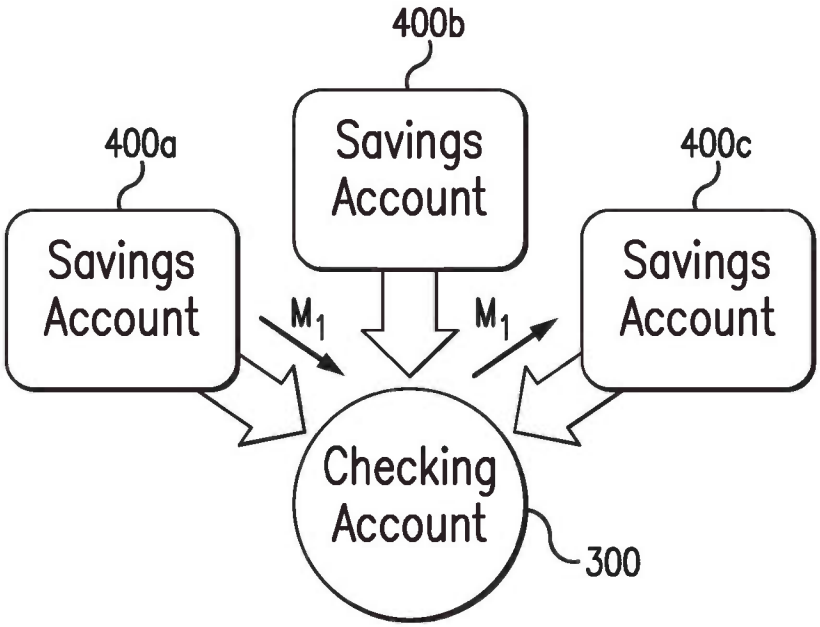

400b
Savings Account
400a
Savings Account
400c
Savings Account
M1
M1
Checking Account
300

FIG. 2

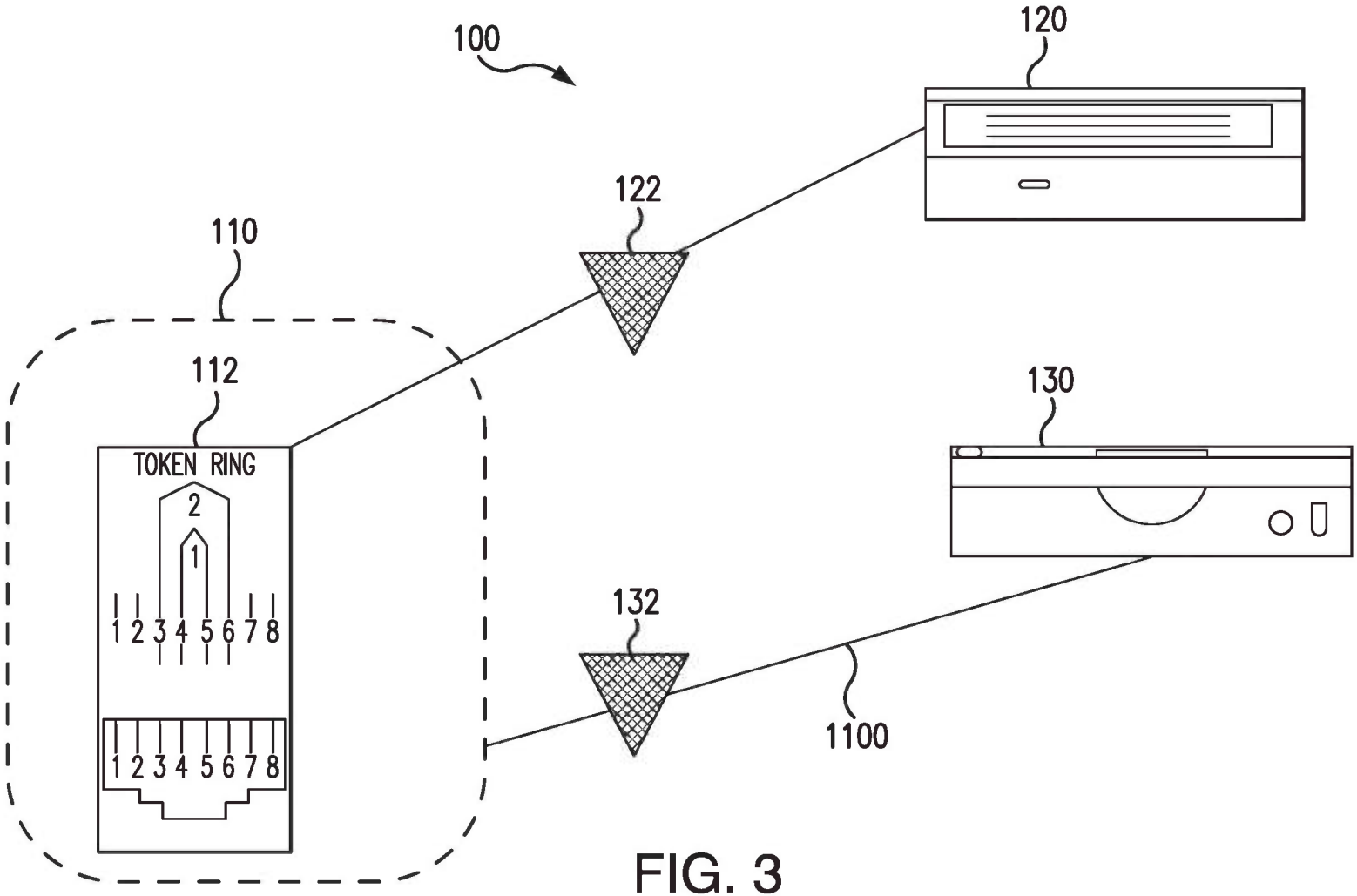


FIG. 3

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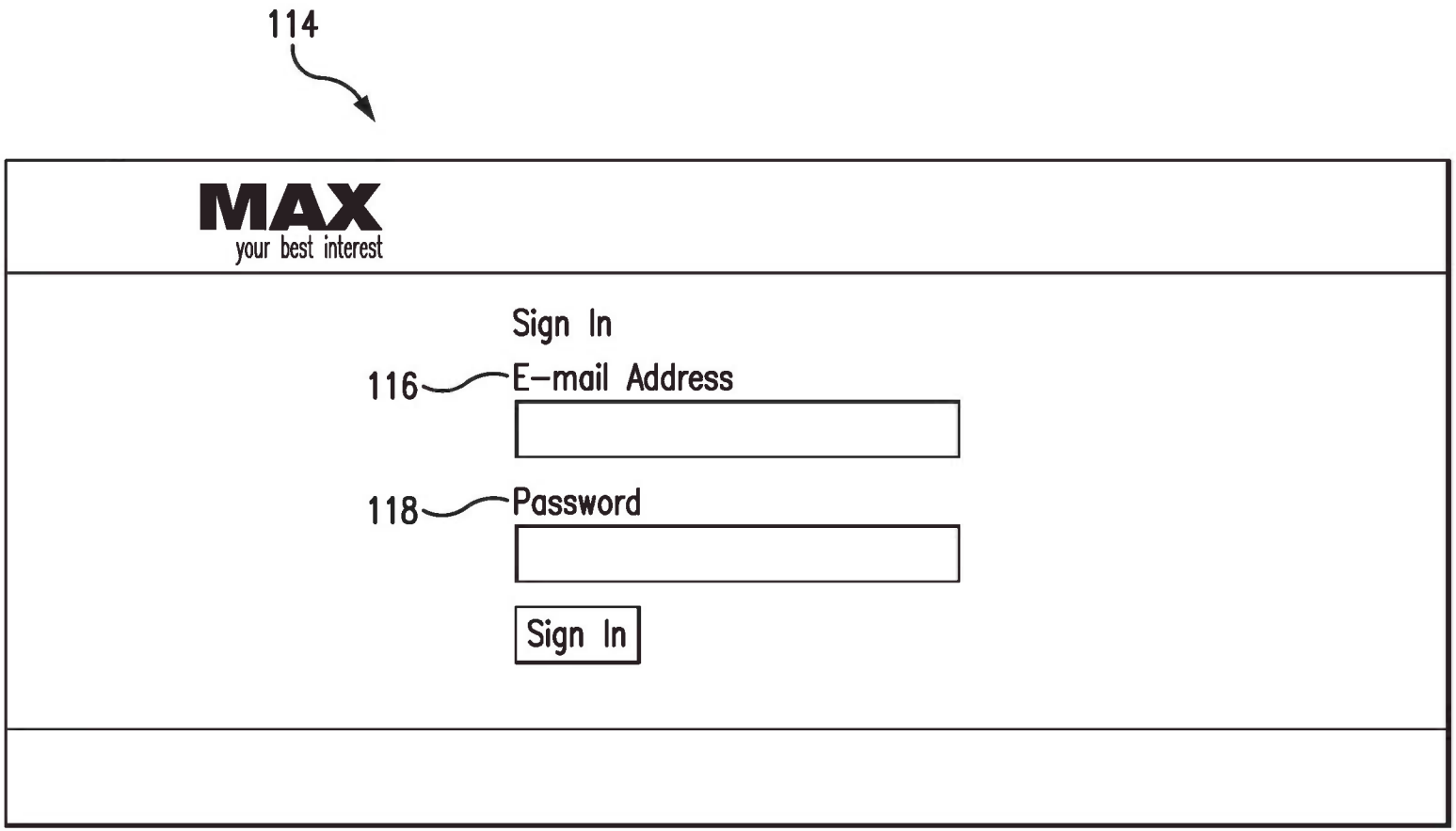


FIG. 4A

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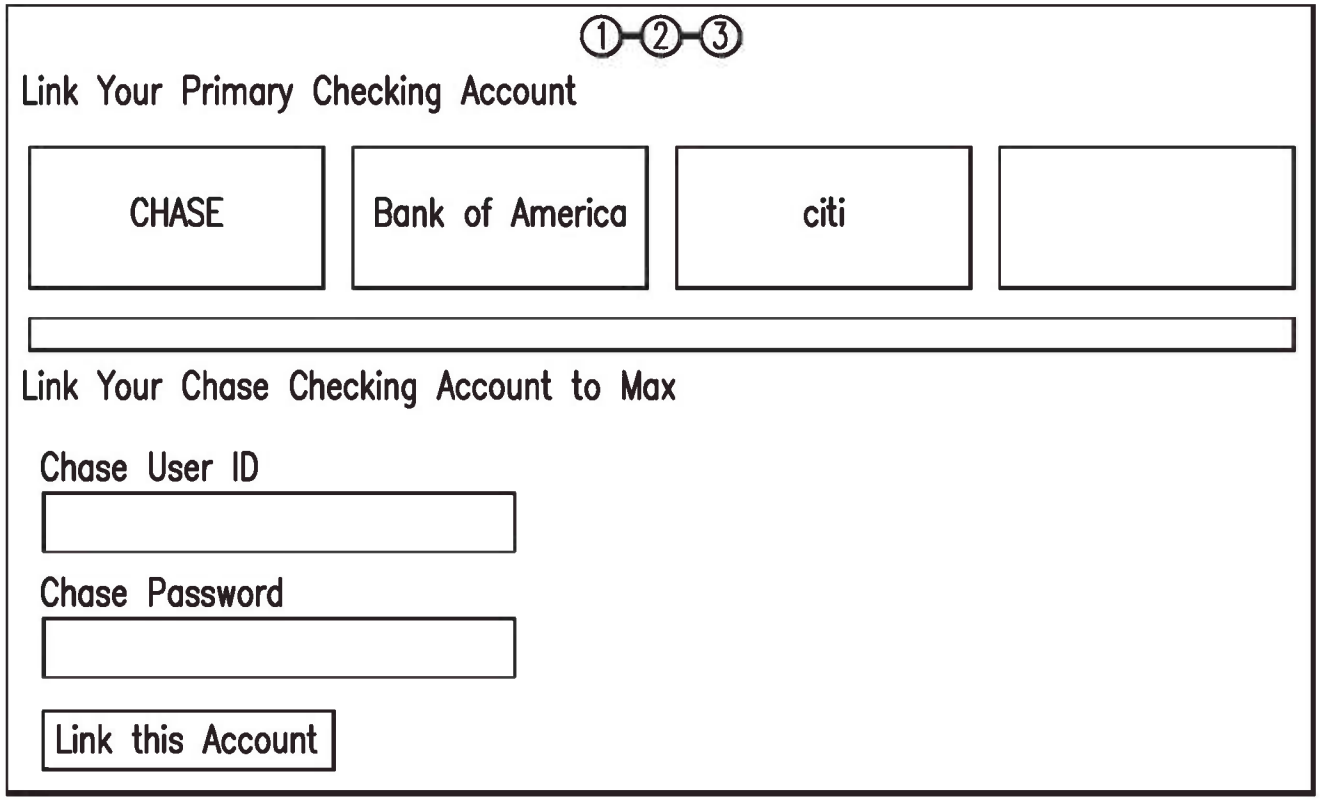


FIG. 4B

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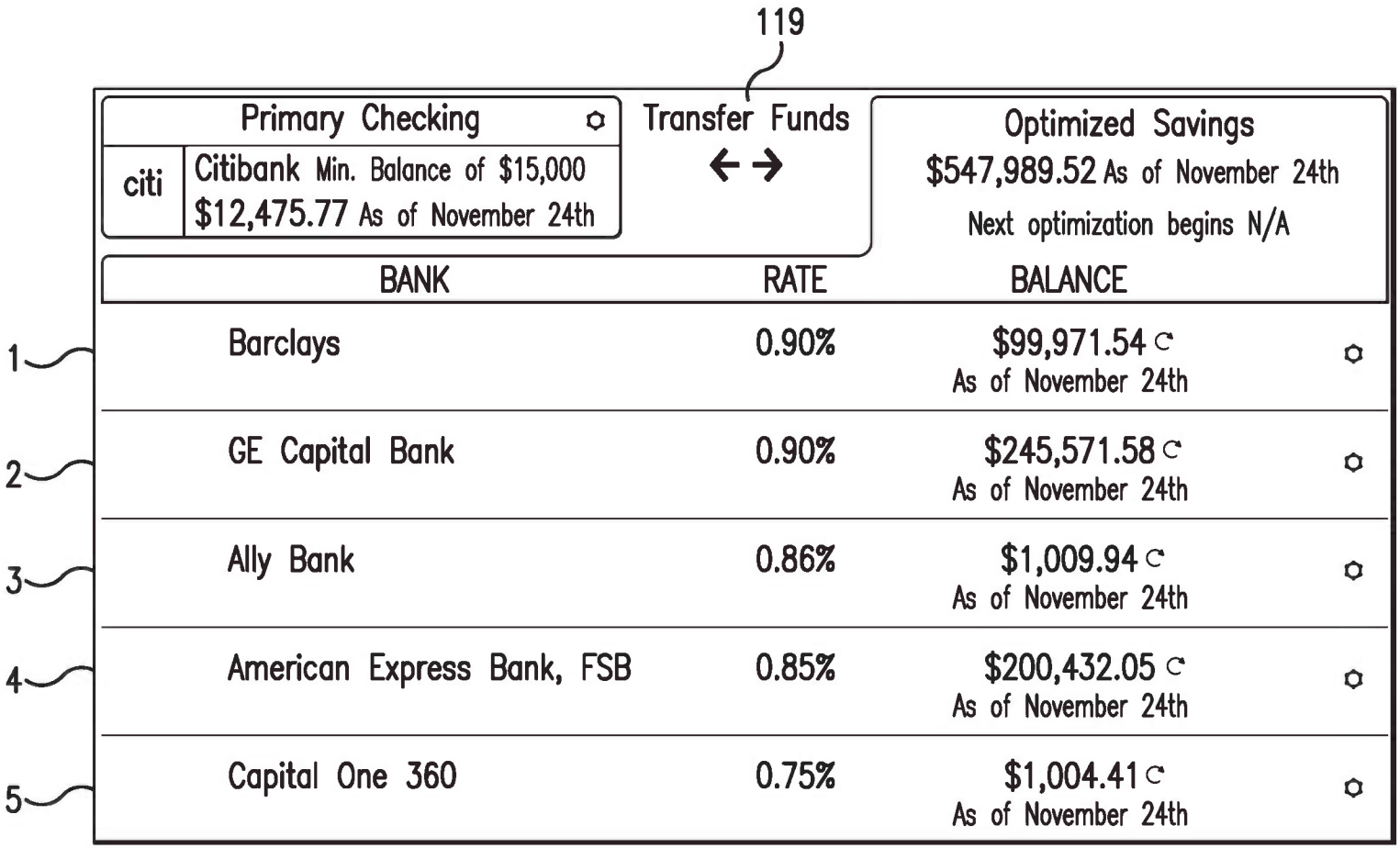


FIG. 4C

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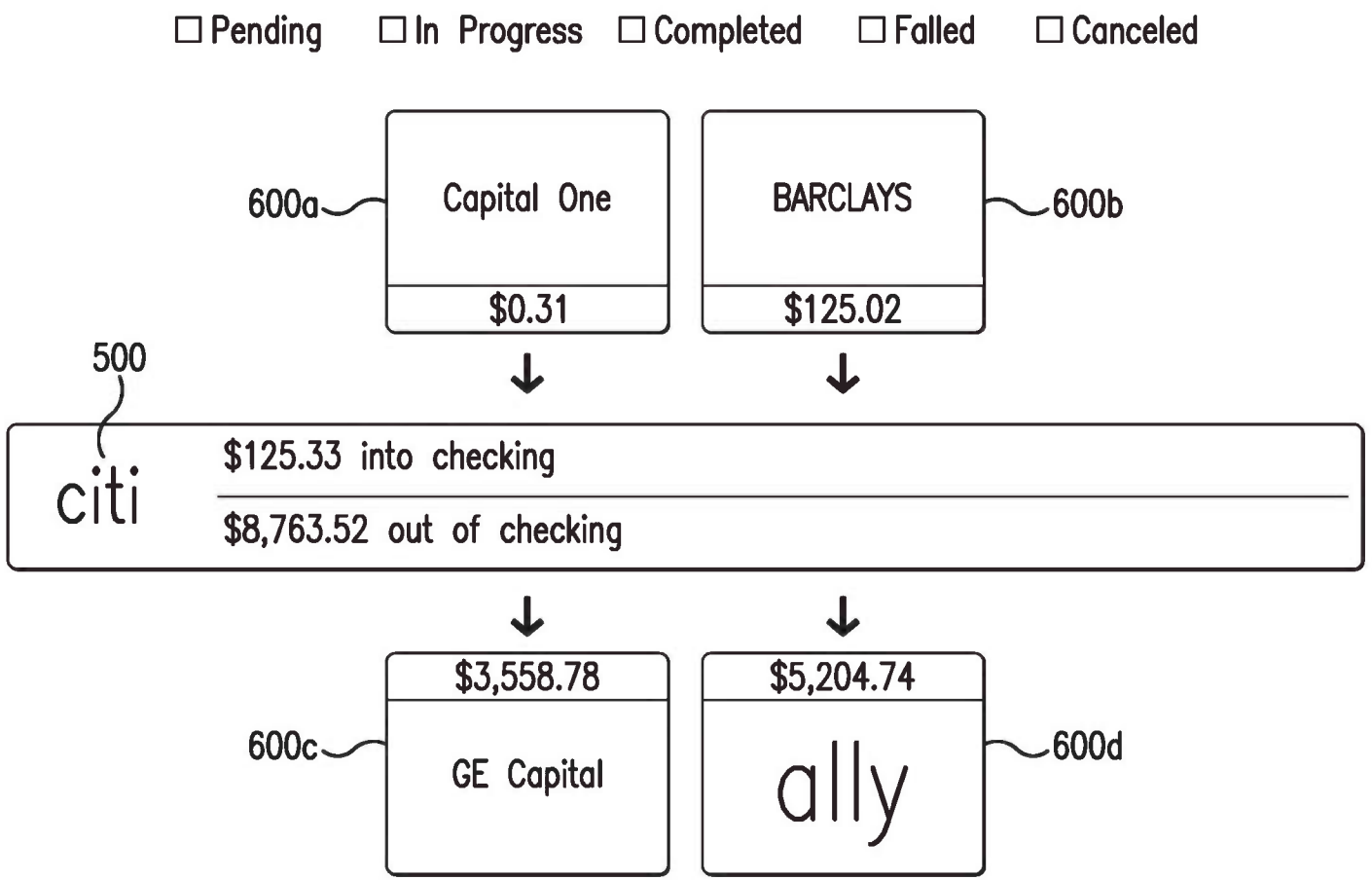


FIG. 4D

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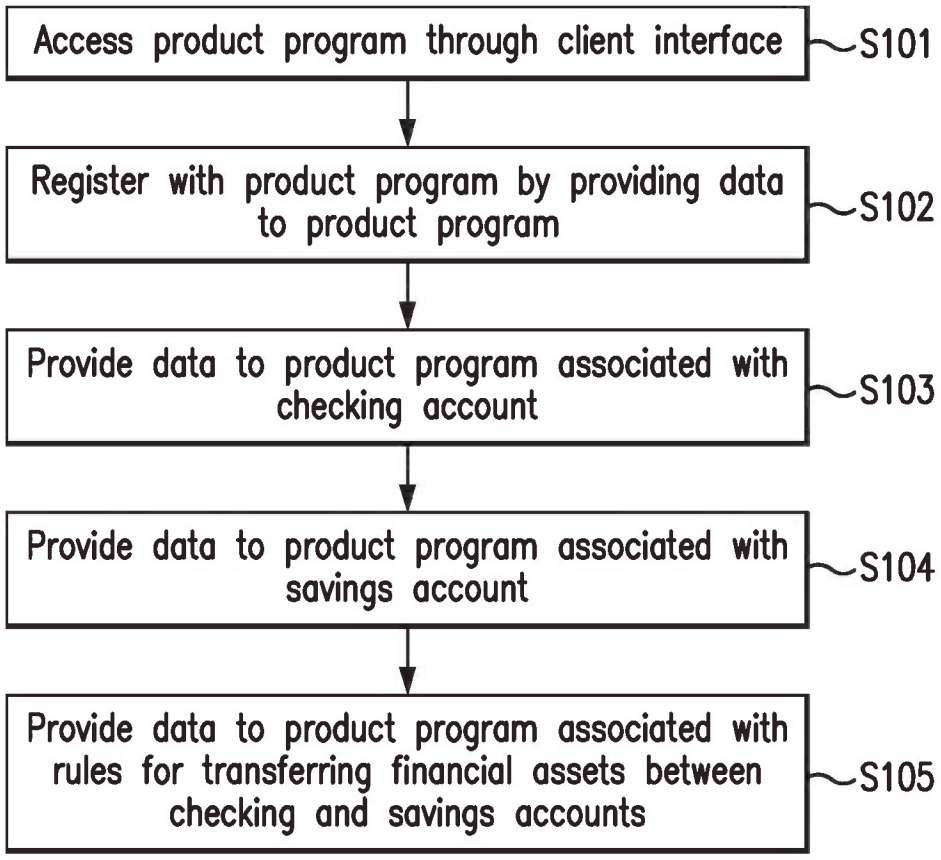

Access product program through client interface
S101
Register with product program by providing data to product program
S102
Provide data to product program associated with checking account
S103
Provide data to product program associated with savings account
S104
Provide data to product program associated with rules for transferring financial assets between checking and savings accounts
S105

FIG. 5

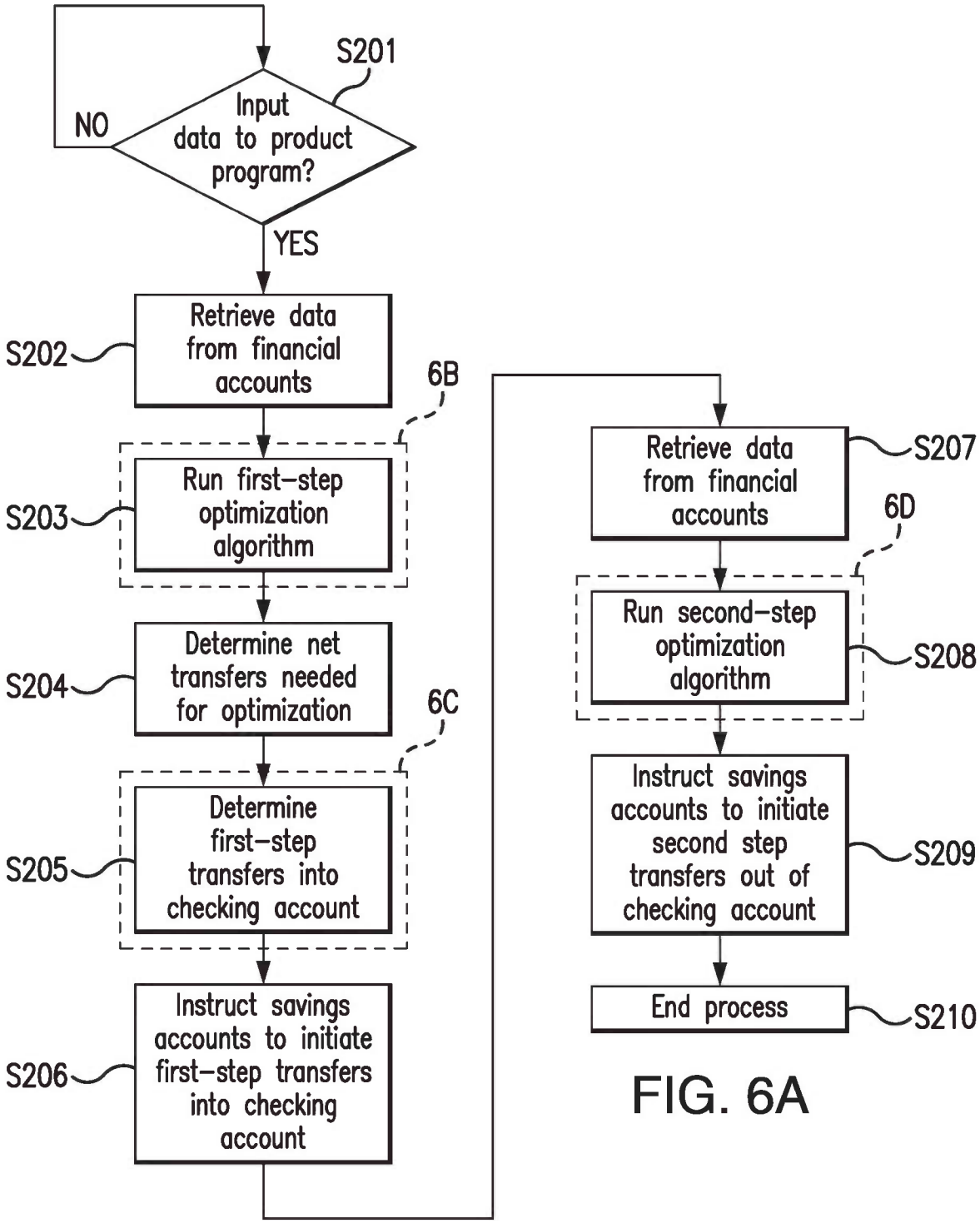

S201
Input data to product program?
NO
YES
Retrieve data from financial accounts
S202
6B
Run first-step optimization algorithm
S203
Determine net transfers needed for optimization
S204
6C
Determine first-step transfers into checking account
S205
Instruct savings accounts to initiate first-step transfers into checking account
S206
Retrieve data from financial accounts
S207
6D
Run second-step optimization algorithm
S208
Instruct savings accounts to initiate second step transfers out of checking account
S209
End process
S210

FIG. 6A

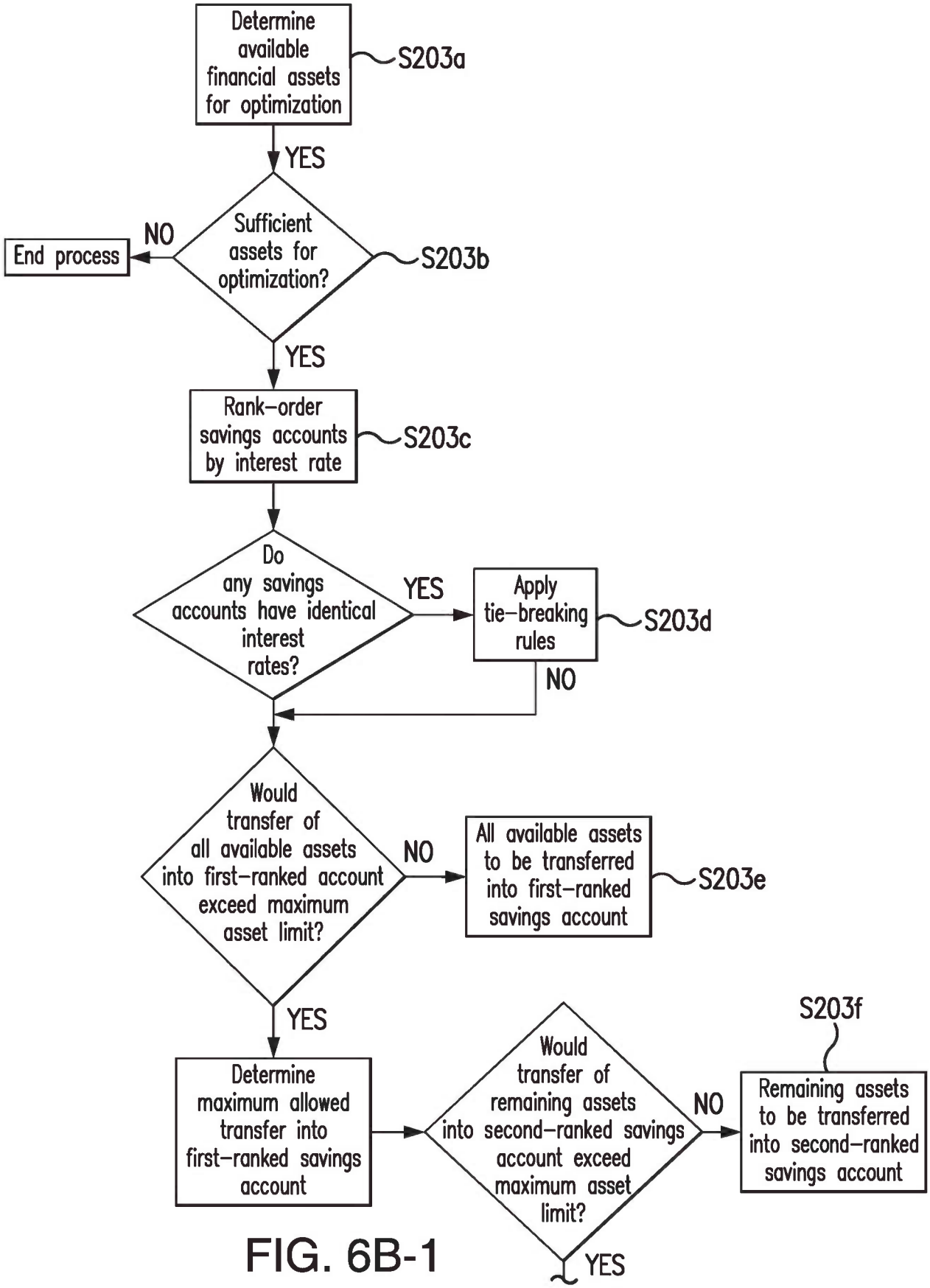

Determine available financial assets for optimization
S203a
YES
Sufficient assets for optimization?
S203b
NO
End process
YES
Rank-order savings accounts by interest rate
S203c
Do any savings accounts have identical interest rates?
YES
Apply tie-breaking rules
S203d
NO
Would transfer of all available assets into first-ranked account exceed maximum asset limit?
NO
All available assets to be transferred into first-ranked savings account
S203e
YES
Determine maximum allowed transfer into first-ranked savings account
Would transfer of remaining assets into second-ranked savings account exceed maximum asset limit?
NO
S203f
Remaining assets to be transferred into second-ranked savings account
YES

FIG. 6B-1

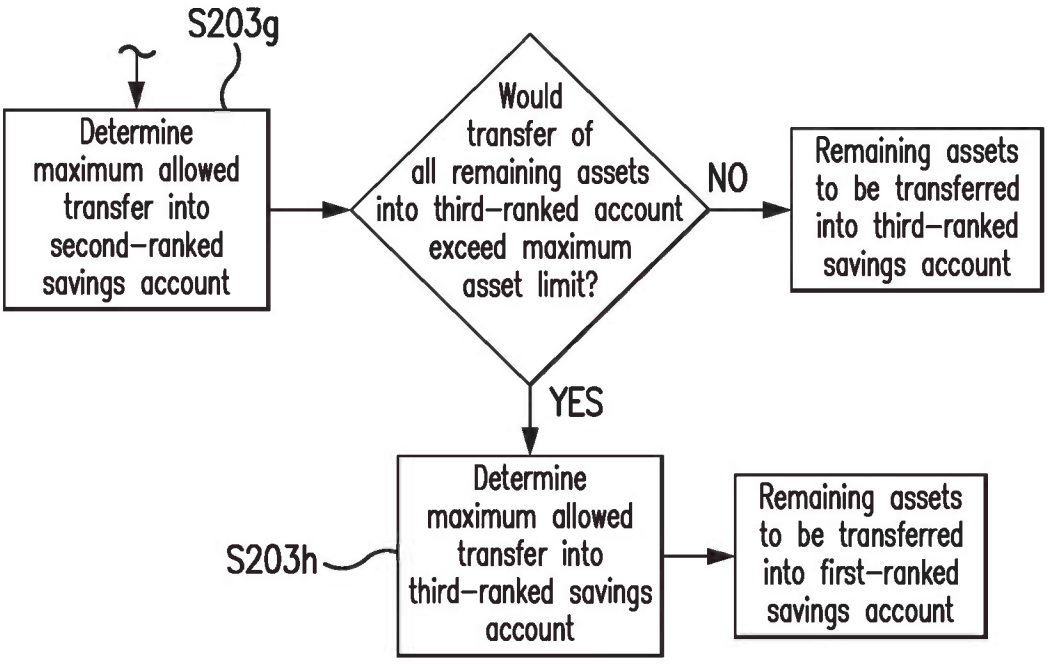

S203g
Determine maximum allowed transfer into second-ranked savings account
Would transfer of all remaining assets into third-ranked account exceed maximum asset limit?
NO
Remaining assets to be transferred into third-ranked savings account
YES
S203h
Determine maximum allowed transfer into third-ranked savings account
Remaining assets to be transferred into first-ranked savings account

FIG. 6B-2

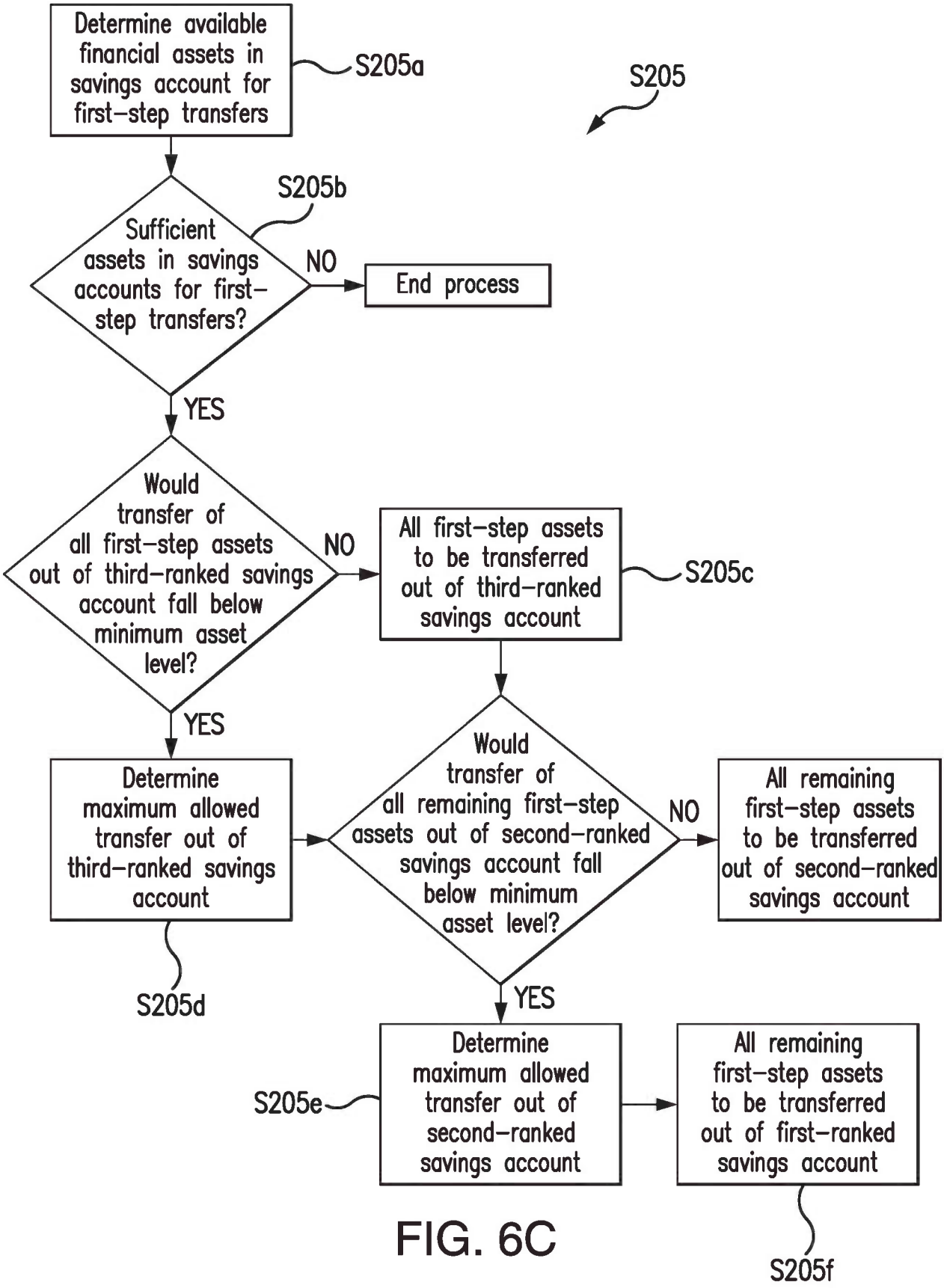

Determine available financial assets in savings account for first-step transfers
S205a
S205
S205b
Sufficient assets in savings accounts for first-step transfers?
NO
End process
YES
Would transfer of all first-step assets out of third-ranked savings account fall below minimum asset level?
NO
All first-step assets to be transferred out of third-ranked savings account
S205c
YES
Determine maximum allowed transfer out of third-ranked savings account
S205d
Would transfer of all remaining first-step assets out of second-ranked savings account fall below minimum asset level?
NO
All remaining first-step assets to be transferred out of second-ranked savings account
YES
S205e
Determine maximum allowed transfer out of second-ranked savings account
All remaining first-step assets to be transferred out of first-ranked savings account
S205f

FIG. 6C

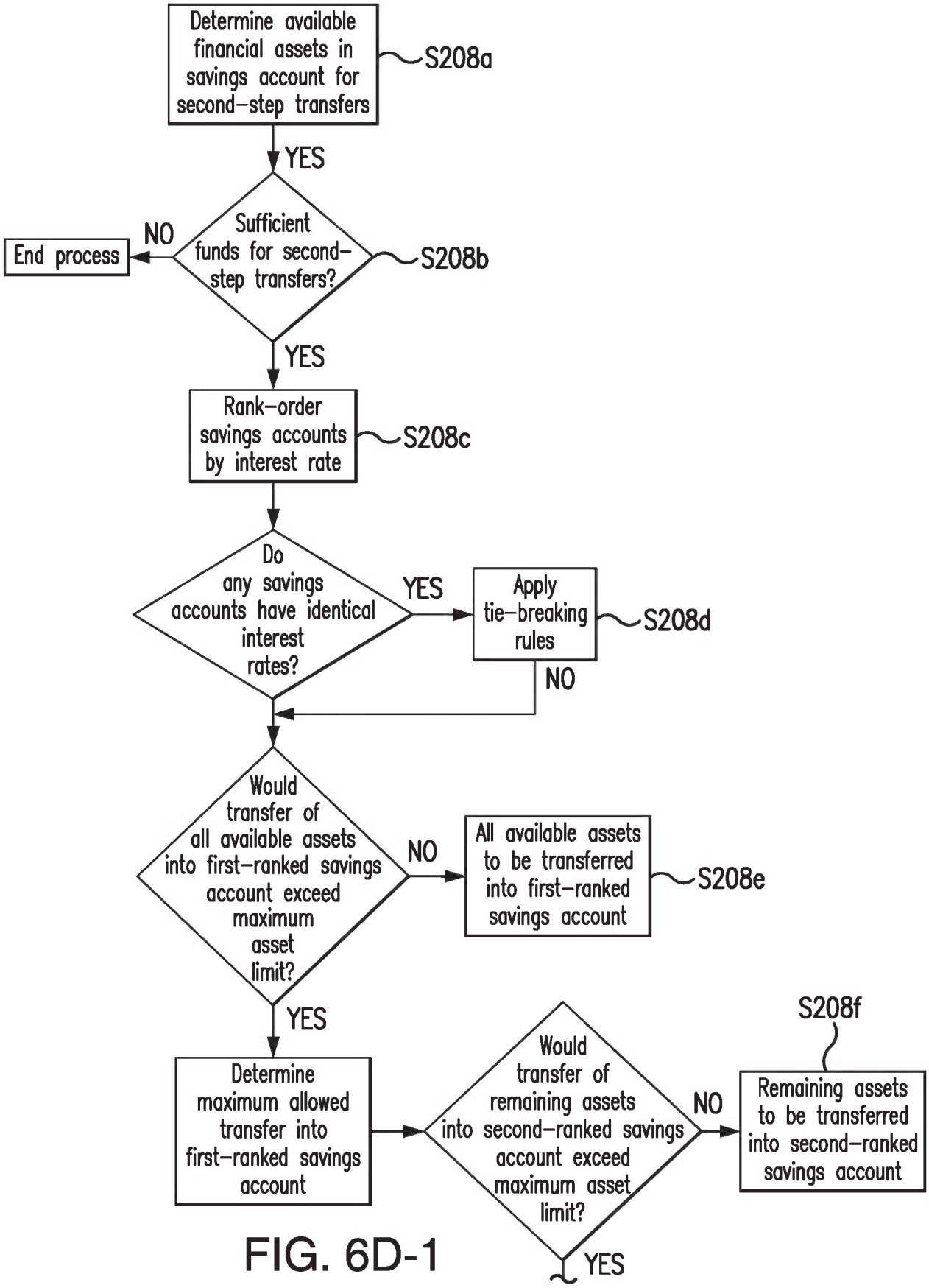

Determine available financial assets in savings account for second-step transfers
S208a
YES
Sufficient funds for second-step transfers?
NO
End process
S208b
YES
Rank-order savings accounts by interest rate
S208c
Do any savings accounts have identical interest rates?
YES
Apply tie-breaking rules
S208d
NO
Would transfer of all available assets into first-ranked savings account exceed maximum asset limit?
NO
All available assets to be transferred into first-ranked savings account
S208e
YES
Determine maximum allowed transfer into first-ranked savings account
Would transfer of remaining assets into second-ranked savings account exceed maximum asset limit?
NO
S208f
Remaining assets to be transferred into second-ranked savings account
YES

FIG. 6D-1

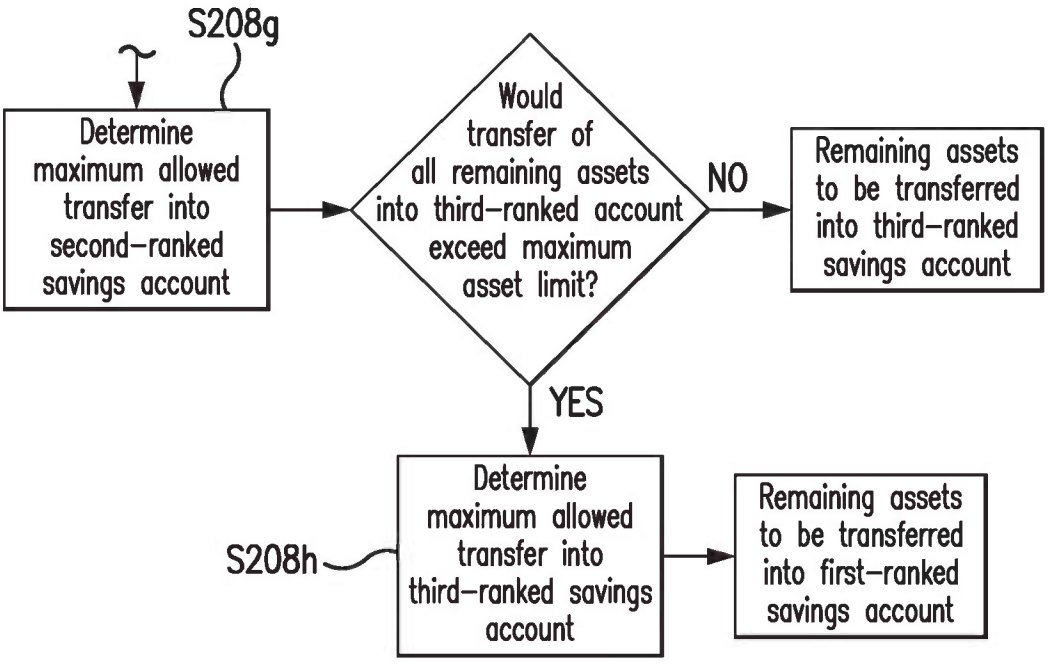

S208g
Determine maximum allowed transfer into second-ranked savings account
Would transfer of all remaining assets into third-ranked account exceed maximum asset limit?
NO
Remaining assets to be transferred into third-ranked savings account
YES
S208h
Determine maximum allowed transfer into third-ranked savings account
Remaining assets to be transferred into first-ranked savings account

FIG. 6D-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Gary Zimmerman et al.

Filed: April 16, 2020

Assignee: Six Trees Capital LLC

Docket No.: 103771-500

Title: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Please enter and consider the following:

Amendments to the Specification begin on page **2** of this paper.

Remarks begin on page **3** of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [0001] with the following amended paragraph:

[0001] The present application is a Continuation of United States Patent Application No. 15/678,453 filed August 16, 2017 and entitled "SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS." ~~This non-provisional application~~ U.S. 15/678,453 claims priority to U.S. 14/606,931 filed January 27, 2015, bearing the same title. U.S. 14/606,931 claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title~~, whose contents are hereby incorporated by reference~~. The contents of U.S. 15/678,453, U.S. 14/606,931 and U.S. 61/932,495 are hereby incorporated by reference herein in their entirety.

Please replace paragraphs [0053] and [0055] with the following amended paragraphs:

[0053] FIG. 6B-1 and FIG. 6B-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as S203;

[0055] FIG. 6D-1 and FIG. 6D-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as S208.

Please delete paragraph [0050] of the Specification which begins with "FIG. 4E is a schematic view . . ."

REMARKS

The amendments to the Specification are to add a claim of priority and to provide a brief description of the several drawings and correct the inclusion of a figure number not corresponding with a figure. No new matter is added.

Applicant authorizes any and all fees necessary for the continued prosecution of the present application to be charged to Deposit Account No. 23-1665.

Respectfully submitted,
Six Trees Capital LLC

Dated: April 16, 2020

/Jonathan D Hall/
Jonathan D. Hall
Reg. No. 67,130

CONTACT INFORMATION:
WIGGIN &DANA LLP
One Century Tower
New Haven, CT 06508-1832
Telephone: (212) 551-2616
Facsimile: (203) 782-2889
Email: JHall@wiggin.com

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6064943

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
GARY ZIMMERMAN	01/27/2015
RICHARD D. WU	01/26/2015
GABRIEL JORGE GIRONDA	01/27/2015

RECEIVING PARTY DATA

Name:	SIX TREES CAPITAL LLC
Street Address:	445 PARK AVENUE
Internal Address:	9TH FLOOR
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10022

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16850150

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2034984400
Email: IP@Wiggin.com
Correspondent Name: WIGGIN AND DANA LLP
Address Line 1: ONE CENTURY TOWER
Address Line 2: 265 CHURCH STREET
Address Line 4: NEW HAVEN, CONNECTICUT 06040

ATTORNEY DOCKET NUMBER:	103771-500
NAME OF SUBMITTER:	JONATHAN D. HALL
SIGNATURE:	/Jonathan D Hall/
DATE SIGNED:	04/16/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 3

source=Declarations#page1.tif
source=Declarations#page2.tif
source=Declarations#page3.tif

ASSIGNMENT/DECLARATION BY INVENTORS

WHEREAS, We, Gary E. Zimmerman, residing at 799 Park Avenue, New York, New York 10021; Richard D. Wu, residing at 600 N. Fairbanks Ct. #2803, Chicago, Illinois 60611; and Gabriel Jorge Gironda, residing at 501 E. Oltorf Street #426, Austin, Texas 78704, have invented certain new and useful improvements in SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS for which:

☒ we have filed an application for Letters Patent of the United States on even date herewith;

WHEREAS, Six Trees Capital LLC, organized under the laws of Delaware, having its principal place of business at 445 Park Avenue, 9th Floor, New York, New York 10022, is desirous of obtaining the entire right, title, and interest in, to and under said improvements and said application and be the Applicant thereof;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, we do hereby sell, assign, transfer and set over, unto said Six Trees Capital LLC, its successors, legal representatives, and assigns, any and all rights, title, and interest that we may have in, to and under said improvements, and said application and all divisions, renewals, and continuations thereof, and all Letters Patent of the United States which may be granted thereon or claim priority therefrom and all reissues and extensions thereof, and all applications for Letters Patent which may hereafter be filed for said improvements in any country or countries foreign to the United States, and all Letters Patent which may be granted for said improvements or claim priority therefrom in any country or countries foreign to the United States and all extensions, renewals, and reissues thereof; and we hereby authorize and request the Commissioner of Patents of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patents for said improvements to said Six Trees Capital LLC, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND WE HEREBY further assign and transfer to Six Trees Capital LLC all priority rights that we may have that are derived from such application therefore by virtue of the International Convention for the Protection of Industrial Property for any and all member countries of the

aforesaid International convention and do hereby assign and transfer to Six Trees Capital LLC any and all rights that we may have to file further applications for patents under the patent laws of any country of the world based on any improvements disclosed in said application as fully and entirely as the same would have been held by had this assignment not been made.

AND WE HEREBY covenant that we have full right to convey the entire interest herein assigned, and that we have not executed, and will not execute, any agreement in conflict herewith.

AND WE HEREBY further covenant and agree that we will communicate to said Six Trees Capital LLC, its successors, legal representatives and assigns, any facts known to us respecting said improvements, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths, and generally do everything possible to aid said Six Trees Capital LLC, its successors, legal representatives and assigns to obtain and enforce proper patent protection for said improvements in all countries.

AND WE EACH INDIVIDUALLY HEREBY declare, as one of the inventors named above, that: (1) the above-identified application was made or authorized to be made by me; (2) I believe that I am the original inventor or an original joint inventor of a claimed invention in the application; (3) I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.

THE REMAINDER OF THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK.
SIGNATURE PAGE FOLLOWS.

IN TESTIMONY WHEREOF, We hereunto set our hands on the date set opposite our signatures.

Date: 1/27/2015

Gary E. Zimmerman

Date: 1/26/2015

Richard D. Wu

Date: 1/27/2015

Gabriel Jorge Gironda

PLUS Search Results for S/N 16850150, Searched Mon Apr 20 12:04:29 EDT 2020

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

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9769134 80
20030200184 80
20080301056 80
20100063895 80
20160358175 80
20080262969 75
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8280807 71
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20090006254 69
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PLUS Search Results for S/N 16850150, Searched Mon Apr 20 12:04:39 EDT 2020

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5223699 91
5644727 91
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5940811 91
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/850,150	04/16/2020	3693	785	103771-500	3	1

CONFIRMATION NO. 1088

FILING RECEIPT

27267
WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

OC000000116450832

Date Mailed: 04/23/2020

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Gary E. Zimmerman, New York, NY;
Richard D. Wu, Chicago, IL;
Gabriel Jorge Gironda, Austin, TX;

Applicant(s)

Six Trees Capital LLC, New York, NY;

Assignment For Published Patent Application

Six Trees Capital LLC, New York, NY

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 15/678,453 08/16/2017
which is a DIV of 14/606,931 01/27/2015 PAT 10268995
which claims benefit of 61/932,495 01/28/2014

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/22/2020
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/850,150**
Projected Publication Date: Request for Non-Publication Acknowledged
Non-Publication Request: Yes
Early Publication Request: No
** **SMALL ENTITY** **
Title

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

Preliminary Class

705

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative,

this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/850,150

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	3 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	785		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500

CONFIRMATION NO. 1088

27267
WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

FORMALITIES LETTER

OC000000116450833

Date Mailed: 04/23/2020

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification excluding claims in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125 is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). Since a preliminary amendment was present on the filing date of the application and such amendment is part of the original disclosure of the application, the substitute specification must include all of the desired changes made in the preliminary amendment. See 37 CFR 1.115 and 1.215.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltan/

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FIELD

[0001] The present application is a Continuation of United States Patent Application No. 15/678,453 filed August 16, 2017 and entitled "SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS." ~~This non-provisional application~~ U.S. 15/678,453 claims priority to U.S. 14/606,931 filed January 27, 2015, bearing the same title. U.S. 14/606,931 claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title~~, whose contents are hereby incorporated by reference~~. The contents of U.S. 15/678,453, U.S. 14/606,931 and U.S. 61/932,495 are hereby incorporated by reference herein in their entirety.

[0002] The present invention generally relates to systems, product programs and methods of using the same for optimizing the distribution of financial assets among financial accounts via a fully-automated approach that does not require user intervention on an ongoing basis. The present invention further relates to systems, product programs, and methods of using the same for automated management of financial assets, including the transfer of financial assets between financial accounts according to a set of rules that optimize the distribution of the financial assets among those accounts according to certain criteria, and subject to certain constraints.

BACKGROUND

[0003] In many economies, financial institutions, for example, banks, brokerage firms and credit unions, offer account holders interest payments at set interest rates for maintaining financial assets in accounts operated by such financial institutions. However, these set interest rates may vary over time depending on overall financial markets and each financial institution's need for deposits, and may differ from one financial institution to another. The current scheme of interest return on financial assets stored in various financial accounts provides challenges to an account holder in managing multiple accounts and optimizing the allocation of his or her financial assets among such accounts to obtain the best overall interest return, while

simultaneously maximizing the degree to which such assets are kept safe via diversification and deposit insurance schemes, such as that provided by the Federal Deposit Insurance Corporation (FDIC).

[0004] For example, many traditional "brick and mortar" financial institutions offer personal checking accounts at comparatively low or zero interest rates, but provide substantially instantaneous access to financial assets in those checking accounts. In today's world of electronic banking, such checking accounts may be configured to allow for ingoing and/or outgoing transfer of financial assets to and from other accounts via batch electronic transfers such as Automated Clearing House (ACH) transfers or wire transfers such as FedWire transfers. One feature of ACH transfers is that they may also be provided with mechanisms to reverse erroneous or unauthorized transfers within a designated period such as 60 days.

[0005] In contrast to low or zero interest bearing checking accounts, other financial institutions, such as online banking institutions, may be attractive in that they offer to a user savings accounts with higher interest rates than their "brick and mortar" counterparts, but sometimes place restrictions on access to financial assets by a user, for example, by requiring a waiting period for funds to clear or transfer, or by placing limitations on the method by which such funds may be transferred or accessed. At present, many of these online banking institutions allow for funds to be transferred into or out of their online savings accounts via ACH transfers, which they provide to their customers free of charge. In some cases, online banking institutions also provide for the ability to send or receive funds via wire transfers.

[0006] Since interest rates may be subject to frequent and/or unpredictable fluctuations among various financial institutions, account holders must continuously monitor, plan, and/or effect transfers of financial assets among their various accounts in order to gain the maximum benefit of interest rates offered across different financial accounts at a given time. Moving funds from one account to another can often require multiple steps, careful coordination, and mathematical adjustments to the amounts being transferred due to the time that elapses in the process of making such funds transfers.

[0007] Prior attempts to optimize returns on financial assets using, for example, automated cash sweep systems, have sought to allocate cash across multiple accounts so as to provide increased FDIC insurance protection, but not necessarily to optimize interest yield.

[0008] For example, there are prior art cash sweep systems that operate as "brokered deposit" systems. Such brokered deposit systems involve deposits that are sold from bank to bank. Since such deposits are characterized as a lower tier of capital from a regulatory perspective, optimization systems involving such brokered deposits are less attractive, since banks are only willing to pay below-market interest rates for such deposits.

[0009] Among the inventive concepts incorporated in the system described herein, the optimization of interest earnings among a user's accounts is structured differently from such brokered deposit systems. Since i) the user's accounts are conventional deposit accounts that they hold directly in their own names, ii) the banks cannot dictate the extent to which they receive funds, and iii) the banks do not pay a fee to receive such funds, these deposits are not considered by the regulators to be "brokered." As such, these deposits receive a higher interest rate than funds that are subject to brokered deposit systems. Optimizing the distribution of financial assets among such conventional deposit accounts thus provides higher yields to the user, while simultaneously affording the banks more favorable regulatory treatment as it relates to these deposits.

[0010] Prior art sweep systems using brokered deposit accounts are also deficient in that they may not provide full insurance to the account holder/user, since the account holder/user may have outside deposits or CDs at the same institutions that serve as program banks under the brokered deposit system, and overlapping deposits may result in the user inadvertently exceeding the deposit insurance coverage limits. On the other hand, the invention disclosed herein permits the account holder/user to easily and directly control overall limits on a per bank basis, thereby providing control and reducing the likelihood that there will be uninsured deposits.

[0011] Still further, in prior art cash sweep systems, the accounts are not directly held by the user and therefore cannot be directly accessed by the user without coordination with the cash sweep administrator. Further, if the main bank controlling, for example, the brokered deposit

network were to fail, the user would lose access to the funds being held by the related banks involved in the brokered deposits for a period of time.

[0012] Accordingly, there is a need for a financial management system that can avoid the deficiencies of prior art systems. These deficiencies are obviated by the invention described herein, in which all accounts are not only optimized, but at all times are directly accessible to the user/account holder without needing to coordinate with a third party.

[0013] The financial management system disclosed herein can determine the optimal allocation of financial assets across different financial accounts set up by a user/account holder, and then instruct or facilitate the transfer of financial assets among multiple accounts to allocate an account holder's financial assets in an optimal manner so that the user receives the maximum available amount of interest return on the financial assets disposed across the various accounts, subject to the constraints imposed by simultaneously maximizing FDIC insurance coverage, or any other such constraints that may be set by the user or administrator of the financial management network.

[0014] The disclosed financial management system can be configured to allocate an account holder's financial assets among the different accounts to be optimized subject to additional or alternative factors or constraints, such as keeping assets within insurance limits set by deposit insurance schemes or other purchased insurance products, keeping within transfer limits imposed by the banks and/or minimum and/or maximum account balances as may be required by financial institutions or desired by the user, maintaining checking account balances at specified deposit levels and/or to provide a user with other advantages that different types of financial accounts have to offer.

[0015] The disclosed financial management system can operate in an at least a partially automated manner to effect such financial transfers with little or no monitoring and/or intervention by the user/account holder and/or at no marginal cost to the user per transfer effected.

[0016] As detailed further herein, a unique and inventive concept of the underlying architecture of the system disclosed herein is that any transfers of funds required to achieve

optimized interest returns originate as requests made by online banks through the Automated Clearing House (ACH) for either an ACH credit to the user's linked checking account or as an ACH debit that pulls funds from the checking account.

[0017] Significantly, among the many inventive concepts included in the disclosed system, the checking account at the hub of the disclosed system is passive in that the checking account does not control the flow of funds into or out of the checking account. Advantageously, this arrangement avoids funds transfer limitations often imposed by brick-and-mortar banks, as well as fees that are normally charged for funds transfers from a checking account. Because transfers are handled by the online banks who assume the costs for such ACH transfers, there are no costs incurred by the user of the disclosed system.

SUMMARY

[0018] As used herein and as will be clear from the context, the term "account" may refer to the account holder's account per se, or to the associated physical interface that permits the account to be electronically accessed by either the user or the financial management system disclosed herein. Further, the terms "user," "client," "account holder," "customer," and "member" are used interchangeably in this disclosure

[0019] According to an exemplary embodiment, a financial management system is disclosed, comprising a first financial management network that connects a checking account, a first savings account, and a second savings account. The financial management network comprises at least one data store, a processor and a product program for implementing the desired transactions, as further discussed herein. The financial management network, checking account, first savings account, and second savings account are each interconnected along a data network.

[0020] In an exemplary embodiment, the checking account is associated with a first interest rate.

[0021] In an exemplary embodiment, the first savings account is associated with an interest rate that is higher than the first interest rate.

[0022] In an exemplary embodiment, the second savings account is associated with an interest rate that is equal to or higher than the first interest rate.

[0023] In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

[0024] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among one or more of the checking account, first savings account, and second savings account.

[0025] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets in one or more of the checking account, first savings account, and second savings account.

[0026] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets to be transferred between one or both of the first savings account and second savings account and the checking account.

[0027] In an exemplary embodiment, the one or more rules determine an allowable amount of transfers of financial assets between one or both of the first savings account and second savings account and the checking account over a given period of time.

[0028] In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

[0029] In an exemplary embodiment, the credentials include one or more of: a login name, a login password, an account number, a routing number, a name, an address, a telephone number, an email address, information relating to a third party financial institution, a PIN number, and answers to a one or more predetermined questions.

[0030] In an exemplary embodiment, the processor is configured to determine an allocation of financial assets among the checking account, first savings account, and second savings account, based upon a relative priority of the checking account, first savings account, and second savings account subject to the one or more rules.

[0031] According to an exemplary embodiment, a financial management network is disclosed that utilizes links that a user/account holder has established between a checking account, and one or more savings accounts. Such links are made accessible to the financial management system which can then instruct transfers between the linked accounts in the manner disclosed herein.

[0032] In an exemplary embodiment the financial management network comprises at least one data store, and one or more processors for implementing a product program as further disclosed herein. Each of the financial management network, checking account, and one or more savings accounts are interconnected along a data network.

[0033] In an exemplary embodiment, the one or more processors are configured to apply one or more rules stored in the at least one data store to instruct at least one savings account of the one or more savings accounts to initiate a transfer of financial assets between the checking account and the respective savings account.

[0034] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among the checking account and the one or more savings accounts.

[0035] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising a data store, a processor and a product program; (b) linking a checking account to the financial management network; (c) linking a first savings account to the checking account and to the financial management network; (d) linking a second savings account to the checking account and to the financial management network; (e) providing one or more rules to the product program; and (f) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account, first savings account, and second savings account according to a relative priority

assigned to the checking account, first savings account, and second savings account subject to the one or more rules.

[0036] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets between one or more of the first savings account and second savings account and the checking account according to an optimization algorithm.

[0037] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to the checking account from one or more of the first savings account and second savings account according to the optimization algorithm.

[0038] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to one or more of the first savings account and second savings account from the checking account according to the optimization algorithm.

[0039] In an exemplary embodiment, the optimization algorithm determines a relative priority among the savings accounts at least partially based upon an interest rate associated with each of the first savings account and second savings account.

[0040] In an exemplary embodiment, the optimization algorithm determines the relative priority based at least partially on one or more factors including: an objective customer service rating, a subjective customer service rating, an associated fee, an account limit, a transfer limit, and historical interest rates or historical interest rate volatility.

[0041] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising at least one data store, one or more processors and a product program; (b) linking a checking account to the financial management network; (c) linking one or more savings accounts to the checking account and to the financial management network; (d) providing one or more rules to the product program; and (e) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account and the one or more savings accounts according to a relative priority assigned to the checking account and/or the one or more savings accounts

subject to the one or more rules, and (f) individually instructing some or all of a user's online savings banks to send cash to the checking account and/or pull cash from the checking account.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein:

[0043] FIG. 1 is a schematic diagram of a financial management system according to an exemplary embodiment of the present disclosure;

[0044] FIG. 2 is a schematic diagram illustrating linked financial accounts in the financial management system of FIG. 1.

[0045] FIG. 3 is a schematic diagram of the financial management network of FIG. 1;

[0046] FIG. 4A is a schematic view of an exemplary embodiment of the image layer of the client interface shown in FIG. 1.

[0047] FIG. 4B is a schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0048] FIG. 4C is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0049] FIG. 4D is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

~~[0050] FIG. 4E is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;~~

[0051] FIG. 5 is a process diagram of steps a user may take to configure the financial management system of FIG. 1 for use, according to an exemplary embodiment of the present disclosure;

[0052] FIG. 6A is an operational flow chart of the financial management system of FIG. 1 according to an exemplary embodiment of the present disclosure:

[0053] FIG. 6B-1 and FIG. 6B-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as **S203**;

[0054] FIG. 6C is a flow chart of the area of detail identified in FIG. 6A as **S205**; and

[0055] FIG. 6D-1 and FIG. 6D-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as **S208**.

DETAILED DESCRIPTION

[0056] In embodiments, the present invention generally relates to systems, product programs, and methods of using the same for managing multiple financial asset accounts, determining the optimal allocation of financial assets across financial accounts and the automated transfer of financial assets between a first financial account and at least one second financial account so that the financial assets are allocated in an optimal manner among the financial accounts according to certain criteria and without ongoing user intervention. As used herein, the term financial account will be understood to include a collection of one or more units of a financial asset having an associated monetary value, such as a currency. Financial accounts may be collections of financial assets that are held, maintained, and/or otherwise managed by a financial institution, such as a bank, brokerage firm or credit union. In embodiments, a financial account may be, for example, a checking account or savings account or money market fund account. As described herein, an interest rate refers to a percentage increase, or in the event of a negative interest rate, a percentage decrease, of the value of the financial assets in an account at set intervals of time, effected via deposits to the financial account called interest payments. Interest payments in financial accounts such as checking and savings accounts may be in the form of, for example, cash. In embodiments, interest payments may be in a form dependent upon the type of financial account to which they are applied, for example, yields in the form of coupons on bonds and/or bills in the case of a money market fund.

[0057] In embodiments, the present invention further relates to systems, product programs, and methods of using the same for allocating and transferring financial assets between a first financial account and at least a second financial account according to an optimization algorithm so that a user's financial assets are distributed across the financial accounts in a manner such that the financial assets receive the maximum amount of interest payments available as determined by the respective interest rates of the financial accounts within boundary conditions or constraints that may be user-selected and/or imposed by a financial institution or other body, such as the system administrator.

[0058] In embodiments, a boundary condition may be a requirement imposed by the financial institution that a minimum amount of assets be maintained in in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a minimum account balance. In other embodiments, such boundary condition could relate to a minimum account balance that a user desires to keep in his/her account, irrespective of the requirements imposed by the financial institution. A minimum account balance may be, for example, $1 USD. Such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts.

[0059] In embodiments, a boundary condition may be a maximum amount of financial assets in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a maximum account balance. In embodiments, a maximum account balance may correspond to a financial asset limit independent of financial management system **1000**, for example, a government or third-party insurance limit, such as the maximum FDIC insurance limit (which currently stands at $250,000 USD, but which may change from time to time). In such embodiments, the boundary condition may be set at a margin of safety below the reference financial asset limit, for example, $249,500 USD in the case of the FDIC insurance limit for an individual account, such that principal plus accrued interest remain below the FDIC insurance limit. In embodiments, such a boundary condition may correspond to a maximum financial asset limit as specified by a third-party financial institution, for example, $1,000,000. Accordingly, such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts. In

embodiments, such a boundary condition may correspond to the user's maximum desired balance, which may be higher or lower than the default boundary condition set by product program **110**.

[0060] In embodiments, a boundary condition may be a maximum and/or minimum amount of financial assets that may be transferred into and/or out of a given financial account, e.g., a transfer limit. In embodiments, such a boundary condition may apply to either or both incoming and outgoing transfers of financial assets on anyone of accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In embodiments, the boundary condition may apply to any given period of time, for example, one day, one week, or one month, to name a few. In embodiments, the boundary condition may apply to a limit on ingoing and/or outgoing transfers occurring in a single transfer of financial assets, for example, a maximum outbound transfer of $150,000 USD, or a maximum inbound transfer of $250,000 USD, or a maximum daily transfer limit of $500,000 USD, and may differ across different accounts.

[0061] In embodiments, a boundary condition may be a maximum number of transfers of financial assets to be initiated over a given period of time. In embodiments, such a boundary condition may correspond to a limit set by a financial institution, such as a maximum of six transfers with respect to a given financial account before associated fees are incurred.

[0062] In embodiments, a boundary condition may depend upon a different variable, for example, a minimum difference in interest rates associated with two financial accounts and/or a minimum difference in financial assets in two financial accounts before a transfer of financial assets there between is initiated.

[0063] Turning to FIG. 1, an exemplary embodiment of a financial management system is generally designated **1000**. Financial management system **1000** may be an interconnection of elements that comprise at least a financial management network **100**, a client interface **200**, and interfaces to a first financial account, such as a checking account **300**, and one or more second financial accounts, such as savings accounts **400** *a*, **400** *b*, **400** *c*. Although the presently-described exemplary embodiment includes three savings accounts, it will be understood that, in

embodiments, a financial management system **1000** may be linked to any number of savings accounts and/or other types of financial accounts through their associated computer interfaces.

[0064] Financial management network **100**, client interface **200**, account interfaces **300**, **400** *a*, **400** *b*, **400** *c*, and/or any component thereof, may be interconnected along one or more electronic data networks **1100**, for example, a wired and/or wireless data communication system such as the World Wide Web, a mobile data network, and/or local intranet, to name a few. In embodiments, a financial management system may be an interconnection of elements that comprise any number, combination, and/or separation of elements described above.

[0065] Financial management network **100** may include web servers, application servers and databases as described herein, for implementing a multi-tier web application that includes access and security restrictions between the web servers, application servers and databases. For example, the application servers and databases can be accessed on the internet only by system administrators using specialized software and virtual private networks that communicate using SSL certificates with tightly controlled access lists.

[0066] As described further herein, financial management system **1000** is configured so that financial management network **100** periodically analyzes changing conditions among the one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, and checking account **300** that may impact the optimum allocation of funds among the accounts. For example, interest rates payable by the accounts, FDIC insurance limits, maximum/minimum account limits, transfer limits and the like may periodically change for some or all of the accounts. Such changing conditions are periodically monitored by the financial management network **100** to determine the optimal allocation of a user's financial assets among checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* to receive the benefit of the highest interest rates available subject to any or all of the constraints described above in any combination or separation, subject to any and/or all of the boundary conditions described above in any combination or separation. Such optimal allocation may be made in accordance with a particular schedule or automatically when a changing condition occurs that impacts on the optimal allocation.

[0067] The financial management network may then instruct one or more of the interfaces for savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets indirectly there between, through a corresponding crediting and debiting action on checking account **300** as an intermediary to achieve this optimized distribution of the user's financial assets.

[0068] In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account **400** *a* is instructed to initiate a transfer of financial assets M_1, into checking account **300** (through a debiting action). In a separate, second step, savings account **400** *c* is instructed to initiate a transfer of financial assets M_1 into savings account **400** *c* from the checking account **300** (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

[0069] The above-described processes of financial management network **100** may be at least partially automated so that a user may attain the benefits of an optimized allocation of his or her financial assets across savings accounts **400** *a*, **400** *b*, **400** *c*, without spending a substantially increased amount of time and effort monitoring these accounts.

[0070] In embodiments, financial management system **1000** may include any number of savings accounts. Accordingly, in embodiments, financial management system **1000** may link a single savings account and a single checking account. In embodiments, financial management system may include more than one checking account. In embodiments, financial management system **1000** may include any number of financial accounts, including, for example, checking accounts, savings accounts, brokerage accounts or money market fund accounts in any combination or separation.

[0071] In the exemplary embodiment shown, checking account **300** may be maintained by a traditional banking institution, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be

maintained by respective online banking institutions. Accordingly, checking account **300** may be a financial account with a low or zero value interest rate it, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be a financial account with respective interest rates i_2, i_3, i_4 that are each greater than the interest rate i_1 of checking account **300**. In this manner, financial assets stored in savings accounts **400** *a*, **400** *b*, and/or **400** *c* may be supplemented by interest payments at a greater percentage than would be earned by a corresponding amount of financial assets stored in the checking account **300** during a comparative interval of time. Interest rates i_2, i_3, i_4 may each be substantially similar to one another, may have different values, and/or may fluctuate over time so that interest rates i_2, i_3, and i_4, do not necessarily have a constant relative relationship. In embodiments, checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* may be different financial accounts at the same third party institution that have different associated interest rates i_2, i_3, i_4. It will be understood that, in embodiments, accounts **300**, **400** *a*, **400** *b*, **400** *c* may be different types of financial accounts and may use different currencies. For example, each account may be a non-commercial account, a commercial account, a trust account, an escrow account, a non-profit, foundation or endowment account, or any other type of account that can be accessed by the financial management network **100** in accordance with this disclosure.

[0072] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* includes financial assets to which a user/account holder has access, and to which other individuals or entities may have access when authorized by a user/account holder. A user may include, for example, a single account owner, one or more joint account owners, or one or more persons acting on behalf of an at least partial account holder, such as a proxy or trustee, financial advisor, private wealth manager, and/or an automated system acting upon instructions provided by a user, being one or more of the above, to name a few. For example, the user might be an individual, a couple, a financial advisor administering the system on behalf of an individual or a couple, or a CFO or treasurer of a company who has authority to act on behalf of that entity's accounts.

[0073] As shown, savings accounts **400** *a*, **400** *b*, **400** *c* are linked across data network **1100** through checking account **300**. Referring additionally to FIG. 2, checking account **300** is linked between each of accounts **400** *a*, **400** *b*, **400** *c* so that checking account **300** may act as a hub through which financial assets may be transferred indirectly between savings accounts **400** *a*, **400** *b*, **400** *c*. The savings accounts may be viewed as

connected to the checking account hub as various spokes. By using such hub-and-spoke architecture, rather than making transfers directly between savings accounts, the disclosed system is able to avoid limitations that may be imposed on transfers from savings account (e.g., certain banking regulations in the United States currently limit savings accounts to no more than 6 outbound transfers per month).

[0074] Furthermore, by using such hub-and-spoke architecture in which transfers are made through previously-verified ACH links between the checking account at the hub and the savings accounts at the spokes, the presently disclosed system is highly secure. In accordance with this architecture and as disclosed herein, the financial management network **100** does not originate funds transfers, but only acts as agent for the user/account holder, providing instructions on the user's behalf to the user's savings banks to make the funds transfers along ACH conduits that the user has setup with each online account and whose security has been previously verified by the user and the banks. For example, it is not possible for someone who may breach other robust security measures built into the disclosed financial management system **1000** and/or financial management network **100** to link their own online account and syphon funds away from the user/account holder, since the breaching party will not be able to complete the trial deposit verification procedures currently in place by banks for confirming the secure linking together of new accounts, since access to the user's checking account is also required to confirm trial deposits (or other mechanisms typically used to confirm rightful ownership of accounts).

[0075] Accordingly, financial assets may be transferred between savings accounts **400** *a*, **400** *b*, **400** *c* by using checking account **300** as an intermediary. For example, an amount of financial assets M, may be transferred between savings account **400** *a* and savings account **400** *c* in a two-step process: in a first step, financial assets M_1, are transferred from savings account **400** *a* to checking account **300**; in a separate, second step, financial assets M, are transferred to savings account **400** *c* from checking account **300**. A lapse in time between the first step and second step described above may be associated with, for example, the length of time that the checking account **300** or an intermediary funds transfer network, such as the ACH network or FedWire, takes to process the transfer in the first step, along with the amount of time that the system described herein takes to i) confirm that the first step has been completed

successfully and ii) refresh user account balances and recalculate the required funds transfers for the second step, taking into account any changes in relevant account balances between the first and second step.

[0076] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* may retain financial assets so that a substantially large number of possible distributions of a user's financial assets is possible. As described above, it may be desirable to redistribute financial assets among savings accounts **400** *a*, **400** *b*, **400** *c*, for example, to gain the benefit of a higher interest rate offered on one account, or to help maintain the level of financial assets in some or all of the accounts above a minimum value or below a maximum value, for example, to stay below an insurance program limit, such as FDIC insurance, or to stay above a minimum balance requirement (either for the avoidance of account fees or to keep an account open).

[0077] Accordingly, financial management network **100** is configured to implement an optimization algorithm to provide a user with the optimum distribution of financial assets across savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** so that the user's financial assets in financial management network **100** are eligible for the greatest amount of interest payments offered on savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, subject to the aforementioned constraints.

[0078] In embodiments, financial management network **100** may be at least partially automated so that financial management network **100** can send instructions to implement financial transfers between accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring direct input from a user. In such embodiments, financial management network **100** may be governed by a set of rules or conditions chosen by the user and/or persons or entities authorized by the user, including the system administrator. As described further herein, financial management network may be provided with a variable level of automation so that a user is afforded a degree of direct control over the operation of financial management network **100**.

[0079] Still referring to FIG. 1, client interface **200** is an access point configured to transmit data between a user and at least financial management network **100** along data network **1100**. In embodiments, client interface **200** may additionally be configured to transmit

data directly between a user and checking account **300** and/or savings accounts **400** *a*, **400** *b*, and/or **400** *c*. In embodiments, client interface **200** may be, for example, a desktop or terminal computer, or may be a mobile device incorporating a computer such as a smartphone, PDA, wearable computer, laptop computer, or tablet computer. It will be understood that any device capable of connecting to data network **1100** may be configurable as a suitable client interface.

[0080] Client interface **200** includes a display **210** that is configured to provide data from financial management network **100** in a format visually accessible to a user, such as letters, numbers, symbols, and/or graphics, to name a few. In embodiments, display **210** may be, for example, a video monitor, a screen, or a projector. Client interface **200** also includes at least one input device **220** through which a user may input data to at least financial management network **100** along data network **1100**. In embodiments, input device **220** may be, for example, a keyboard, mouse, keypad, touchpad, voice recognition program, motion sensor and/or other input device capable of sending data to financial management network **100** through data network **1100** in response to a corresponding physical input and/or visual input and/or audible input. In embodiments, a client interface **200** may include additional and/or alternative features for the receipt and input of data there through. Still further, in embodiments, the financial management network **100** may provide information and receive instructions via an API, for example connected to the computer system of a financial advisor, rather than via human input. In embodiments, a display and input device may together be provided on a client interface, for example, through one or more capacitive touchscreens. In this regard, a user may access and/or input information directly to financial management network **100**, checking account **300**, and/or savings account **400**, and/or may indirectly access and/or input information to checking account **300** and/or savings account **400** via financial management network **100** through client interface **200**.

[0081] Turning to FIG. 3, financial management network **100** may comprise a product program **110**, a credential data store **120**, and rule data store **130**. In embodiments, financial management network **100** may include a single data store, or any number, combination, and/or separation of elements described above.

[0082] Product program **110** may be an application or software operable via one or more processors **112**. In embodiments, product program **110** may comprise a computing environment having one or more real and/or virtual data servers to provide network-based services to a user, such as a cloud computing environment, and provides a hub that is connected between credential data store **120**, rule data store **130**, client interface **200**, checking account **300**, and savings accounts **400** *a*, **400** *b*, **400** *c* along data network **1100**.

[0083] Referring additionally to FIG. 4A, product program **110** includes a visual layer **114** that is transmitted through data network **1100** to at least client interface **200**. Visual layer **114** may be, for example, an application layer or website configured to be displayed on display **210** of client interface **200**. In this manner, display **210** of client interface **200** and visual layer **114** of product program **110** are together configured to communicate to display data input and/or output by product program **110** in a manner accessible to the user as described above.

[0084] Accordingly, visual layer **114** may include one or more indicia **116** that may include for example, letters, numbers, colors, patterns, and/or symbols, to name a few. Visual layer **114** may also include one or more input fields **18** in which a user may input data through control device **220**, for example, letters, numbers, symbols, and/or markings such as radio buttons, check boxes, or text boxes. Data supplied from input fields **118** are transmitted to product program **110** through data network **1100**.

[0085] Credential data store **120** and rule data store **130** are repositories of data connected to product program **110** along data network **1100**. Either or both of credential data store **120** and rule data store **130** may be configured as a database, for example, a relational database or key-value data storage system. Credential data store **120** and/or rule data store **130** may be supported on one or more network-based environments that may comprise one or more virtual and/or physical servers, for example, a cloud computing environment. Credential data store **120** and rule data store **130** may be supported on a common cloud computing environment or separate cloud computing environments. In embodiments, data associated with financial management system **1000** may be stored on a single data store, two data stores as shown, or, in embodiments, any number of data stores. In embodiments, data associated with financial management system **1000** may be stored on multiple data stores, for example, for

security purposes so that data is compartmentalized to inhibit unauthorized access. In embodiments, data may be transmitted to data stores **120**, **130** by a user through client interface **200** or by another path through product program **110**, for example, data input by a user or system administrator or via an API.

[0086] Credential data store **120** may include data associated with information capable of accessing any of checking account **300**, savings accounts **400** *a*, **400** *b*, **400** *c*. For example, credentials such as account numbers, routing numbers, challenge questions that may be posed by an account interface and associated answers, login names, passwords, PIN codes, e-mail addresses, contact telephone numbers, digital certificates, and/or web cookies, to name a few of the credentials that may need to be provided to gain access to a user's checking and/or savings accounts.

[0087] Accordingly, data stored on credential data store **120** may comprise confidential information, for example, information deemed secure by a user so that only the user and/or user-approved individuals and/or entities that are intended to be privy to such information may be granted access. In embodiments, one or more electronic security measures **122** may be incorporated into the architecture of credential data store **120** and/or product program **110**, and/or may be disposed upstream of credential data store **120** along data network **1100** to inhibit unauthorized access to information associated with data stored on credential data store **120**.

[0088] Rule data store **130** may include data that determines the configuration, scheduling, and/or sequence of operations of financial management network **100** with respect to accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In this manner, rule data store **130** may store data associated with information supplied by a user through client interface **200** in the form of, for example, rules, boundary conditions, schedules, limits, tasks, commands, applications, and/or action identifications, to name a few.

[0089] Data associated with information relating to boundary conditions described above with respect to one or more accounts **300**, **400** *a*, **400** *b*, **400** *c* may include, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial

transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few. All such boundary conditions may be set by a user, a user's financial advisor, a financial institution, governmental or other body or by product program **110**.

[0090] Data associated with information relating to a sequence of operations of financial management network **100** may include, for example, a length of time associated with initiating and/or restricting one or more actions of product program **110**, for example, the cessation of further transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, identifying the value of interest rates i_1, i_2, i_3, and/or, from information sources associated with, or independent from, third-party financial institutions, and/or providing data to a user through client interface **200**, for example, information relating to checking account **300** and/or savings accounts **400** *a*, **400** *b*, **400** *c* and/or prompting a user to input data through client interface **200**.

[0091] In this manner, program product **110** is configured to take one or more actions and/or restrict one or more actions on at least savings accounts **400** *a*, **400** *b*, **400** *c* based at least in part upon data received from rule data store **130**. Such one or more actions may include the transfer of financial assets from one or more savings accounts **400** *a*, **400** *b*, **400** *c* to checking account **300** and/or the transfer of financial assets to one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0092] In the exemplary embodiment shown, program product **110** instructs one or more of savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets with respect to checking account **300**. In this manner, program product **110** is configured to initiate the transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** solely by initiating crediting and debiting actions on checking account **300** from the perspective of the savings accounts **400** *a*, **400** *b*, **400** *c* so that no financial transfers are required to be initiated from checking account **300**. Financial transfers may be implemented via the Automated Clearing

House (ACH) network, or another method of electronic funds transfer known by those skilled in the art of the present disclosure.

[0093] In this regard, financial management network **100** may be configured such that program product **110** may initiate and/or restrict one or more actions on one or more of savings accounts **400** *a*, **400** *b*, **400** *c* based on data stored in rule data store **130**. In this manner, a set of rules may be stored in rule data store **130** in advance of a financial transfer so that the financial management network is at least partially automated to implement financial transfers based on the rules in rule data store **130**. In this manner, financial management network **100** is configured such that a user is not required to continuously monitor and/or implement financial transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such an automated configuration allows financial management network **100** to provide instructions for the implementation of a greater number of financial transfers without direct user input than might be practical for a user to perform directly, and with greater discipline. Accordingly, financial management network **100** affords a user the benefit of an increased and/or finer control of the distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, for example, to optimize the amount of interest earned on the financial assets in accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring additional time or effort by the user, and/or to ensure that financial assets are distributed across accounts **300**, **400** *a*, **400** *b*, **400** *c* to in a manner to be maximally covered by one or more insurance programs such as FDIC. Additionally or alternatively, financial management network **100** may afford a user such control to allocate the financial assets in accounts, **300**, **400** *a*, **400** *b*, **400** *c* in an optimized manner to take advantage of other beneficial factors, for example, available insurance coverage and/or maintaining a checking account at target balance.

[0094] It will be understood that, in embodiments, a financial management system may include a first financial account having a first interest rate and one or more additional financial accounts having respective interest rates that are greater than the first interest rate. A financial management network may be associated with such financial management systems so that financial assets may be transferred between the first financial account and any or each of the other financial account(s) in any combination or separation as described above.

[0095] Referring additionally to FIG. 5, a process diagram of steps a user engages in to configure financial management system **1000** for use is illustrated in accordance with an exemplary embodiment of the present disclosure.

[0096] With additional reference to FIG. 4A, in a first step S **101**, a user accesses the product program **110** through client interface **200** so that an image layer **114** of the product program can appear on display **210** to relay data to the user. A user may access product program **110**, for example, by entering a website URL into an internet browser, selecting a shortcut to such website URL via an icon on a smartphone, tablet computer, wearable computer or similar device, or initiating a software application.

[0097] In a second step S **102**, a user registers an account with product program **110** by providing data to product program **110** through client interface **200** over data network **1100**. In embodiments, a user may provide data to product program **110** that is associated with information such as, for example, an e-mail address, telephone number, username, password, and/or biographical information such as name, address, and/or date of birth, to name a few, as well as personal demographic information such as age, occupation, income, approximate balance of financial assets, to name a few. The data provided by the user in step S**202** is received by the product program **110** and transmitted to credential data store **120** over data network **1100** so that a user thereafter may re-submit such data, or a portion thereof, through client interface **200** to access additional features of the product program **110**. In embodiments, client interface **200** may store such data, for example, in a web browser or local storage medium, so that this data can be transferred from its stored location to product program **110** upon command by a user. In embodiments, this data may be stored on a different data store.

[0098] In embodiments, second step S**102** or another step in the configuration of financial management system **1000** may include a user providing data to product program **110** through client interface **200** associated with information needed to setup an account at more than one financial institution and/or more than one account at a single financial institution. In this manner, financial management system **1000** may be configured to facilitate a user in registering, for example, for multiple financial accounts through a single, common

application and/or substantially simplified registration process as compared to individual registration processes associated with different financial institutions and/or financial accounts.

[0099] With additional reference to FIG. 4B, in a third step **S103**, data is provided to product program **110** that is associated with information related to checking account **300**. Such information may include, for example, login name and password, account numbers, routing numbers, names, addresses, third party financial institution information, PIN numbers, answers to challenge questions, a contact telephone number or email address, and/or other identification and/or access information, as well as the client's desired target checking account balance. The data provided in step **S203** may be stored in credential data store **120** and/or rule data store **130** in any combination or separation. In embodiments, such data may be associated with, for example, public information on the third party financial institution associated with checking account **300** and/or a history of one or more transactions or statuses of checking account **300**. In embodiments, such data may be associated with information relating to, for example, account numbers, routing numbers, PIN numbers, and/or other access information associated with checking account **300**.

[0100] With additional reference to FIG. 4C, in a fourth step **S104**, data is provided to product program **110** that is associated with information related to savings accounts **400** *a*, **400** *b*, **400** *c*. Such information may be substantially similar to the types of information provided in step **S103** with regard to checking account **300**, and may accordingly be stored in credential data store **120** and/or rule data store **130** in any combination or separation as described above in step **S104**. In embodiments, a user may supply information related to any of accounts **300**, **400** *a*, **400** *b*, **400** *c* described over the course of a single connection session with product program **110**, or over any number of sessions. It will be understood that a process for configuring a financial management system for use will include any number of additional steps relating to the input of data relating to identification and/or access information of a financial account in accordance with the number of financial accounts associated with the financial management system.

[0101] In a fifth step **S105**, data is provided to product program **110** that is associated with information related to a rules for transferring assets between checking account **300** and one

or more of savings accounts **400** *a*, **400** *b*, **400** *c*. Such rules may include, for example: i) a minimum or target account balance set by a user, financial institution, or other body; ii) a minimum or maximum limit of financial assets in a financial account set by a user, product program **110**, a financial institution, or other body; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time as set by a user, financial institution, or governmental or other body; iv) a maximum number of financial transfers that may be performed over a given period as set by a user, financial institution, or governmental or other body; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts as set by a user or by product program **110**; and/or vii) a minimum difference in financial assets required before initiating a transfer of financial assets between financial accounts as set by a user or product program **110**, to name a few.

[0102] It will be understood that the data supplied to product program **110** may in whole or in part be supplied by a source other than a user, for example, a financial advisor or system administrator or by one or more default settings of product program **110**. It will be understood that the steps described above to configure financial management system **1000** may be completed in any order, combination, or separation as described above. In embodiments, such a process may include additional and/or alternative steps.

[0103] Turning to FIG. 6A, and still referring to FIG. 1, an operational flow chart of a process of financial management system **1000** is illustrated in accordance with an exemplary embodiment of the present disclosure. It will be understood that this operational flow chart may be applicable to financial management system **1000** or any other financial management system based on the inventive concepts disclosed herein.

[0104] In a first step **S201**, input data is provided to product program **110** to initiate an optimization process which will culminate in the transfer of financial assets between one or more of savings accounts **400** *a*, **400** *b*, and **400** *c* and checking account **300**. Input data may be provided substantially in real-time, for example, by a user or system administrator, and/or may be stored data in rule data store **130** to be input under certain conditions, such as a scheduled task. For example, a first instance of the optimization process described herein may be initiated

by a user through client device **200**, and one or more successive instances of the optimization process may be initiated by product program **110** as a scheduled task. If no data instructing product program **110** to initiate a transfer is supplied to product program **110**, first step S**201** may be repeated. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of first step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met. A successive iteration of first step S**201** may also be initiated by a user or system administrator on an ad hoc basis. For example, a client or his/her financial advisor may access the financial management network **100** to manually initiate an optimization in between scheduled optimizations.

[0105] If an optimization process is to be initiated, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in a second step S**202**. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or or may be supplied by another source such as an independent reporting service or by the system administrator or via an API (application program interface). Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, a corresponding interest rate i_1, i_2, i_3, i_4, and/or one or more account balances.

[0106] In a third step S**203**, processor **112** of product program **110** applies one or more rules from rule data store **130** to the data obtained from the one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in step S**202** to determine the optimal allocation of financial assets across financial accounts **300**, **400** *a*, **400** *b*, **400** *c* in a first-step optimization algorithm, as described further herein. Accordingly, step S**203** yields a set of data relating to an allocation of financial assets that may be different from the allocation of financial assets retrieved from step S**202**.

[0107] In a fourth step S**204**, product program **110** determines the net amount of transfers of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c* in order to arrive at the optimized allocation of financial assets determined in step S**203**. As described above, in embodiments, financial management system **1000** is configured to instruct transfers of financial assets in two steps: a first set of one or more transfers of financial assets from any one or more of savings

accounts **400** *a*, **400** *b*, **400** *c*; and a second set of one or more transfers of financial assets into any one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0108] Accordingly, in a fifth step **S205**, product program **110** determines the optimum set of transfers of financial assets to be initiated from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, into checking account **300** as described further herein.

[0109] In a sixth step **S206**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets into checking account **300** in amounts determined in step **S205**. In embodiments, step **S206** may include transfers from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, step **S206** may involve no transfers of financial assets from any of savings accounts **400** *a*, **400** *b*, **400** *c*, as described further herein.

[0110] In embodiments, instructions provided to savings accounts **400** *a*, **400** *b*, **400** *c* may require the product program **110** to retrieve credentials from credential data store **120** to first access savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, checking account **300** may also be accessed in a similar manner. In embodiments, one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may involve more than one level or layer of credential input on the part of product program **110**, e.g., to satisfy multi-level or multi-factor authentication protocols.

[0111] For example, some financial institutions and banks will recognize a login from an unauthorized client computer and prompt the user/account holder to provide further authentication in addition to the account holder's username and password before allowing access to the account holder's account. Such multi-factor authentication protocols may involve a bank's website indicating that it will be transmitting a pre-determined or random authentication code to the user's cell phone by voice or text, or by email to the user's email address, which cell phone number and email address the user or system administrator has previously entered in his user data on the bank's website when the account was initially set up. The user must then retrieve the transmitted code from his landline phone or cell phone or from his email provider within a preset limited time period and correctly enter the code on the bank's website before being permitted to continue with the user login.

[0112] Comparably, a financial institution that manages one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may detect access to an account by a new origination point along data network **1100**, e.g. a point other than client device **200**, and may require a response, answer, and/or code to be input in response to an inquiry before permitting connection of an account to the financial management network **100**. Typically, such a response, answer, and/or code is provided by a user through client device **200** or another device connected to the relevant account.

[0113] However, in such a case, product program **110** may be configured to communicate directly with one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* as a proxy for the user, for example, to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses. Such communication between product program **110** and one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few. Accordingly, product program **110** (in certain embodiments, via a selected third-party vendor) may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts **300**, **400** *a* **400** *b*, **400** *c* on behalf of the account holder, without intervention by the account holder or user.

[0114] In particular, with respect to multi-factor authentication, the financial management network **100** implements unique and inventive concepts that permit it to act as proxy for the user and respond to any multi-factor authentication that may be required for account access in a way that does not require user intervention, while simultaneously maintaining rigid security measures to avoid unauthorized access to the user's accounts by other parties. For this purpose, and to the extent necessary, a limited power of attorney is provided by the user/account holder to the financial management network **100** to permit the administrators of the financial management network **100** to act as agent for the user/account holder.

[0115] As described herein, the one or more processors of the financial management network **100** perform multiple processes that permit an account holder to access account

information across his various accounts and that permit the financial management network **100** to interface with banks holding the one or more user accounts, and in particular to permit the financial management network **100** to login as the user by using the user's credentials stored in credential data store **120**. Once logged into a user's account, these processes can verify the accounts that are linked, fetch balances, instruct transfers, prepare transaction histories, retrieve 1099-INT tax forms or other client communications provided by the associated banks.

[0116] To reduce latencies and provide a high performance processing framework, the financial management network **100** may be configured to run multiple processes in parallel. For example, multiple processes may be executed to provide headless web browsers that are used to navigate to and interact with the websites of multiple banks at the same time, for example to fetch balances, send funds transfer instructions, retrieve year-end 1099-INT tax statements, and the like.

[0117] As noted above, processes may also be implemented by the financial management network **100** to handle multi-factor authentication required by some banks and financial institutions before permitting account access, without user intervention. To enable the financial management network **100** to directly respond to a multi-factor authentication request within the user present, the following procedure is implemented.

[0118] When a user first links an account to the financial management network **100**, the user supplies their username and password to the financial management network **100**, and a process within the financial management network **100** controls a web browser and uses the user's credentials to attempt to log in to the bank's website holding the account.

[0119] If the bank responds to the log in attempt by issuing challenge questions or by requiring additional multi-factor authentication such as entry of a code sent to the user, then the financial management network **100** will prompt the user for the additional information that the bank website has requested.

[0120] For example, after a user links an American Express savings account to the financial management network **100** for the first time, the financial management network **100** will

attempt to log in to the American Express savings account using the provided username and password.

[0121] If the web page indicates that additional multi-factor authentication is required, for example, input of a code that is sent to the user's cell phone or email address, then a process running within the product program **110** will present to the user the list of email addresses and/or phone numbers that is stored on the American Express site to which the authentication code can be sent, and will prompt the user to select one of the listed addresses or phone numbers. The process then passes the selected option to the American Express site so that the site sends the code using the selected option. Once received by the user at his selected address or phone number, the user enters the code into the financial management network **100**, which then forwards the code to the American Express site to respond to the multi-factor authentication request and gain access to the site. Once the product program **110** has access to the American Express site, it adds to the user data stored by the site an additional multi-factor authentication endpoint, e.g., an additional phone number or email address, that is accessible either directly by the product program **110** or, in some cases, via a third-party software service provider, and to which subsequent authentication codes may be sent.

[0122] Upon subsequent log ins by the product program **110** to the American Express site when the user is not present, the product program **110** can selected the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing description, e.g. a phone number known to the product program **110**, which the product program **110** (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program **110** can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts.

[0123] To enhance security, the credential data store **120** is formed as an encrypted key/value database to protect the users' sensitive data which may include email addresses, user names, passwords, account numbers, PIN numbers, security questions and answers, and the like.

[0124] In some embodiments, data is encrypted before it is passed to the credential data store **120**, and the data is further encrypted in credential data store **120** before being stored.

[0125] To further enhance security and protect against unauthorized acts that may compromise critical operations, the financial management system **100** may, through product program **110** or through other means, implement a two-man rule algorithm, for example as may be implemented using Shamir's Secret Sharing algorithm, to require that any such critical operations be authorized by at least two persons having appropriate authority.

[0126] Reverting back to FIG. 6A, in a seventh step S**207**, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c*. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or may be supplied by another source such as an independent reporting service, or by the system administrator. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, an interest rate i_1, i_2, i_3, i_4, and/or one or more account balances. Accordingly, step S**207** is substantially similar to step S**202** described above.

[0127] Step S**207** is performed again after the transfers of financial assets in step S**206** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c* may have changed following step S**206**. In particular, the transfers of financial assets initiated in step S**206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or other user-set constraints such as maximum, minimum or target account balances.

[0128] In an eighth step S**208**, a second-step optimization algorithm is applied to the information gathered in step S**207** to ensure that the transfers of financial assets into savings accounts **400** *a*, **400** *b*, **400** *c* originally determined in step S**204** will satisfy the rules in rule data

store **130**. Accordingly, the second step optimization algorithm applied in step S**208** is similar to the first-step optimization algorithm applied in step S**203**, but relates to optimizing the second-step transfers into one or more of savings accounts, **400** *a*, **400** *b*, **400** *c* originally determined in step S**203**.

[0129] If no conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred since the first-step financial transfers were initiated in step S**206**, the second-step financial transfers may proceed as originally determined in step S**204**. However, if one or more conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred in the interim, the second-step optimization algorithm may adjust the second-step financial transfers to compensate for these changed conditions according to the rules in rule data store **130**. In this manner, steps S**207** and S**208** together serve as a verification and/or adjustment of the second-step financial transfers originally determined in step S**204**.

[0130] In a ninth step S**209**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets out from checking account **300** in amounts determined in step S**208**. In embodiments, step S**209** may include transfers into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**. In embodiments, step S**209** may involve no transfers of financial assets into any of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**, for example, due to a lack of available financial assets that may be determined in step S**208** due to a changed condition of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* between steps S**206** and S**207** or due to changes in interest rates or other user-set constraints.

[0131] In a tenth step S**210**, the process may terminate following the last instructed financial transfer in step S**209** and confirmation that the recipient accounts have received their intended transfers. For example, the financial management network **100** may periodically (e.g., daily) check the account balances and account activity in the recipient accounts to confirm that the intended transfers have been completed. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of step S**210** and step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met

after step S**210** is complete. In embodiments, a user or system administrator may manually trigger another optimization before such interval or predetermined condition is met.

[0132] Turning to FIG. 6B, the first-step optimization algorithm shown in step S**203** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0133] In a first step S**203** *a* of the first-step optimization algorithm, the product program **110** determines the available financial assets for optimization by deducting from the sum of the account balances in step S**202** (FIG. 6A) the minimum account balances for each of accounts **300**, **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in all of accounts **300**, **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**.

[0134] In a second step S**203** *b*, product program **110** determines whether sufficient financial assets are available for optimization. In embodiments, a positive, nonzero value determined in step S**203** *a* may be sufficient for optimization. In embodiments, sufficient financial assets for optimization may be determined by a rule in rule data store **130**, for example, a minimum difference in financial assets between two given accounts for a transfer of financial assets to occur. If sufficient financial assets are unavailable for optimization, the process may be terminated.

[0135] If sufficient financial assets are available for optimization, product program **110** may proceed to rank order savings accounts **400** *a*, **400** *b*, **400** *c* to determine the priority order in which available financial assets will be transferred for optimization in a third step S**203** *c*. Savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by interest rate, descending from the highest interest rate. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by a different factor.

In a fourth step S**203** *d*, two or more of savings accounts **400** *a*, **400** *b*, **400** *c* may have an identical value for a factor by which savings accounts **400** *a*, **400** *b*, **400** *c* are rank ordered, for example, an identical interest rate. In such embodiments, financial management network **100** may utilize subjective and/or objective tiebreaker factors or rules stored in rule data store **130** to determine which of the one or more savings accounts offering the same interest rate should be given priority for a given financial transfer. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or rate volatility, to name a few.

[0136] In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank-ordered by a different factor, or by a combination of factors that may or may include interest rates as described above. Such different factors may be subjective and/or objective, for example, so that one account may be rank-ordered lower than another account having a higher interest rate.

[0137] Once savings accounts **400** *a*, **400** *b*, **400** *c* have been rank ordered, the first-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or product program **110**.

[0138] Accordingly, in step S**203** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**204** (FIG. 6A).

[0139] If the first-ranked savings account cannot by itself receive all available financial assets for optimization, the process proceeds to a sixth step S**203** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**204** (FIG. 6A).

[0140] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to a seventh step S**203** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**204** (FIG. 6A).

[0141] In this manner, financial management system **1000** provides an optimization process with a "waterfall" configuration that first determines an available pool of financial assets for optimization, and proceeds to prepare to instruct a transfer of the maximum amount of financial assets allowed by a set of boundary conditions sequentially into accounts that are rank-ordered, for example, by interest rate. It will be understood that, in embodiments,

steps **203** *e*, **203** *f*, **203** *g*, may continue corresponding to the number of savings accounts included in a financial management system.

[0142] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to an eighth step S**203** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** *h* may override a maximum account limit applied in step S**203** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would be transferred to (or remain within) checking account **300**. The process then proceeds to step S**204** (FIG. 6A).

[0143] Turning to FIG. 6C, the first-step transfers of financial assets shown in step S**205** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0144] Following the determination in step S**204** (FIG. 6A) of the net amount of financial assets to be transferred into checking account **300** for the first step of optimization, product program **110** proceeds to determine the available amount of financial assets in savings accounts **400** *a*, **400** *b*, **400** *c* for transfer into checking account **300** in a first step S**205** *a*. Product program **110** makes such a determination by deducting from the savings account balances retrieved in step S**202** (FIG. 6A) the minimum account balances for each of accounts **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in accounts **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**. If no financial assets are available for transfer in the first-step of optimization, the process may proceed directly to step S**208** (FIG. 6A).

[0145] If sufficient financial assets are available for transfer into checking account **300** in the first-step of optimization, product program proceeds to determine the priority order in which available financial assets will be transferred out of savings accounts **400** *a*, **400** *b*, **400** *c*. The priority order for the transfer of financial assets into checking account **300** may be the reverse of the rank order determined in step S**203** *c* (FIG. 6B) so that financial assets are first pulled from the lowest-ranked savings account. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be ordered by a different factor.

[0146] In a third step S**205** *c*, product program **110** proceeds to determine if it is possible to transfer all the available financial assets for the first-step of optimization from the third rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a minimum account balance for the third-rank ordered savings account, for example, a user-defined or financial institution-defined minimum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a minimum account balance; ii) a minimum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0147] Accordingly, in step S**205** *c*, the first-step optimization algorithm determines whether the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization, the process proceeds to step S**206** (FIG. 6A).

[0148] If the third-ranked savings account cannot by itself send all available financial assets required for optimization by itself, the process proceeds to a fourth step S**203** *d* in which product program **110** determines the maximum amount of available financial assets that can be transferred out of the third-ranked savings account, and any remaining available financial assets for transfer into checking account **300** thereafter. Product program **110** then determines whether the second-ranked savings account can send all remaining financial assets required for transfer under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can send all available remaining financial assets for transfer, the process proceeds to step S**206** (FIG. 6A).

[0149] If the second-ranked savings account cannot by itself send all remaining available financial assets required for optimization by itself, the process proceeds to a fifth step S**203** *e*, in which product program **110** determines the maximum amount of remaining financial assets for transfer that can be transferred from the second-ranked savings account, and any remaining available financial assets required for optimization thereafter.

[0150] In a sixth step, product program **110** then determines that the remaining financial assets for transfer will be transferred out of the first-ranked savings account. The process then proceeds to step S**206** (FIG. 6A).

[0151] Turning to FIG. 6D, the second-step optimization algorithm shown in step S**208** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0152] The second-step optimization algorithm begins in a similar manner to the first-step optimization algorithm described above, in that product program **110** determines the available amount of financial assets for transfer in the second-step of optimization (S**208** *a*); whether sufficient financial assets are available for the transfers in the second step of optimization (S**208** *b*); rank-orders the savings accounts **400** *a*, **400** *b*, **400** *c* (S**208** *c*); and determines whether any tie-breaking rules need to be applied to complete the rank-ordering of savings accounts **400** *a*, **400** *b*, **400** *c* (S**208** *d*). Accordingly, and as described above, the second-step optimization algorithm verifies the preliminary determination of financial assets to be

transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in step S**204** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c*, or such other conditions described below, may have changed following step S**206**. In particular, the transfers of financial assets initiated in step S**206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or a change in user settings.

[0153] In the event that no intervening conditions have affected accounts **300**, **400** *a*, **400** *b*, **400** *c*, the second step transfers may proceed in the manner originally determined in step S**204** (FIG. 6A). However, if one or more conditions of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* have changed since the determination in step S**204**, product program **110** proceeds to adjust for such changes in the manner described below.

[0154] In a fifth step S**208** *e*, the second-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few, in any order, separation, and/or combination. All such rules may be set

by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0155] Accordingly, in step S**208** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0156] If the first-ranked savings account cannot by itself receive all available financial assets for optimization by itself, the process proceeds to a sixth step S**208** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0157] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to a seventh step S**208** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0158] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to an eighth step S**208** *h*, in which product program **110** determines the maximum amount of available financial assets for

optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** ***h*** may override a maximum account limit applied in step S**208** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would remain in checking account **300**. The process then proceeds to step S**209** (FIG. 6A).

[0159] In the manner described above, the optimization algorithm of financial management network **1000** is configured to adjust for changing conditions that may affect one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*. Accordingly, if such an adjustment results in one or more instructed financial transfers to be constrained by one or more boundary conditions, for example, transfer limits, one or more optimization algorithms or processes may need to be run in order to fully optimize a user's financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such additional optimization algorithms may be run immediately, after a specific period of time has elapsed, or the system may wait until the next regularly-scheduled optimization.

[0160] In other embodiments, the instructions to transfer funds between accounts **300**, **400** *a*, **400** *b*, and **400** *c* may be repeated in the midst of the optimization to overcome boundary conditions (such as maximum daily transfer limits) rather than waiting until the end to re-run the entire optimization again. For example, if the financial management network **100** determines that a transfer of $500,000 is required, but the daily transfer limit is $250,000, the financial management network **100** may perform two transfers of $250,000 each in succession on the same or on subsequent days, as part of the first or second step transfer process, rather than repeat the entire optimization process just to effect the second transfer of $250,000.

[0161] Referring additionally to FIGS. 4C and 4D, an exemplary embodiment of the application of the optimization algorithm described above is illustrated as seen by a user on the image layer **114**. In the exemplary embodiment shown, the optimization algorithm determines the optimized distribution of the user's assets by generating a rank order of one or more savings accounts according to relative interest rates. In embodiments, image layer **114** may be configured

to display relative interest rates of savings accounts other than, or in addition to, savings accounts in which a user has financial assets.

[0162] As shown in the exemplary embodiment of FIG. 4C, account **1**, account **2**, account **3**, account **4**, and account **5** are listed in descending order according to their respective interest rates. However, as shown, account **1** and account **2** have an identical interest rate of 0.90%, and account **3** and account **4** have an identical interest rate of 0.85%. In such instances, financial management network **100** may utilize subjective and/or objective factors to determine which of the one or more savings accounts offering the same interest rate should be given priority for financial transfers. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or interest rate volatility, to name a few. Such factors may be input into rule data store **130**, for example, by a system administrator. In the exemplary embodiment shown, account **1** is given priority over account **2** because account **1** does not impose a limit on account balances, whereas account **2** limits account balances to a maximum of $1,000,000. In this manner, the optimization algorithm is operable to distribute an amount of financial assets across two or more accounts so that the financial assets are deposited into a highest-ranked financial account that offers the combination of highest rates and least restrictive policies, and/or into a descending hierarchy of financial accounts subject, to rules applied by product program **110** as described above. In embodiments, the optimization algorithm or display/list of accounts may prioritize financial accounts according to a different factor.

[0163] Turning to FIG. 4D, another exemplary embodiment of a financial management system is illustrated, and includes a checking account **500** linked between a first, second, third, and fourth savings account **600** *a*, **600** *b*, **600** *c*, **600** *d*, respectively. Once the optimization algorithm has determined the optimized allocation of financial assets across available savings accounts, the product program **110** instructs savings accounts **600** *a*, **600** *b*, **600** *c*, and/or **600** *d* to initiate transfers of financial assets in one or more steps in series. In the exemplary embodiment shown, the optimization algorithm has determined that a total of $125.33 USD should be transferred into checking account **500** from savings accounts **600** *a* and **600** *b*, and a total of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d* from checking account **500**. In this manner, the optimization algorithm has determined that financial

assets in the amount of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d*, for example, to take advantage of a higher interest rate associated with those savings accounts, and that a portion ($125.33 USD) of these financial assets should be removed from savings accounts **600** *a* and **600** *b* through checking account **500**, for example, due to a lower interest rate associated with those savings accounts. The optimization algorithm has also determined the relative amounts of financial assets to be transferred from each of savings accounts **600** *a* ($0.31) and **600** *b* ($125.02 USD) for the transfer of $125.33 USD into checking account **500**, and the relative amounts of financial assets to be transferred to each of savings accounts **600** *c* ($3,558.78) and **600** *d* ($5,204.74) in accordance with various boundary conditions determined by rules stored in rule data store **130** or otherwise provided through product program **110**, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body or by product program **110**. The optimization algorithm has also determined that the net transfer of funds out of checking account **500** ought to be positive, reflecting the fact that the balance of financial assets in checking account **500** immediately prior to the initiation of the optimization exceeded a previously specified desired minimum or target balance for such checking account **500**.

[0164] In accordance with the embodiments described above, the transfers occur in two separate steps: in a first step, an amount of $0.31 USD is instructed to be transferred from savings account **600** *a* to checking account **500** in parallel with a transfer of $125.02 USD from savings account **600** *b* to the same checking account **500**; in a second step, an amount of $3,558.78 USD is instructed to be transferred into savings account **600** *c* from checking account **500** in parallel with a transfer of $5,204.74 USD into savings account **600** *d* from checking account **500**. As described above, the transfers illustrated in the second step are subject

to a second-step optimization algorithm as a check against a changed property of one or more of accounts **500**, **600** *a*, **600** *b*, **600** *c*, **600** *d*, for example, a change in account limits, a change in the amount of financial assets disposed in an account, a change in the FDIC maximum insurance limit, and/or a change in interest rates associated with savings accounts **600** *a*, **600** *b*, **600** *c*, **600** *d*.

[01650] It will be understood that any point between or during any of the steps described above, product program **110** may provide to a user through client interface **200** information relating to the processes described above substantially in real-time or with any amount of delay, for example the status of each transfer, confirmation codes and/or numbers relating to a transfer of financial assets between any of the accounts described above.

[0166] It will be understood that the steps described above are exemplary according to the present disclosure, and are not intended to be limiting. A financial management network may include greater, fewer, and/or alternative steps to those disclosed above.

[0167] In embodiments, financial management system **1000** may be configured to implement a truncated, extended, and/or modified version of the optimization process described above, for example, so that different variables of the optimization algorithm may be optionally input by the user or by product program **110**. In an exemplary embodiment, a user may designate an amount of financial assets to be optimally allocated into savings accounts **400** *a*, **400** *b*, and **400** *c* from checking account **300**. Accordingly, with additional reference to FIG. 4C, visual layer **114** may provide one or more inputs **119** to a user to designate such an amount of financial assets to be transferred, With reference to FIG. 6D, product program **110** may then proceed to optimize the distribution of the financial assets from checking account **300** designated by the user in the manner described above. In this manner, financial management system **1000** is configured to instruct an automated or intelligent transfer of funds from checking account **300** into savings accounts **400** *a*, **400** *b*, and/or **400** *c* from checking **300** in an optimized manner.

[0168] In another embodiment, and with reference to FIG. 6C, a user may designate an amount of financial assets for product program **110** to instruct to be transferred from one or more

of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300**, which may otherwise be determined by product program **110** as the "first-step" transfers in step **S204** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into checking account **300**, product program **110** institutes steps **S205** *a* through **S205** *e* as shown in FIG. 6C.

[0169] Similarly, in another embodiment, and with reference to FIG. 6D, a user may designate an amount of financial assets for product program **110** to instruct to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, from checking account **300** which may otherwise be determined by product program **110** as the "second-step" transfers in step **S208** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into savings accounts **400** *a*, **400** *b*, **400** *c*, product program **110** institutes steps **S208** *a* through **S208** *h* as shown in FIG. 6D.

[0170] In another embodiment, the product program **110** determines an optimized distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, but does not automatically effect transfers of the funds through financial management network **100**. Rather, a user may opt to implement the financial transfers necessary to achieve such a distribution without using financial management network **100**, for example, by implementing one or more electronic funds transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*, by for example, ACH, wire transfer, credit transfer, or another modality of electronic funds transfer.

[0171] While the financial management network **100** in exemplary embodiments has been described as optimizing financial assets among accounts by having one checking account acting as the hub and multiple savings accounts on the spokes, by using the inventive concepts described herein, financial systems that have different hub-spoke configurations may also be implemented and the distribution of financial assets optimized among their accounts. For

example, the financial management system **1000** may also include configurations in which there may be more than one account at the hub of the system.

[0172] For example, funds may be moved and optimized between a brokerage account and a checking account that both act as passive accounts forming the hub of the system and other accounts on the spokes that initiate transfers of funds into and request transfers of funds out from such two hub accounts. In such embodiment, the user may be able to set two different target balances for the respective checking and brokerage accounts.

[0173] Based on the inventive concepts disclosed herein, in such systems having two or more accounts at the hub, transfers may be effected automatically between these hub accounts as well as between the hub accounts and other accounts on the spokes of the financial management system **1000** to optimize the financial return among all of the accounts based upon requests initiated at the spoke accounts for transfers into and out of the hub accounts.

[0174] In other embodiments, transfers between the multiple hub accounts (for example, a checking account and a brokerage account) may be initiated automatically, or manually by a user, as a means of moving funds between the two hub accounts via transfers to and/or from the accounts on the spokes (for example, online savings accounts.) As a result of the inventive concept described herein, funds may be transferred out of one of the hub accounts in an amount that would otherwise exceed the daily transfer limits imposed by that account, since the transfer is effected as an ACH credit to the spoke account, rather than as an outbound transfer from the hub account.

[0175] In embodiments, transfers of financial funds may occur indirectly between savings accounts through an intermediary checking account as described above, or a user may opt, either within or without financial management network **100**, to transfer financial assets directly between savings accounts without passing through a checking account. In such embodiments, ACH, or a modality of electronics fund transfer other than ACH, such as wire transfer or credit transfer, may be advantageous as wire transferred- or credit-transferred financial assets are processed substantially in real-time as compared to ACH, which typically occurs over a two-to-three day period. Because such transfers may be accompanied by a fee,

such methods may be beneficial in embodiments where associated fees are relatively small relative to the amount of financial assets being transferred and the potential for enhanced interest income on these assets.

[0176] While this invention has been described in conjunction with the embodiments outlined above, many alternatives, modifications and variations will be apparent to those skilled in the art upon reading the foregoing disclosure. Accordingly, the exemplary embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention, which is defined by the following claims.

ABSTRACT

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account, by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Gary Zimmerman et al.

Filed: April 16, 2020

Assignee: Six Trees Capital LLC

Docket No.: 103771-500

Title: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This paper is filed in reply to the Notice to File Corrected Application Papers mailed April 23, 2020.

Please enter and consider the following:

Amendments to the Specification begin on page **2** of this paper.

Remarks begin on page **3** of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace the Specification with the appended Replacement Specification filed herewith in both annotated and clean form.

REMARKS

This paper is filed in reply to the Notice to File Corrected Application Papers mailed April 23, 2020, demanding a Substitute Specification. Appended is both an annotated and clean substitute specification.

Applicant authorizes any and all fees necessary for the continued prosecution of the present application to be charged to Deposit Account No. 23-1665.

Respectfully submitted,
Six Trees Capital LLC

Dated: June 22, 2020

/Jonathan D Hall/
Jonathan D. Hall
Reg. No. 67,130

CONTACT INFORMATION:
WIGGIN &DANA LLP
One Century Tower
New Haven, CT 06508-1832
Telephone: (212) 551-2616
Facsimile: (203) 782-2889
Email: JHall@wiggin.com

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FIELD

[0001] The present application is a Continuation of United States Patent Application No. 15/678,453 filed August 16, 2017 and entitled "SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS." U.S. 15/678,453 claims priority to U.S. 14/606,931 filed January 27, 2015, bearing the same title. U.S. 14/606,931 claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title. The contents of U.S. 15/678,453, U.S. 14/606,931 and U.S. 61/932,495 are hereby incorporated by reference herein in their entirety.

[0002] The present invention generally relates to systems, product programs and methods of using the same for optimizing the distribution of financial assets among financial accounts via a fully-automated approach that does not require user intervention on an ongoing basis. The present invention further relates to systems, product programs, and methods of using the same for automated management of financial assets, including the transfer of financial assets between financial accounts according to a set of rules that optimize the distribution of the financial assets among those accounts according to certain criteria, and subject to certain constraints.

BACKGROUND

[0003] In many economies, financial institutions, for example, banks, brokerage firms and credit unions, offer account holders interest payments at set interest rates for maintaining financial assets in accounts operated by such financial institutions. However, these set interest rates may vary over time depending on overall financial markets and each financial institution's need for deposits, and may differ from one financial institution to another. The current scheme of interest return on financial assets stored in various financial accounts provides challenges to an account holder in managing multiple accounts and optimizing the allocation of his or her financial assets among such accounts to obtain the best overall interest return, while simultaneously maximizing the degree to which such assets are kept safe via diversification and

deposit insurance schemes, such as that provided by the Federal Deposit Insurance Corporation (FDIC).

[0004] For example, many traditional "brick and mortar" financial institutions offer personal checking accounts at comparatively low or zero interest rates, but provide substantially instantaneous access to financial assets in those checking accounts. In today's world of electronic banking, such checking accounts may be configured to allow for ingoing and/or outgoing transfer of financial assets to and from other accounts via batch electronic transfers such as Automated Clearing House (ACH) transfers or wire transfers such as FedWire transfers. One feature of ACH transfers is that they may also be provided with mechanisms to reverse erroneous or unauthorized transfers within a designated period such as 60 days.

[0005] In contrast to low or zero interest bearing checking accounts, other financial institutions, such as online banking institutions, may be attractive in that they offer to a user savings accounts with higher interest rates than their "brick and mortar" counterparts, but sometimes place restrictions on access to financial assets by a user, for example, by requiring a waiting period for funds to clear or transfer, or by placing limitations on the method by which such funds may be transferred or accessed. At present, many of these online banking institutions allow for funds to be transferred into or out of their online savings accounts via ACH transfers, which they provide to their customers free of charge. In some cases, online banking institutions also provide for the ability to send or receive funds via wire transfers.

[0006] Since interest rates may be subject to frequent and/or unpredictable fluctuations among various financial institutions, account holders must continuously monitor, plan, and/or effect transfers of financial assets among their various accounts in order to gain the maximum benefit of interest rates offered across different financial accounts at a given time. Moving funds from one account to another can often require multiple steps, careful coordination, and mathematical adjustments to the amounts being transferred due to the time that elapses in the process of making such funds transfers.

[0007] Prior attempts to optimize returns on financial assets using, for example, automated cash sweep systems, have sought to allocate cash across multiple accounts so as to provide increased FDIC insurance protection, but not necessarily to optimize interest yield.

[0008] For example, there are prior art cash sweep systems that operate as "brokered deposit" systems. Such brokered deposit systems involve deposits that are sold from bank to bank. Since such deposits are characterized as a lower tier of capital from a regulatory perspective, optimization systems involving such brokered deposits are less attractive, since banks are only willing to pay below-market interest rates for such deposits.

[0009] Among the inventive concepts incorporated in the system described herein, the optimization of interest earnings among a user's accounts is structured differently from such brokered deposit systems. Since i) the user's accounts are conventional deposit accounts that they hold directly in their own names, ii) the banks cannot dictate the extent to which they receive funds, and iii) the banks do not pay a fee to receive such funds, these deposits are not considered by the regulators to be "brokered." As such, these deposits receive a higher interest rate than funds that are subject to brokered deposit systems. Optimizing the distribution of financial assets among such conventional deposit accounts thus provides higher yields to the user, while simultaneously affording the banks more favorable regulatory treatment as it relates to these deposits.

[0010] Prior art sweep systems using brokered deposit accounts are also deficient in that they may not provide full insurance to the account holder/user, since the account holder/user may have outside deposits or CDs at the same institutions that serve as program banks under the brokered deposit system, and overlapping deposits may result in the user inadvertently exceeding the deposit insurance coverage limits. On the other hand, the invention disclosed herein permits the account holder/user to easily and directly control overall limits on a per bank basis, thereby providing control and reducing the likelihood that there will be uninsured deposits.

[0011] Still further, in prior art cash sweep systems, the accounts are not directly held by the user and therefore cannot be directly accessed by the user without coordination with the cash sweep administrator. Further, if the main bank controlling, for example, the brokered deposit

network were to fail, the user would lose access to the funds being held by the related banks involved in the brokered deposits for a period of time.

[0012] Accordingly, there is a need for a financial management system that can avoid the deficiencies of prior art systems. These deficiencies are obviated by the invention described herein, in which all accounts are not only optimized, but at all times are directly accessible to the user/account holder without needing to coordinate with a third party.

[0013] The financial management system disclosed herein can determine the optimal allocation of financial assets across different financial accounts set up by a user/account holder, and then instruct or facilitate the transfer of financial assets among multiple accounts to allocate an account holder's financial assets in an optimal manner so that the user receives the maximum available amount of interest return on the financial assets disposed across the various accounts, subject to the constraints imposed by simultaneously maximizing FDIC insurance coverage, or any other such constraints that may be set by the user or administrator of the financial management network.

[0014] The disclosed financial management system can be configured to allocate an account holder's financial assets among the different accounts to be optimized subject to additional or alternative factors or constraints, such as keeping assets within insurance limits set by deposit insurance schemes or other purchased insurance products, keeping within transfer limits imposed by the banks and/or minimum and/or maximum account balances as may be required by financial institutions or desired by the user, maintaining checking account balances at specified deposit levels and/or to provide a user with other advantages that different types of financial accounts have to offer.

[0015] The disclosed financial management system can operate in an at least a partially automated manner to effect such financial transfers with little or no monitoring and/or intervention by the user/account holder and/or at no marginal cost to the user per transfer effected.

[0016] As detailed further herein, a unique and inventive concept of the underlying architecture of the system disclosed herein is that any transfers of funds required to achieve

optimized interest returns originate as requests made by online banks through the Automated Clearing House (ACH) for either an ACH credit to the user's linked checking account or as an ACH debit that pulls funds from the checking account.

[0017] Significantly, among the many inventive concepts included in the disclosed system, the checking account at the hub of the disclosed system is passive in that the checking account does not control the flow of funds into or out of the checking account. Advantageously, this arrangement avoids funds transfer limitations often imposed by brick-and-mortar banks, as well as fees that are normally charged for funds transfers from a checking account. Because transfers are handled by the online banks who assume the costs for such ACH transfers, there are no costs incurred by the user of the disclosed system.

SUMMARY

[0018] As used herein and as will be clear from the context, the term "account" may refer to the account holder's account per se, or to the associated physical interface that permits the account to be electronically accessed by either the user or the financial management system disclosed herein. Further, the terms "user," "client," "account holder," "customer," and "member" are used interchangeably in this disclosure

[0019] According to an exemplary embodiment, a financial management system is disclosed, comprising a first financial management network that connects a checking account, a first savings account, and a second savings account. The financial management network comprises at least one data store, a processor and a product program for implementing the desired transactions, as further discussed herein. The financial management network, checking account, first savings account, and second savings account are each interconnected along a data network.

[0020] In an exemplary embodiment, the checking account is associated with a first interest rate.

[0021] In an exemplary embodiment, the first savings account is associated with an interest rate that is higher than the first interest rate.

[0022] In an exemplary embodiment, the second savings account is associated with an interest rate that is equal to or higher than the first interest rate.

[0023] In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

[0024] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among one or more of the checking account, first savings account, and second savings account.

[0025] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets in one or more of the checking account, first savings account, and second savings account.

[0026] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets to be transferred between one or both of the first savings account and second savings account and the checking account.

[0027] In an exemplary embodiment, the one or more rules determine an allowable amount of transfers of financial assets between one or both of the first savings account and second savings account and the checking account over a given period of time.

[0028] In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

[0029] In an exemplary embodiment, the credentials include one or more of: a login name, a login password, an account number, a routing number, a name, an address, a telephone number, an email address, information relating to a third party financial institution, a PIN number, and answers to a one or more predetermined questions.

[0030] In an exemplary embodiment, the processor is configured to determine an allocation of financial assets among the checking account, first savings account, and second savings account, based upon a relative priority of the checking account, first savings account, and second savings account subject to the one or more rules.

[0031] According to an exemplary embodiment, a financial management network is disclosed that utilizes links that a user/account holder has established between a checking account, and one or more savings accounts. Such links are made accessible to the financial management system which can then instruct transfers between the linked accounts in the manner disclosed herein.

[0032] In an exemplary embodiment the financial management network comprises at least one data store, and one or more processors for implementing a product program as further disclosed herein. Each of the financial management network, checking account, and one or more savings accounts are interconnected along a data network.

[0033] In an exemplary embodiment, the one or more processors are configured to apply one or more rules stored in the at least one data store to instruct at least one savings account of the one or more savings accounts to initiate a transfer of financial assets between the checking account and the respective savings account.

[0034] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among the checking account and the one or more savings accounts.

[0035] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising a data store, a processor and a product program; (b) linking a checking account to the financial management network; (c) linking a first savings account to the checking account and to the financial management network; (d) linking a second savings account to the checking account and to the financial management network; (e) providing one or more rules to the product program; and (f) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account, first savings account, and second savings account according to a relative priority

assigned to the checking account, first savings account, and second savings account subject to the one or more rules.

[0036] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets between one or more of the first savings account and second savings account and the checking account according to an optimization algorithm.

[0037] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to the checking account from one or more of the first savings account and second savings account according to the optimization algorithm.

[0038] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to one or more of the first savings account and second savings account from the checking account according to the optimization algorithm.

[0039] In an exemplary embodiment, the optimization algorithm determines a relative priority among the savings accounts at least partially based upon an interest rate associated with each of the first savings account and second savings account.

[0040] In an exemplary embodiment, the optimization algorithm determines the relative priority based at least partially on one or more factors including: an objective customer service rating, a subjective customer service rating, an associated fee, an account limit, a transfer limit, and historical interest rates or historical interest rate volatility.

[0041] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising at least one data store, one or more processors and a product program; (b) linking a checking account to the financial management network; (c) linking one or more savings accounts to the checking account and to the financial management network; (d) providing one or more rules to the product program; and (e) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account and the one or more savings accounts according to a relative priority assigned to the checking account and/or the one or more savings accounts

subject to the one or more rules, and (f) individually instructing some or all of a user's online savings banks to send cash to the checking account and/or pull cash from the checking account.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein:

[0043] FIG. 1 is a schematic diagram of a financial management system according to an exemplary embodiment of the present disclosure;

[0044] FIG. 2 is a schematic diagram illustrating linked financial accounts in the financial management system of FIG. 1.

[0045] FIG. 3 is a schematic diagram of the financial management network of FIG. 1;

[0046] FIG. 4A is a schematic view of an exemplary embodiment of the image layer of the client interface shown in FIG. 1.

[0047] FIG. 4B is a schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0048] FIG. 4C is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0049] FIG. 4D is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0051] FIG. 5 is a process diagram of steps a user may take to configure the financial management system of FIG. 1 for use, according to an exemplary embodiment of the present disclosure;

[0052] FIG. 6A is an operational flow chart of the financial management system of FIG. 1 according to an exemplary embodiment of the present disclosure:

[0053] FIG. 6B-1 and FIG. 6B-2 together illustrate a flow chart of the area of detail identified in FIG. 6A as **S203**;

[0054] FIG. 6C is a flow chart of the area of detail identified in FIG. 6A as **S205**; and

[0055] FIG. 6D-1 and FIG. 6D-2 together illustrate a flow chart of the area of detail identified in FIG. 6A as **S208**.

DETAILED DESCRIPTION

[0056] In embodiments, the present invention generally relates to systems, product programs, and methods of using the same for managing multiple financial asset accounts, determining the optimal allocation of financial assets across financial accounts and the automated transfer of financial assets between a first financial account and at least one second financial account so that the financial assets are allocated in an optimal manner among the financial accounts according to certain criteria and without ongoing user intervention. As used herein, the term financial account will be understood to include a collection of one or more units of a financial asset having an associated monetary value, such as a currency. Financial accounts may be collections of financial assets that are held, maintained, and/or otherwise managed by a financial institution, such as a bank, brokerage firm or credit union. In embodiments, a financial account may be, for example, a checking account or savings account or money market fund account. As described herein, an interest rate refers to a percentage increase, or in the event of a negative interest rate, a percentage decrease, of the value of the financial assets in an account at set intervals of time, effected via deposits to the financial account called interest payments. Interest payments in financial accounts such as checking and savings accounts may be in the form of, for example, cash. In embodiments, interest payments may be in a form dependent upon the type of financial account to which they are applied, for example, yields in the form of coupons on bonds and/or bills in the case of a money market fund.

[0057] In embodiments, the present invention further relates to systems, product programs, and methods of using the same for allocating and transferring financial assets between a first financial account and at least a second financial account according to an optimization algorithm so that a user's financial assets are distributed across the financial accounts in a manner

such that the financial assets receive the maximum amount of interest payments available as determined by the respective interest rates of the financial accounts within boundary conditions or constraints that may be user-selected and/or imposed by a financial institution or other body, such as the system administrator.

[0058] In embodiments, a boundary condition may be a requirement imposed by the financial institution that a minimum amount of assets be maintained in in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a minimum account balance. In other embodiments, such boundary condition could relate to a minimum account balance that a user desires to keep in his/her account, irrespective of the requirements imposed by the financial institution. A minimum account balance may be, for example, $1 USD. Such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts.

[0059] In embodiments, a boundary condition may be a maximum amount of financial assets in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a maximum account balance. In embodiments, a maximum account balance may correspond to a financial asset limit independent of financial management system **1000**, for example, a government or third-party insurance limit, such as the maximum FDIC insurance limit (which currently stands at $250,000 USD, but which may change from time to time). In such embodiments, the boundary condition may be set at a margin of safety below the reference financial asset limit, for example, $249,500 USD in the case of the FDIC insurance limit for an individual account, such that principal plus accrued interest remain below the FDIC insurance limit. In embodiments, such a boundary condition may correspond to a maximum financial asset limit as specified by a third-party financial institution, for example, $1,000,000. Accordingly, such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts. In embodiments, such a boundary condition may correspond to the user's maximum desired balance, which may be higher or lower than the default boundary condition set by product program **110**.

[0060] In embodiments, a boundary condition may be a maximum and/or minimum amount of financial assets that may be transferred into and/or out of a given financial account, e.g., a transfer limit. In embodiments, such a boundary condition may apply to either or both incoming and outgoing transfers of financial assets on anyone of accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In embodiments, the boundary condition may apply to any given period of time, for example, one day, one week, or one month, to name a few. In embodiments, the boundary condition may apply to a limit on ingoing and/or outgoing transfers occurring in a single transfer of financial assets, for example, a maximum outbound transfer of $150,000 USD, or a maximum inbound transfer of $250,000 USD, or a maximum daily transfer limit of $500,000 USD, and may differ across different accounts.

[0061] In embodiments, a boundary condition may be a maximum number of transfers of financial assets to be initiated over a given period of time. In embodiments, such a boundary condition may correspond to a limit set by a financial institution, such as a maximum of six transfers with respect to a given financial account before associated fees are incurred.

[0062] In embodiments, a boundary condition may depend upon a different variable, for example, a minimum difference in interest rates associated with two financial accounts and/or a minimum difference in financial assets in two financial accounts before a transfer of financial assets there between is initiated.

[0063] Turning to FIG. 1, an exemplary embodiment of a financial management system is generally designated **1000**. Financial management system **1000** may be an interconnection of elements that comprise at least a financial management network **100**, a client interface **200**, and interfaces to a first financial account, such as a checking account **300**, and one or more second financial accounts, such as savings accounts **400** *a*, **400** *b*, **400** *c*. Although the presently-described exemplary embodiment includes three savings accounts, it will be understood that, in embodiments, a financial management system **1000** may be linked to any number of savings accounts and/or other types of financial accounts through their associated computer interfaces.

[0064] Financial management network **100**, client interface **200**, account interfaces **300**, **400** *a*, **400** *b*, **400** *c*, and/or any component thereof, may be interconnected along

one or more electronic data networks **1100**, for example, a wired and/or wireless data communication system such as the World Wide Web, a mobile data network, and/or local intranet, to name a few. In embodiments, a financial management system may be an interconnection of elements that comprise any number, combination, and/or separation of elements described above.

[0065] Financial management network **100** may include web servers, application servers and databases as described herein, for implementing a multi-tier web application that includes access and security restrictions between the web servers, application servers and databases. For example, the application servers and databases can be accessed on the internet only by system administrators using specialized software and virtual private networks that communicate using SSL certificates with tightly controlled access lists.

[0066] As described further herein, financial management system **1000** is configured so that financial management network **100** periodically analyzes changing conditions among the one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, and checking account **300** that may impact the optimum allocation of funds among the accounts. For example, interest rates payable by the accounts, FDIC insurance limits, maximum/minimum account limits, transfer limits and the like may periodically change for some or all of the accounts. Such changing conditions are periodically monitored by the financial management network **100** to determine the optimal allocation of a user's financial assets among checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* to receive the benefit of the highest interest rates available subject to any or all of the constraints described above in any combination or separation, subject to any and/or all of the boundary conditions described above in any combination or separation. Such optimal allocation may be made in accordance with a particular schedule or automatically when a changing condition occurs that impacts on the optimal allocation.

[0067] The financial management network may then instruct one or more of the interfaces for savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets indirectly there between, through a corresponding crediting and debiting action on checking account **300** as an intermediary to achieve this optimized distribution of the user's financial assets.

[0068] In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account **400** *a* is instructed to initiate a transfer of financial assets M_1, into checking account **300** (through a debiting action). In a separate, second step, savings account **400** *c* is instructed to initiate a transfer of financial assets M_1 into savings account **400** *c* from the checking account **300** (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

[0069] The above-described processes of financial management network **100** may be at least partially automated so that a user may attain the benefits of an optimized allocation of his or her financial assets across savings accounts **400** *a*, **400** *b*, **400** *c*, without spending a substantially increased amount of time and effort monitoring these accounts.

[0070] In embodiments, financial management system **1000** may include any number of savings accounts. Accordingly, in embodiments, financial management system **1000** may link a single savings account and a single checking account. In embodiments, financial management system may include more than one checking account. In embodiments, financial management system **1000** may include any number of financial accounts, including, for example, checking accounts, savings accounts, brokerage accounts or money market fund accounts in any combination or separation.

[0071] In the exemplary embodiment shown, checking account **300** may be maintained by a traditional banking institution, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be maintained by respective online banking institutions. Accordingly, checking account **300** may be a financial account with a low or zero value interest rate it, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be a financial account with respective interest rates i_2, i_3, i_4 that are each greater than the interest rate i_1 of checking account **300**. In this manner, financial assets stored in savings accounts **400** *a*, **400** *b*, and/or **400** *c* may be supplemented by interest payments at a greater percentage than would be earned by a corresponding amount of financial assets stored in the

checking account **300** during a comparative interval of time. Interest rates i_2, i_3, i_4 may each be substantially similar to one another, may have different values, and/or may fluctuate over time so that interest rates i_2, i_3, and i_4, do not necessarily have a constant relative relationship. In embodiments, checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* may be different financial accounts at the same third party institution that have different associated interest rates i_2, i_3, i_4. It will be understood that, in embodiments, accounts **300**, **400** *a*, **400** *b*, **400** *c* may be different types of financial accounts and may use different currencies. For example, each account may be a non-commercial account, a commercial account, a trust account, an escrow account, a non-profit, foundation or endowment account, or any other type of account that can be accessed by the financial management network **100** in accordance with this disclosure.

[0072] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* includes financial assets to which a user/account holder has access, and to which other individuals or entities may have access when authorized by a user/account holder. A user may include, for example, a single account owner, one or more joint account owners, or one or more persons acting on behalf of an at least partial account holder, such as a proxy or trustee, financial advisor, private wealth manager, and/or an automated system acting upon instructions provided by a user, being one or more of the above, to name a few. For example, the user might be an individual, a couple, a financial advisor administering the system on behalf of an individual or a couple, or a CFO or treasurer of a company who has authority to act on behalf of that entity's accounts.

[0073] As shown, savings accounts **400** *a*, **400** *b*, **400** *c* are linked across data network **1100** through checking account **300**. Referring additionally to FIG. 2, checking account **300** is linked between each of accounts **400** *a*, **400** *b*, **400** *c* so that checking account **300** may act as a hub through which financial assets may be transferred indirectly between savings accounts **400** *a*, **400** *b*, **400** *c*. The savings accounts may be viewed as connected to the checking account hub as various spokes. By using such hub-and-spoke architecture, rather than making transfers directly between savings accounts, the disclosed system is able to avoid limitations that may be imposed on transfers from savings account (e.g., certain banking regulations in the United States currently limit savings accounts to no more than 6 outbound transfers per month).

[0074] Furthermore, by using such hub-and-spoke architecture in which transfers are made through previously-verified ACH links between the checking account at the hub and the savings accounts at the spokes, the presently disclosed system is highly secure. In accordance with this architecture and as disclosed herein, the financial management network **100** does not originate funds transfers, but only acts as agent for the user/account holder, providing instructions on the user's behalf to the user's savings banks to make the funds transfers along ACH conduits that the user has setup with each online account and whose security has been previously verified by the user and the banks. For example, it is not possible for someone who may breach other robust security measures built into the disclosed financial management system **1000** and/or financial management network **100** to link their own online account and syphon funds away from the user/account holder, since the breaching party will not be able to complete the trial deposit verification procedures currently in place by banks for confirming the secure linking together of new accounts, since access to the user's checking account is also required to confirm trial deposits (or other mechanisms typically used to confirm rightful ownership of accounts).

[0075] Accordingly, financial assets may be transferred between savings accounts **400** *a*, **400** *b*, **400** *c* by using checking account **300** as an intermediary. For example, an amount of financial assets M, may be transferred between savings account **400** *a* and savings account **400** *c* in a two-step process: in a first step, financial assets M_1, are transferred from savings account **400** *a* to checking account **300**; in a separate, second step, financial assets M, are transferred to savings account **400** *c* from checking account **300**. A lapse in time between the first step and second step described above may be associated with, for example, the length of time that the checking account **300** or an intermediary funds transfer network, such as the ACH network or FedWire, takes to process the transfer in the first step, along with the amount of time that the system described herein takes to i) confirm that the first step has been completed successfully and ii) refresh user account balances and recalculate the required funds transfers for the second step, taking into account any changes in relevant account balances between the first and second step.

[0076] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* may retain financial assets so that a substantially large number of possible distributions of a user's financial assets is possible. As

described above, it may be desirable to redistribute financial assets among savings accounts **400** *a*, **400** *b*, **400** *c*, for example, to gain the benefit of a higher interest rate offered on one account, or to help maintain the level of financial assets in some or all of the accounts above a minimum value or below a maximum value, for example, to stay below an insurance program limit, such as FDIC insurance, or to stay above a minimum balance requirement (either for the avoidance of account fees or to keep an account open).

[0077] Accordingly, financial management network **100** is configured to implement an optimization algorithm to provide a user with the optimum distribution of financial assets across savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** so that the user's financial assets in financial management network **100** are eligible for the greatest amount of interest payments offered on savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, subject to the aforementioned constraints.

[0078] In embodiments, financial management network **100** may be at least partially automated so that financial management network **100** can send instructions to implement financial transfers between accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring direct input from a user. In such embodiments, financial management network **100** may be governed by a set of rules or conditions chosen by the user and/or persons or entities authorized by the user, including the system administrator. As described further herein, financial management network may be provided with a variable level of automation so that a user is afforded a degree of direct control over the operation of financial management network **100**.

[0079] Still referring to FIG. 1, client interface **200** is an access point configured to transmit data between a user and at least financial management network **100** along data network **1100**. In embodiments, client interface **200** may additionally be configured to transmit data directly between a user and checking account **300** and/or savings accounts **400** *a*, **400** *b*, and/or **400** *c*. In embodiments, client interface **200** may be, for example, a desktop or terminal computer, or may be a mobile device incorporating a computer such as a smartphone, PDA, wearable computer, laptop computer, or tablet computer. It will be understood that any device capable of connecting to data network **1100** may be configurable as a suitable client interface.

[0080] Client interface **200** includes a display **210** that is configured to provide data from financial management network **100** in a format visually accessible to a user, such as letters, numbers, symbols, and/or graphics, to name a few. In embodiments, display **210** may be, for example, a video monitor, a screen, or a projector. Client interface **200** also includes at least one input device **220** through which a user may input data to at least financial management network **100** along data network **1100**. In embodiments, input device **220** may be, for example, a keyboard, mouse, keypad, touchpad, voice recognition program, motion sensor and/or other input device capable of sending data to financial management network **100** through data network **1100** in response to a corresponding physical input and/or visual input and/or audible input. In embodiments, a client interface **200** may include additional and/or alternative features for the receipt and input of data there through. Still further, in embodiments, the financial management network **100** may provide information and receive instructions via an API, for example connected to the computer system of a financial advisor, rather than via human input. In embodiments, a display and input device may together be provided on a client interface, for example, through one or more capacitive touchscreens. In this regard, a user may access and/or input information directly to financial management network **100**, checking account **300**, and/or savings account **400**, and/or may indirectly access and/or input information to checking account **300** and/or savings account **400** via financial management network **100** through client interface **200**.

[0081] Turning to FIG. 3, financial management network **100** may comprise a product program **110**, a credential data store **120**, and rule data store **130**. In embodiments, financial management network **100** may include a single data store, or any number, combination, and/or separation of elements described above.

[0082] Product program **110** may be an application or software operable via one or more processors **112**. In embodiments, product program **110** may comprise a computing environment having one or more real and/or virtual data servers to provide network-based services to a user, such as a cloud computing environment, and provides a hub that is connected between credential data store **120**, rule data store **130**, client interface **200**, checking account **300**, and savings accounts **400** *a*, **400** *b*, **400** *c* along data network **1100**.

[0083] Referring additionally to FIG. 4A, product program **110** includes a visual layer **114** that is transmitted through data network **1100** to at least client interface **200**. Visual layer **114** may be, for example, an application layer or website configured to be displayed on display **210** of client interface **200**. In this manner, display **210** of client interface **200** and visual layer **114** of product program **110** are together configured to communicate to display data input and/or output by product program **110** in a manner accessible to the user as described above.

[0084] Accordingly, visual layer **114** may include one or more indicia **116** that may include for example, letters, numbers, colors, patterns, and/or symbols, to name a few. Visual layer **114** may also include one or more input fields **18** in which a user may input data through control device **220**, for example, letters, numbers, symbols, and/or markings such as radio buttons, check boxes, or text boxes. Data supplied from input fields **118** are transmitted to product program **110** through data network **1100**.

[0085] Credential data store **120** and rule data store **130** are repositories of data connected to product program **110** along data network **1100**. Either or both of credential data store **120** and rule data store **130** may be configured as a database, for example, a relational database or key-value data storage system. Credential data store **120** and/or rule data store **130** may be supported on one or more network-based environments that may comprise one or more virtual and/or physical servers, for example, a cloud computing environment. Credential data store **120** and rule data store **130** may be supported on a common cloud computing environment or separate cloud computing environments. In embodiments, data associated with financial management system **1000** may be stored on a single data store, two data stores as shown, or, in embodiments, any number of data stores. In embodiments, data associated with financial management system **1000** may be stored on multiple data stores, for example, for security purposes so that data is compartmentalized to inhibit unauthorized access. In embodiments, data may be transmitted to data stores **120**, **130** by a user through client interface **200** or by another path through product program **110**, for example, data input by a user or system administrator or via an API.

[0086] Credential data store **120** may include data associated with information capable of accessing any of checking account **300**, savings accounts **400** *a*, **400** *b*, **400** *c*. For example,

credentials such as account numbers, routing numbers, challenge questions that may be posed by an account interface and associated answers, login names, passwords, PIN codes, e-mail addresses, contact telephone numbers, digital certificates, and/or web cookies, to name a few of the credentials that may need to be provided to gain access to a user's checking and/or savings accounts.

[0087] Accordingly, data stored on credential data store **120** may comprise confidential information, for example, information deemed secure by a user so that only the user and/or user-approved individuals and/or entities that are intended to be privy to such information may be granted access. In embodiments, one or more electronic security measures **122** may be incorporated into the architecture of credential data store **120** and/or product program **110**, and/or may be disposed upstream of credential data store **120** along data network **1100** to inhibit unauthorized access to information associated with data stored on credential data store **120**.

[0088] Rule data store **130** may include data that determines the configuration, scheduling, and/or sequence of operations of financial management network **100** with respect to accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In this manner, rule data store **130** may store data associated with information supplied by a user through client interface **200** in the form of, for example, rules, boundary conditions, schedules, limits, tasks, commands, applications, and/or action identifications, to name a few.

[0089] Data associated with information relating to boundary conditions described above with respect to one or more accounts **300**, **400** *a*, **400** *b*, **400** *c* may include, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few. All such boundary conditions may be set by a user, a user's financial advisor, a financial institution, governmental or other body or by product program **110**.

[0090] Data associated with information relating to a sequence of operations of financial management network **100** may include, for example, a length of time associated with initiating and/or restricting one or more actions of product program **110**, for example, the cessation of further transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, identifying the value of interest rates i_1, i_2, i_3, and/or, from information sources associated with, or independent from, third-party financial institutions, and/or providing data to a user through client interface **200**, for example, information relating to checking account **300** and/or savings accounts **400** *a*, **400** *b*, **400** *c* and/or prompting a user to input data through client interface **200**.

[0091] In this manner, program product **110** is configured to take one or more actions and/or restrict one or more actions on at least savings accounts **400** *a*, **400** *b*, **400** *c* based at least in part upon data received from rule data store **130**. Such one or more actions may include the transfer of financial assets from one or more savings accounts **400** *a*, **400** *b*, **400** *c* to checking account **300** and/or the transfer of financial assets to one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0092] In the exemplary embodiment shown, program product **110** instructs one or more of savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets with respect to checking account **300**. In this manner, program product **110** is configured to initiate the transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** solely by initiating crediting and debiting actions on checking account **300** from the perspective of the savings accounts **400** *a*, **400** *b*, **400** *c* so that no financial transfers are required to be initiated from checking account **300**. Financial transfers may be implemented via the Automated Clearing House (ACH) network, or another method of electronic funds transfer known by those skilled in the art of the present disclosure.

[0093] In this regard, financial management network **100** may be configured such that program product **110** may initiate and/or restrict one or more actions on one or more of savings accounts **400** *a*, **400** *b*, **400** *c* based on data stored in rule data store **130**. In this manner, a set of rules may be stored in rule data store **130** in advance of a financial transfer so that the financial management network is at least partially automated to implement financial transfers based on the

rules in rule data store **130**. In this manner, financial management network **100** is configured such that a user is not required to continuously monitor and/or implement financial transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such an automated configuration allows financial management network **100** to provide instructions for the implementation of a greater number of financial transfers without direct user input than might be practical for a user to perform directly, and with greater discipline. Accordingly, financial management network **100** affords a user the benefit of an increased and/or finer control of the distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, for example, to optimize the amount of interest earned on the financial assets in accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring additional time or effort by the user, and/or to ensure that financial assets are distributed across accounts **300**, **400** *a*, **400** *b*, **400** *c* to in a manner to be maximally covered by one or more insurance programs such as FDIC. Additionally or alternatively, financial management network **100** may afford a user such control to allocate the financial assets in accounts, **300**, **400** *a*, **400** *b*, **400** *c* in an optimized manner to take advantage of other beneficial factors, for example, available insurance coverage and/or maintaining a checking account at target balance.

[0094] It will be understood that, in embodiments, a financial management system may include a first financial account having a first interest rate and one or more additional financial accounts having respective interest rates that are greater than the first interest rate. A financial management network may be associated with such financial management systems so that financial assets may be transferred between the first financial account and any or each of the other financial account(s) in any combination or separation as described above.

[0095] Referring additionally to FIG. 5, a process diagram of steps a user engages in to configure financial management system **1000** for use is illustrated in accordance with an exemplary embodiment of the present disclosure.

[0096] With additional reference to FIG. 4A, in a first step S **101**, a user accesses the product program **110** through client interface **200** so that an image layer **114** of the product program can appear on display **210** to relay data to the user. A user may access product program **110**, for example, by entering a website URL into an internet browser, selecting a

shortcut to such website URL via an icon on a smartphone, tablet computer, wearable computer or similar device, or initiating a software application.

[0097] In a second step S **102**, a user registers an account with product program **110** by providing data to product program **110** through client interface **200** over data network **1100**. In embodiments, a user may provide data to product program **110** that is associated with information such as, for example, an e-mail address, telephone number, username, password, and/or biographical information such as name, address, and/or date of birth, to name a few, as well as personal demographic information such as age, occupation, income, approximate balance of financial assets, to name a few. The data provided by the user in step S**202** is received by the product program **110** and transmitted to credential data store **120** over data network **1100** so that a user thereafter may re-submit such data, or a portion thereof, through client interface **200** to access additional features of the product program **110**. In embodiments, client interface **200** may store such data, for example, in a web browser or local storage medium, so that this data can be transferred from its stored location to product program **110** upon command by a user. In embodiments, this data may be stored on a different data store.

[0098] In embodiments, second step S**102** or another step in the configuration of financial management system **1000** may include a user providing data to product program **110** through client interface **200** associated with information needed to setup an account at more than one financial institution and/or more than one account at a single financial institution. In this manner, financial management system **1000** may be configured to facilitate a user in registering, for example, for multiple financial accounts through a single, common application and/or substantially simplified registration process as compared to individual registration processes associated with different financial institutions and/or financial accounts.

[0099] With additional reference to FIG. 4B, in a third step S**103**, data is provided to product program **110** that is associated with information related to checking account **300**. Such information may include, for example, login name and password, account numbers, routing numbers, names, addresses, third party financial institution information, PIN numbers, answers to challenge questions, a contact telephone number or email address, and/or other identification and/or access information, as well as the client's desired target checking account balance. The

data provided in step S**203** may be stored in credential data store **120** and/or rule data store **130** in any combination or separation. In embodiments, such data may be associated with, for example, public information on the third party financial institution associated with checking account **300** and/or a history of one or more transactions or statuses of checking account **300**. In embodiments, such data may be associated with information relating to, for example, account numbers, routing numbers, PIN numbers, and/or other access information associated with checking account **300**.

[0100] With additional reference to FIG. 4C, in a fourth step S**104**, data is provided to product program **110** that is associated with information related to savings accounts **400** *a*, **400** *b*, **400** *c*. Such information may be substantially similar to the types of information provided in step S**103** with regard to checking account **300**, and may accordingly be stored in credential data store **120** and/or rule data store **130** in any combination or separation as described above in step S**104**. In embodiments, a user may supply information related to any of accounts **300**, **400** *a*, **400** *b*, **400** *c* described over the course of a single connection session with product program **110**, or over any number of sessions. It will be understood that a process for configuring a financial management system for use will include any number of additional steps relating to the input of data relating to identification and/or access information of a financial account in accordance with the number of financial accounts associated with the financial management system.

[0101] In a fifth step S**105**, data is provided to product program **110** that is associated with information related to a rules for transferring assets between checking account **300** and one or more of savings accounts **400** *a*, **400** *b*, **400** *c*. Such rules may include, for example: i) a minimum or target account balance set by a user, financial institution, or other body; ii) a minimum or maximum limit of financial assets in a financial account set by a user, product program **110**, a financial institution, or other body; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time as set by a user, financial institution, or governmental or other body; iv) a maximum number of financial transfers that may be performed over a given period as set by a user, financial institution, or governmental or other body; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts as set by a user

or by product program **110**; and/or vii) a minimum difference in financial assets required before initiating a transfer of financial assets between financial accounts as set by a user or product program **110**, to name a few.

[0102] It will be understood that the data supplied to product program **110** may in whole or in part be supplied by a source other than a user, for example, a financial advisor or system administrator or by one or more default settings of product program **110**. It will be understood that the steps described above to configure financial management system **1000** may be completed in any order, combination, or separation as described above. In embodiments, such a process may include additional and/or alternative steps.

[0103] Turning to FIG. 6A, and still referring to FIG. 1, an operational flow chart of a process of financial management system **1000** is illustrated in accordance with an exemplary embodiment of the present disclosure. It will be understood that this operational flow chart may be applicable to financial management system **1000** or any other financial management system based on the inventive concepts disclosed herein.

[0104] In a first step **S201**, input data is provided to product program **110** to initiate an optimization process which will culminate in the transfer of financial assets between one or more of savings accounts **400** *a*, **400** *b*, and **400** *c* and checking account **300**. Input data may be provided substantially in real-time, for example, by a user or system administrator, and/or may be stored data in rule data store **130** to be input under certain conditions, such as a scheduled task. For example, a first instance of the optimization process described herein may be initiated by a user through client device **200**, and one or more successive instances of the optimization process may be initiated by product program **110** as a scheduled task. If no data instructing product program **110** to initiate a transfer is supplied to product program **110**, first step **S201** may be repeated. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of first step **S201** so that step **S201** can only repeat following a set interval of time and/or a predetermined condition is met. A successive iteration of first step **S201** may also be initiated by a user or system administrator on an ad hoc basis. For example, a client or his/her financial advisor may access the financial management network **100** to manually initiate an optimization in between scheduled optimizations.

[0105] If an optimization process is to be initiated, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in a second step S**202**. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or or may be supplied by another source such as an independent reporting service or by the system administrator or via an API (application program interface). Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, a corresponding interest rate i_1, i_2, i_3, i_4, and/or one or more account balances.

[0106] In a third step S**203**, processor **112** of product program **110** applies one or more rules from rule data store **130** to the data obtained from the one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in step S**202** to determine the optimal allocation of financial assets across financial accounts **300**, **400** *a*, **400** *b*, **400** *c* in a first-step optimization algorithm, as described further herein. Accordingly, step S**203** yields a set of data relating to an allocation of financial assets that may be different from the allocation of financial assets retrieved from step S**202**.

[0107] In a fourth step S**204**, product program **110** determines the net amount of transfers of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c* in order to arrive at the optimized allocation of financial assets determined in step S**203**. As described above, in embodiments, financial management system **1000** is configured to instruct transfers of financial assets in two steps: a first set of one or more transfers of financial assets from any one or more of savings accounts **400** *a*, **400** *b*, **400** *c*; and a second set of one or more transfers of financial assets into any one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0108] Accordingly, in a fifth step S**205**, product program **110** determines the optimum set of transfers of financial assets to be initiated from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, into checking account **300** as described further herein.

[0109] In a sixth step S**206**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets into checking account **300** in amounts determined in step S**205**. In embodiments, step S**206** may include transfers from one or more of

savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, step S**206** may involve no transfers of financial assets from any of savings accounts **400** *a*, **400** *b*, **400** *c*, as described further herein.

[0110] In embodiments, instructions provided to savings accounts **400** *a*, **400** *b*, **400** *c* may require the product program **110** to retrieve credentials from credential data store **120** to first access savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, checking account **300** may also be accessed in a similar manner. In embodiments, one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may involve more than one level or layer of credential input on the part of product program **110**, e.g., to satisfy multi-level or multi-factor authentication protocols.

[0111] For example, some financial institutions and banks will recognize a login from an unauthorized client computer and prompt the user/account holder to provide further authentication in addition to the account holder's username and password before allowing access to the account holder's account. Such multi-factor authentication protocols may involve a bank's website indicating that it will be transmitting a pre-determined or random authentication code to the user's cell phone by voice or text, or by email to the user's email address, which cell phone number and email address the user or system administrator has previously entered in his user data on the bank's website when the account was initially set up. The user must then retrieve the transmitted code from his landline phone or cell phone or from his email provider within a preset limited time period and correctly enter the code on the bank's website before being permitted to continue with the user login.

[0112] Comparably, a financial institution that manages one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may detect access to an account by a new origination point along data network **1100**, e.g. a point other than client device **200**, and may require a response, answer, and/or code to be input in response to an inquiry before permitting connection of an account to the financial management network **100**. Typically, such a response, answer, and/or code is provided by a user through client device **200** or another device connected to the relevant account.

[0113] However, in such a case, product program **110** may be configured to communicate directly with one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* as a proxy for the user, for example, to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses. Such communication between product program **110** and one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few. Accordingly, product program **110** (in certain embodiments, via a selected third-party vendor) may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts **300**, **400** *a* **400** *b*, **400** *c* on behalf of the account holder, without intervention by the account holder or user.

[0114] In particular, with respect to multi-factor authentication, the financial management network **100** implements unique and inventive concepts that permit it to act as proxy for the user and respond to any multi-factor authentication that may be required for account access in a way that does not require user intervention, while simultaneously maintaining rigid security measures to avoid unauthorized access to the user's accounts by other parties. For this purpose, and to the extent necessary, a limited power of attorney is provided by the user/account holder to the financial management network **100** to permit the administrators of the financial management network **100** to act as agent for the user/account holder.

[0115] As described herein, the one or more processors of the financial management network **100** perform multiple processes that permit an account holder to access account information across his various accounts and that permit the financial management network **100** to interface with banks holding the one or more user accounts, and in particular to permit the financial management network **100** to login as the user by using the user's credentials stored in credential data store **120**. Once logged into a user's account, these processes can verify the accounts that are linked, fetch balances, instruct transfers, prepare transaction histories, retrieve 1099-INT tax forms or other client communications provided by the associated banks.

[0116] To reduce latencies and provide a high performance processing framework, the financial management network **100** may be configured to run multiple processes in parallel. For example, multiple processes may be executed to provide headless web browsers that are used to navigate to and interact with the websites of multiple banks at the same time, for example to fetch balances, send funds transfer instructions, retrieve year-end 1099-INT tax statements, and the like.

[0117] As noted above, processes may also be implemented by the financial management network **100** to handle multi-factor authentication required by some banks and financial institutions before permitting account access, without user intervention. To enable the financial management network **100** to directly respond to a multi-factor authentication request within the user present, the following procedure is implemented.

[0118] When a user first links an account to the financial management network **100**, the user supplies their username and password to the financial management network **100**, and a process within the financial management network **100** controls a web browser and uses the user's credentials to attempt to log in to the bank's website holding the account.

[0119] If the bank responds to the log in attempt by issuing challenge questions or by requiring additional multi-factor authentication such as entry of a code sent to the user, then the financial management network **100** will prompt the user for the additional information that the bank website has requested.

[0120] For example, after a user links an American Express savings account to the financial management network **100** for the first time, the financial management network **100** will attempt to log in to the American Express savings account using the provided username and password.

[0121] If the web page indicates that additional multi-factor authentication is required, for example, input of a code that is sent to the user's cell phone or email address, then a process running within the product program **110** will present to the user the list of email addresses and/or phone numbers that is stored on the American Express site to which the authentication code can be sent, and will prompt the user to select one of the listed addresses or phone numbers. The

process then passes the selected option to the American Express site so that the site sends the code using the selected option. Once received by the user at his selected address or phone number, the user enters the code into the financial management network **100**, which then forwards the code to the American Express site to respond to the multi-factor authentication request and gain access to the site. Once the product program **110** has access to the American Express site, it adds to the user data stored by the site an additional multi-factor authentication endpoint, e.g., an additional phone number or email address, that is accessible either directly by the product program **110** or, in some cases, via a third-party software service provider, and to which subsequent authentication codes may be sent.

[0122] Upon subsequent log ins by the product program **110** to the American Express site when the user is not present, the product program **110** can selected the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing description, e.g. a phone number known to the product program **110**, which the product program **110** (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program **110** can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts.

[0123] To enhance security, the credential data store **120** is formed as an encrypted key/value database to protect the users' sensitive data which may include email addresses, user names, passwords, account numbers, PIN numbers, security questions and answers, and the like.

[0124] In some embodiments, data is encrypted before it is passed to the credential data store **120**, and the data is further encrypted in credential data store **120** before being stored.

[0125] To further enhance security and protect against unauthorized acts that may compromise critical operations, the financial management system **100** may, through product program **110** or through other means, implement a two-man rule algorithm, for example as may be implemented using Shamir's Secret Sharing algorithm, to require that any such critical operations be authorized by at least two persons having appropriate authority.

[0126] Reverting back to FIG. 6A, in a seventh step **S207**, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c*. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or may be supplied by another source such as an independent reporting service, or by the system administrator. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, an interest rate i_1, i_2, i_3, i_4, and/or one or more account balances. Accordingly, step **S207** is substantially similar to step **S202** described above.

[0127] Step **S207** is performed again after the transfers of financial assets in step **S206** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c* may have changed following step **S206**. In particular, the transfers of financial assets initiated in step **S206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or other user-set constraints such as maximum, minimum or target account balances.

[0128] In an eighth step **S208**, a second-step optimization algorithm is applied to the information gathered in step **S207** to ensure that the transfers of financial assets into savings accounts **400** *a*, **400** *b*, **400** *c* originally determined in step **S204** will satisfy the rules in rule data store **130**. Accordingly, the second step optimization algorithm applied in step **S208** is similar to the first-step optimization algorithm applied in step **S203**, but relates to optimizing the second-step transfers into one or more of savings accounts, **400** *a*, **400** *b*, **400** *c* originally determined in step **S203**.

[0129] If no conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred since the first-step financial transfers were initiated in step **S206**, the second-step financial transfers may proceed as originally determined in step **S204**. However, if one or more conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred in the

interim, the second-step optimization algorithm may adjust the second-step financial transfers to compensate for these changed conditions according to the rules in rule data store **130**. In this manner, steps S**207** and S**208** together serve as a verification and/or adjustment of the second-step financial transfers originally determined in step S**204**.

[0130] In a ninth step S**209**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets out from checking account **300** in amounts determined in step S**208**. In embodiments, step S**209** may include transfers into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**. In embodiments, step S**209** may involve no transfers of financial assets into any of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**, for example, due to a lack of available financial assets that may be determined in step S**208** due to a changed condition of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* between steps S**206** and S**207** or due to changes in interest rates or other user-set constraints.

[0131] In a tenth step S**210**, the process may terminate following the last instructed financial transfer in step S**209** and confirmation that the recipient accounts have received their intended transfers. For example, the financial management network **100** may periodically (e.g., daily) check the account balances and account activity in the recipient accounts to confirm that the intended transfers have been completed. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of step S**210** and step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met after step S**210** is complete. In embodiments, a user or system administrator may manually trigger another optimization before such interval or predetermined condition is met.

[0132] Turning to FIG. 6B, the first-step optimization algorithm shown in step S**203** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0133] In a first step S**203** *a* of the first-step optimization algorithm, the product program **110** determines the available financial assets for optimization by deducting from the sum of the account balances in step S**202** (FIG. 6A) the minimum account balances for each of

accounts **300**, **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step **S203** *a*, product program **110** determines the remaining financial assets in all of accounts **300**, **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**.

[0134] In a second step **S203** *b*, product program **110** determines whether sufficient financial assets are available for optimization. In embodiments, a positive, nonzero value determined in step **S203** *a* may be sufficient for optimization. In embodiments, sufficient financial assets for optimization may be determined by a rule in rule data store **130**, for example, a minimum difference in financial assets between two given accounts for a transfer of financial assets to occur. If sufficient financial assets are unavailable for optimization, the process may be terminated.

[0135] If sufficient financial assets are available for optimization, product program **110** may proceed to rank order savings accounts **400** *a*, **400** *b*, **400** *c* to determine the priority order in which available financial assets will be transferred for optimization in a third step **S203** *c*. Savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by interest rate, descending from the highest interest rate. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by a different factor.

In a fourth step **S203** *d*, two or more of savings accounts **400** *a*, **400** *b*, **400** *c* may have an identical value for a factor by which savings accounts **400** *a*, **400** *b*, **400** *c* are rank ordered, for example, an identical interest rate. In such embodiments, financial management network **100** may utilize subjective and/or objective tiebreaker factors or rules stored in rule data store **130** to determine which of the one or more savings accounts offering the same interest rate should be given priority for a given financial transfer. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or rate volatility, to name a few.

[0136] In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank-ordered by a different factor, or by a combination of factors that may or may include interest rates as described above. Such different factors may be subjective and/or objective, for example, so that one account may be rank-ordered lower than another account having a higher interest rate.

[0137] Once savings accounts **400** *a*, **400** *b*, **400** *c* have been rank ordered, the first-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or product program **110**.

[0138] Accordingly, in step S**203** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**204** (FIG. 6A).

[0139] If the first-ranked savings account cannot by itself receive all available financial assets for optimization, the process proceeds to a sixth step S**203** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial

assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0140] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to a seventh step **S203** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0141] In this manner, financial management system **1000** provides an optimization process with a "waterfall" configuration that first determines an available pool of financial assets for optimization, and proceeds to prepare to instruct a transfer of the maximum amount of financial assets allowed by a set of boundary conditions sequentially into accounts that are rank-ordered, for example, by interest rate. It will be understood that, in embodiments, steps **203** *e*, **203** *f*, **203** *g*, may continue corresponding to the number of savings accounts included in a financial management system.

[0142] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to an eighth step **S203** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step **S203** *h* may override a maximum account limit applied in step **S203** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of

savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would be transferred to (or remain within) checking account **300**. The process then proceeds to step S**204** (FIG. 6A).

[0143] Turning to FIG. 6C, the first-step transfers of financial assets shown in step S**205** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0144] Following the determination in step S**204** (FIG. 6A) of the net amount of financial assets to be transferred into checking account **300** for the first step of optimization, product program **110** proceeds to determine the available amount of financial assets in savings accounts **400** *a*, **400** *b*, **400** *c* for transfer into checking account **300** in a first step S**205** *a*. Product program **110** makes such a determination by deducting from the savings account balances retrieved in step S**202** (FIG. 6A) the minimum account balances for each of accounts **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in accounts **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**. If no financial assets are available for transfer in the first-step of optimization, the process may proceed directly to step S**208** (FIG. 6A).

[0145] If sufficient financial assets are available for transfer into checking account **300** in the first-step of optimization, product program proceeds to determine the priority order in which available financial assets will be transferred out of savings accounts **400** *a*, **400** *b*, **400** *c*. The priority order for the transfer of financial assets into checking account **300** may be the reverse of the rank order determined in step S**203** *c* (FIG. 6B) so that financial assets are first pulled from the lowest-ranked savings account. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be ordered by a different factor.

[0146] In a third step S**205** *c*, product program **110** proceeds to determine if it is possible to transfer all the available financial assets for the first-step of optimization from the third rank-

ordered savings account according to the rules in rule data store **130** in a fifth step **S203** *e*. In an exemplary embodiment, such rules may comprise a minimum account balance for the third-rank ordered savings account, for example, a user-defined or financial institution-defined minimum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a minimum account balance; ii) a minimum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0147] Accordingly, in step **S205** *c*, the first-step optimization algorithm determines whether the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization, the process proceeds to step **S206** (FIG. 6A).

[0148] If the third-ranked savings account cannot by itself send all available financial assets required for optimization by itself, the process proceeds to a fourth step **S203** *d* in which product program **110** determines the maximum amount of available financial assets that can be transferred out of the third-ranked savings account, and any remaining available financial assets for transfer into checking account **300** thereafter. Product program **110** then determines whether the second-ranked savings account can send all remaining financial assets required for transfer under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can send all available remaining financial assets for transfer, the process proceeds to step **S206** (FIG. 6A).

[0149] If the second-ranked savings account cannot by itself send all remaining available financial assets required for optimization by itself, the process proceeds to a fifth step **S203** *e*, in which product program **110** determines the maximum amount of remaining financial assets for transfer that can be transferred from the second-ranked savings account, and any remaining available financial assets required for optimization thereafter.

[0150] In a sixth step, product program **110** then determines that the remaining financial assets for transfer will be transferred out of the first-ranked savings account. The process then proceeds to step **S206** (FIG. 6A).

[0151] Turning to FIG. 6D, the second-step optimization algorithm shown in step **S208** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0152] The second-step optimization algorithm begins in a similar manner to the first-step optimization algorithm described above, in that product program **110** determines the available amount of financial assets for transfer in the second-step of optimization (**S208** *a*); whether sufficient financial assets are available for the transfers in the second step of optimization (**S208** *b*); rank-orders the savings accounts **400** *a*, **400** *b*, **400** *c* (**S208** *c*); and determines whether any tie-breaking rules need to be applied to complete the rank-ordering of savings accounts **400** *a*, **400** *b*, **400** *c* (**S208** *d*). Accordingly, and as described above, the second-step optimization algorithm verifies the preliminary determination of financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in step **S204** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c*, or such other conditions described below, may have changed following step **S206**. In particular, the transfers of financial assets initiated in step **S206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or a change in user settings.

[0153] In the event that no intervening conditions have affected accounts **300**, **400** *a*, **400** *b*, **400** *c*, the second step transfers may proceed in the manner originally determined in step S**204** (FIG. 6A). However, if one or more conditions of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* have changed since the determination in step S**204**, product program **110** proceeds to adjust for such changes in the manner described below.

[0154] In a fifth step S**208** *e*, the second-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0155] Accordingly, in step S**208** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0156] If the first-ranked savings account cannot by itself receive all available financial assets for optimization by itself, the process proceeds to a sixth step S**208** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that

can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0157] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to a seventh step S**208** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0158] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to an eighth step S**208** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** *h* may override a maximum account limit applied in step S**208** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would remain in checking account **300**. The process then proceeds to step S**209** (FIG. 6A).

[0159] In the manner described above, the optimization algorithm of financial management network **1000** is configured to adjust for changing conditions that may affect one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*. Accordingly, if such an adjustment results in one or

more instructed financial transfers to be constrained by one or more boundary conditions, for example, transfer limits, one or more optimization algorithms or processes may need to be run in order to fully optimize a user's financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such additional optimization algorithms may be run immediately, after a specific period of time has elapsed, or the system may wait until the next regularly-scheduled optimization.

[0160] In other embodiments, the instructions to transfer funds between accounts **300**, **400** *a*, **400** *b*, and **400** *c* may be repeated in the midst of the optimization to overcome boundary conditions (such as maximum daily transfer limits) rather than waiting until the end to re-run the entire optimization again. For example, if the financial management network **100** determines that a transfer of $500,000 is required, but the daily transfer limit is $250,000, the financial management network **100** may perform two transfers of $250,000 each in succession on the same or on subsequent days, as part of the first or second step transfer process, rather than repeat the entire optimization process just to effect the second transfer of $250,000.

[0161] Referring additionally to FIGS. 4C and 4D, an exemplary embodiment of the application of the optimization algorithm described above is illustrated as seen by a user on the image layer **114**. In the exemplary embodiment shown, the optimization algorithm determines the optimized distribution of the user's assets by generating a rank order of one or more savings accounts according to relative interest rates. In embodiments, image layer **114** may be configured to display relative interest rates of savings accounts other than, or in addition to, savings accounts in which a user has financial assets.

[0162] As shown in the exemplary embodiment of FIG. 4C, account **1**, account **2**, account **3**, account **4**, and account **5** are listed in descending order according to their respective interest rates. However, as shown, account **1** and account **2** have an identical interest rate of 0.90%, and account **3** and account **4** have an identical interest rate of 0.85%. In such instances, financial management network **100** may utilize subjective and/or objective factors to determine which of the one or more savings accounts offering the same interest rate should be given priority for financial transfers. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or interest rate volatility, to name a few. Such factors may be input into rule data

store **130**, for example, by a system administrator. In the exemplary embodiment shown, account **1** is given priority over account **2** because account **1** does not impose a limit on account balances, whereas account **2** limits account balances to a maximum of $1,000,000. In this manner, the optimization algorithm is operable to distribute an amount of financial assets across two or more accounts so that the financial assets are deposited into a highest-ranked financial account that offers the combination of highest rates and least restrictive policies, and/or into a descending hierarchy of financial accounts subject, to rules applied by product program **110** as described above. In embodiments, the optimization algorithm or display/list of accounts may prioritize financial accounts according to a different factor.

[0163] Turning to FIG. 4D, another exemplary embodiment of a financial management system is illustrated, and includes a checking account **500** linked between a first, second, third, and fourth savings account **600** *a*, **600** *b*, **600** *c*, **600** *d*, respectively. Once the optimization algorithm has determined the optimized allocation of financial assets across available savings accounts, the product program **110** instructs savings accounts **600** *a*, **600** *b*, **600** *c*, and/or **600** *d* to initiate transfers of financial assets in one or more steps in series. In the exemplary embodiment shown, the optimization algorithm has determined that a total of $125.33 USD should be transferred into checking account **500** from savings accounts **600** *a* and **600** *b*, and a total of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d* from checking account **500**. In this manner, the optimization algorithm has determined that financial assets in the amount of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d*, for example, to take advantage of a higher interest rate associated with those savings accounts, and that a portion ($125.33 USD) of these financial assets should be removed from savings accounts **600** *a* and **600** *b* through checking account **500**, for example, due to a lower interest rate associated with those savings accounts. The optimization algorithm has also determined the relative amounts of financial assets to be transferred from each of savings accounts **600** *a* ($0.31) and **600** *b* ($125.02 USD) for the transfer of $125.33 USD into checking account **500**, and the relative amounts of financial assets to be transferred to each of savings accounts **600** *c* ($3,558.78) and **600** *d* ($5,204.74) in accordance with various boundary conditions determined by rules stored in rule data store **130** or otherwise provided through product program **110**, for example: i) a minimum account balance; ii) a maximum limit of

financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body or by product program **110**. The optimization algorithm has also determined that the net transfer of funds out of checking account **500** ought to be positive, reflecting the fact that the balance of financial assets in checking account **500** immediately prior to the initiation of the optimization exceeded a previously specified desired minimum or target balance for such checking account **500**.

[0164] In accordance with the embodiments described above, the transfers occur in two separate steps: in a first step, an amount of $0.31 USD is instructed to be transferred from savings account **600** *a* to checking account **500** in parallel with a transfer of $125.02 USD from savings account **600** *b* to the same checking account **500**; in a second step, an amount of $3,558.78 USD is instructed to be transferred into savings account **600** *c* from checking account **500** in parallel with a transfer of $5,204.74 USD into savings account **600** *d* from checking account **500**. As described above, the transfers illustrated in the second step are subject to a second-step optimization algorithm as a check against a changed property of one or more of accounts **500**, **600** *a*, **600** *b*, **600** *c*, **600** *d*, for example, a change in account limits, a change in the amount of financial assets disposed in an account, a change in the FDIC maximum insurance limit, and/or a change in interest rates associated with savings accounts **600** *a*, **600** *b*, **600** *c*, **600** *d*.

[01650] It will be understood that any point between or during any of the steps described above, product program **110** may provide to a user through client interface **200** information relating to the processes described above substantially in real-time or with any amount of delay, for example the status of each transfer, confirmation codes and/or numbers relating to a transfer of financial assets between any of the accounts described above.

[0166] It will be understood that the steps described above are exemplary according to the present disclosure, and are not intended to be limiting. A financial management network may include greater, fewer, and/or alternative steps to those disclosed above.

[0167] In embodiments, financial management system **1000** may be configured to implement a truncated, extended, and/or modified version of the optimization process described above, for example, so that different variables of the optimization algorithm may be optionally input by the user or by product program **110**. In an exemplary embodiment, a user may designate an amount of financial assets to be optimally allocated into savings accounts **400** *a*, **400** *b*, and **400** *c* from checking account **300**. Accordingly, with additional reference to FIG. 4C, visual layer **114** may provide one or more inputs **119** to a user to designate such an amount of financial assets to be transferred, With reference to FIG. 6D, product program **110** may then proceed to optimize the distribution of the financial assets from checking account **300** designated by the user in the manner described above. In this manner, financial management system **1000** is configured to instruct an automated or intelligent transfer of funds from checking account **300** into savings accounts **400** *a*, **400** *b*, and/or **400** *c* from checking **300** in an optimized manner.

[0168] In another embodiment, and with reference to FIG. 6C, a user may designate an amount of financial assets for product program **110** to instruct to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300**, which may otherwise be determined by product program **110** as the "first-step" transfers in step **S204** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into checking account **300**, product program **110** institutes steps **S205** *a* through **S205** *e* as shown in FIG. 6C.

[0169] Similarly, in another embodiment, and with reference to FIG. 6D, a user may designate an amount of financial assets for product program **110** to instruct to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of

financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, from checking account **300** which may otherwise be determined by product program **110** as the "second-step" transfers in step S**208** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into savings accounts **400** *a*, **400** *b*, **400** *c*, product program **110** institutes steps S**208** *a* through S**208** *h* as shown in FIG. 6D.

[0170] In another embodiment, the product program **110** determines an optimized distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, but does not automatically effect transfers of the funds through financial management network **100**. Rather, a user may opt to implement the financial transfers necessary to achieve such a distribution without using financial management network **100**, for example, by implementing one or more electronic funds transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*, by for example, ACH, wire transfer, credit transfer, or another modality of electronic funds transfer.

[0171] While the financial management network **100** in exemplary embodiments has been described as optimizing financial assets among accounts by having one checking account acting as the hub and multiple savings accounts on the spokes, by using the inventive concepts described herein, financial systems that have different hub-spoke configurations may also be implemented and the distribution of financial assets optimized among their accounts. For example, the financial management system **1000** may also include configurations in which there may be more than one account at the hub of the system.

[0172] For example, funds may be moved and optimized between a brokerage account and a checking account that both act as passive accounts forming the hub of the system and other accounts on the spokes that initiate transfers of funds into and request transfers of funds out from such two hub accounts. In such embodiment, the user may be able to set two different target balances for the respective checking and brokerage accounts.

[0173] Based on the inventive concepts disclosed herein, in such systems having two or more accounts at the hub, transfers may be effected automatically between these hub accounts as well as between the hub accounts and other accounts on the spokes of the financial management

system **1000** to optimize the financial return among all of the accounts based upon requests initiated at the spoke accounts for transfers into and out of the hub accounts.

[0174] In other embodiments, transfers between the multiple hub accounts (for example, a checking account and a brokerage account) may be initiated automatically, or manually by a user, as a means of moving funds between the two hub accounts via transfers to and/or from the accounts on the spokes (for example, online savings accounts.) As a result of the inventive concept described herein, funds may be transferred out of one of the hub accounts in an amount that would otherwise exceed the daily transfer limits imposed by that account, since the transfer is effected as an ACH credit to the spoke account, rather than as an outbound transfer from the hub account.

[0175] In embodiments, transfers of financial funds may occur indirectly between savings accounts through an intermediary checking account as described above, or a user may opt, either within or without financial management network **100**, to transfer financial assets directly between savings accounts without passing through a checking account. In such embodiments, ACH, or a modality of electronics fund transfer other than ACH, such as wire transfer or credit transfer, may be advantageous as wire transferred- or credit-transferred financial assets are processed substantially in real-time as compared to ACH, which typically occurs over a two-to-three day period. Because such transfers may be accompanied by a fee, such methods may be beneficial in embodiments where associated fees are relatively small relative to the amount of financial assets being transferred and the potential for enhanced interest income on these assets.

[0176] While this invention has been described in conjunction with the embodiments outlined above, many alternatives, modifications and variations will be apparent to those skilled in the art upon reading the foregoing disclosure. Accordingly, the exemplary embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention, which is defined by the following claims.

ABSTRACT

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account, by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/850,150

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	3 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	785		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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16/850,150	04/16/2020	Gary E. Zimmerman	103771-500

CONFIRMATION NO. 1088

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WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

FORMALITIES LETTER

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Date Mailed: 06/25/2020

NOTICE OF INCOMPLETE REPLY (NONPROVISIONAL)

Filing Date Granted

The U.S. Patent and Trademark Office has received your reply on 06/22/2020 to the NOTICE TO FILE CORRECTED APPLICATION PAPERS (Notice) mailed 04/23/2020 and it has been entered into the application. The reply, however, is not a complete reply for the reason(s) listed below. A complete reply must be timely filed to prevent ABANDONMENT of the above-identified application. Replies should be mailed to: Mail Stop Missing Parts, Commissioner for Patents, P.O.Box 1450, Alexandria VA 22313-1450.

The period for reply continues to run from the date of the Notice mailed 04/23/2020. Applicant must submit all required items and pay any fees required below within two months from the date of the NOTICE TO FILE CORRECTED APPLICATION PAPERS to avoid abandonment. If the reply is submitted after two months from the date of the NOTICE TO FILE CORRECTED APPLICATION PAPERS, extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

Items Required to Avoid Abandonment:

The required items noted below SHOULD be filed along with any items required above.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - A substitute specification was submitted on 06/22/2020; however, the non-marked-up copy of the substitute specification which incorporates the changes made in the marked up copy was not provided. Applicant must submit a clean copy of the revised specification.
- Applicant did not provide a statement that the substitute specification contains no new matter.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Mail date of Notice: 04/23/2020

Last date that extension may be obtained: (Note: The petition and fee must be received by this date, or include a proper certificate of mailing under 37 CFR 1.8 with a date on or before this date, and extend the time to include this date.) 11/23/2020

Length of Extension of Time	Fee under 37 CFR 1.17(a) effective March 19, 2013		
(response due on or before)	Undiscounted	Small Entity	Micro Entity
One Month (07/23/2020)	$200	$100	$50
Two Months (08/23/2020)	$600	$300	$150
Three Months (09/23/2020)	$1400	$700	$350
Four Months (10/23/2020)	$2200	$1100	$550
Five Months (11/23/2020)	$3000	$1500	$750

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/cnguyen/

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FIELD

[0001] The present application is a Continuation of United States Patent Application No. 15/678,453 filed August 16, 2017 and entitled "SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS." ~~This non-provisional application~~ U.S. 15/678,453 claims priority to U.S. 14/606,931 filed January 27, 2015, bearing the same title. U.S. 14/606,931 claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title~~, whose contents are hereby incorporated by reference~~. The contents of U.S. 15/678,453, U.S. 14/606,931 and U.S. 61/932,495 are hereby incorporated by reference herein in their entirety.

[0002] The present invention generally relates to systems, product programs and methods of using the same for optimizing the distribution of financial assets among financial accounts via a fully-automated approach that does not require user intervention on an ongoing basis. The present invention further relates to systems, product programs, and methods of using the same for automated management of financial assets, including the transfer of financial assets between financial accounts according to a set of rules that optimize the distribution of the financial assets among those accounts according to certain criteria, and subject to certain constraints.

BACKGROUND

[0003] In many economies, financial institutions, for example, banks, brokerage firms and credit unions, offer account holders interest payments at set interest rates for maintaining financial assets in accounts operated by such financial institutions. However, these set interest rates may vary over time depending on overall financial markets and each financial institution's need for deposits, and may differ from one financial institution to another. The current scheme of interest return on financial assets stored in various financial accounts provides challenges to an account holder in managing multiple accounts and optimizing the allocation of his or her financial assets among such accounts to obtain the best overall interest return, while

simultaneously maximizing the degree to which such assets are kept safe via diversification and deposit insurance schemes, such as that provided by the Federal Deposit Insurance Corporation (FDIC).

[0004] For example, many traditional "brick and mortar" financial institutions offer personal checking accounts at comparatively low or zero interest rates, but provide substantially instantaneous access to financial assets in those checking accounts. In today's world of electronic banking, such checking accounts may be configured to allow for ingoing and/or outgoing transfer of financial assets to and from other accounts via batch electronic transfers such as Automated Clearing House (ACH) transfers or wire transfers such as FedWire transfers. One feature of ACH transfers is that they may also be provided with mechanisms to reverse erroneous or unauthorized transfers within a designated period such as 60 days.

[0005] In contrast to low or zero interest bearing checking accounts, other financial institutions, such as online banking institutions, may be attractive in that they offer to a user savings accounts with higher interest rates than their "brick and mortar" counterparts, but sometimes place restrictions on access to financial assets by a user, for example, by requiring a waiting period for funds to clear or transfer, or by placing limitations on the method by which such funds may be transferred or accessed. At present, many of these online banking institutions allow for funds to be transferred into or out of their online savings accounts via ACH transfers, which they provide to their customers free of charge. In some cases, online banking institutions also provide for the ability to send or receive funds via wire transfers.

[0006] Since interest rates may be subject to frequent and/or unpredictable fluctuations among various financial institutions, account holders must continuously monitor, plan, and/or effect transfers of financial assets among their various accounts in order to gain the maximum benefit of interest rates offered across different financial accounts at a given time. Moving funds from one account to another can often require multiple steps, careful coordination, and mathematical adjustments to the amounts being transferred due to the time that elapses in the process of making such funds transfers.

[0007] Prior attempts to optimize returns on financial assets using, for example, automated cash sweep systems, have sought to allocate cash across multiple accounts so as to provide increased FDIC insurance protection, but not necessarily to optimize interest yield.

[0008] For example, there are prior art cash sweep systems that operate as "brokered deposit" systems. Such brokered deposit systems involve deposits that are sold from bank to bank. Since such deposits are characterized as a lower tier of capital from a regulatory perspective, optimization systems involving such brokered deposits are less attractive, since banks are only willing to pay below-market interest rates for such deposits.

[0009] Among the inventive concepts incorporated in the system described herein, the optimization of interest earnings among a user's accounts is structured differently from such brokered deposit systems. Since i) the user's accounts are conventional deposit accounts that they hold directly in their own names, ii) the banks cannot dictate the extent to which they receive funds, and iii) the banks do not pay a fee to receive such funds, these deposits are not considered by the regulators to be "brokered." As such, these deposits receive a higher interest rate than funds that are subject to brokered deposit systems. Optimizing the distribution of financial assets among such conventional deposit accounts thus provides higher yields to the user, while simultaneously affording the banks more favorable regulatory treatment as it relates to these deposits.

[0010] Prior art sweep systems using brokered deposit accounts are also deficient in that they may not provide full insurance to the account holder/user, since the account holder/user may have outside deposits or CDs at the same institutions that serve as program banks under the brokered deposit system, and overlapping deposits may result in the user inadvertently exceeding the deposit insurance coverage limits. On the other hand, the invention disclosed herein permits the account holder/user to easily and directly control overall limits on a per bank basis, thereby providing control and reducing the likelihood that there will be uninsured deposits.

[0011] Still further, in prior art cash sweep systems, the accounts are not directly held by the user and therefore cannot be directly accessed by the user without coordination with the cash sweep administrator. Further, if the main bank controlling, for example, the brokered deposit

network were to fail, the user would lose access to the funds being held by the related banks involved in the brokered deposits for a period of time.

[0012] Accordingly, there is a need for a financial management system that can avoid the deficiencies of prior art systems. These deficiencies are obviated by the invention described herein, in which all accounts are not only optimized, but at all times are directly accessible to the user/account holder without needing to coordinate with a third party.

[0013] The financial management system disclosed herein can determine the optimal allocation of financial assets across different financial accounts set up by a user/account holder, and then instruct or facilitate the transfer of financial assets among multiple accounts to allocate an account holder's financial assets in an optimal manner so that the user receives the maximum available amount of interest return on the financial assets disposed across the various accounts, subject to the constraints imposed by simultaneously maximizing FDIC insurance coverage, or any other such constraints that may be set by the user or administrator of the financial management network.

[0014] The disclosed financial management system can be configured to allocate an account holder's financial assets among the different accounts to be optimized subject to additional or alternative factors or constraints, such as keeping assets within insurance limits set by deposit insurance schemes or other purchased insurance products, keeping within transfer limits imposed by the banks and/or minimum and/or maximum account balances as may be required by financial institutions or desired by the user, maintaining checking account balances at specified deposit levels and/or to provide a user with other advantages that different types of financial accounts have to offer.

[0015] The disclosed financial management system can operate in an at least a partially automated manner to effect such financial transfers with little or no monitoring and/or intervention by the user/account holder and/or at no marginal cost to the user per transfer effected.

[0016] As detailed further herein, a unique and inventive concept of the underlying architecture of the system disclosed herein is that any transfers of funds required to achieve

optimized interest returns originate as requests made by online banks through the Automated Clearing House (ACH) for either an ACH credit to the user's linked checking account or as an ACH debit that pulls funds from the checking account.

[0017] Significantly, among the many inventive concepts included in the disclosed system, the checking account at the hub of the disclosed system is passive in that the checking account does not control the flow of funds into or out of the checking account. Advantageously, this arrangement avoids funds transfer limitations often imposed by brick-and-mortar banks, as well as fees that are normally charged for funds transfers from a checking account. Because transfers are handled by the online banks who assume the costs for such ACH transfers, there are no costs incurred by the user of the disclosed system.

SUMMARY

[0018] As used herein and as will be clear from the context, the term "account" may refer to the account holder's account per se, or to the associated physical interface that permits the account to be electronically accessed by either the user or the financial management system disclosed herein. Further, the terms "user," "client," "account holder," "customer," and "member" are used interchangeably in this disclosure

[0019] According to an exemplary embodiment, a financial management system is disclosed, comprising a first financial management network that connects a checking account, a first savings account, and a second savings account. The financial management network comprises at least one data store, a processor and a product program for implementing the desired transactions, as further discussed herein. The financial management network, checking account, first savings account, and second savings account are each interconnected along a data network.

[0020] In an exemplary embodiment, the checking account is associated with a first interest rate.

[0021] In an exemplary embodiment, the first savings account is associated with an interest rate that is higher than the first interest rate.

[0022] In an exemplary embodiment, the second savings account is associated with an interest rate that is equal to or higher than the first interest rate.

[0023] In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

[0024] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among one or more of the checking account, first savings account, and second savings account.

[0025] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets in one or more of the checking account, first savings account, and second savings account.

[0026] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets to be transferred between one or both of the first savings account and second savings account and the checking account.

[0027] In an exemplary embodiment, the one or more rules determine an allowable amount of transfers of financial assets between one or both of the first savings account and second savings account and the checking account over a given period of time.

[0028] In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

[0029] In an exemplary embodiment, the credentials include one or more of: a login name, a login password, an account number, a routing number, a name, an address, a telephone number, an email address, information relating to a third party financial institution, a PIN number, and answers to a one or more predetermined questions.

[0030] In an exemplary embodiment, the processor is configured to determine an allocation of financial assets among the checking account, first savings account, and second savings account, based upon a relative priority of the checking account, first savings account, and second savings account subject to the one or more rules.

[0031] According to an exemplary embodiment, a financial management network is disclosed that utilizes links that a user/account holder has established between a checking account, and one or more savings accounts. Such links are made accessible to the financial management system which can then instruct transfers between the linked accounts in the manner disclosed herein.

[0032] In an exemplary embodiment the financial management network comprises at least one data store, and one or more processors for implementing a product program as further disclosed herein. Each of the financial management network, checking account, and one or more savings accounts are interconnected along a data network.

[0033] In an exemplary embodiment, the one or more processors are configured to apply one or more rules stored in the at least one data store to instruct at least one savings account of the one or more savings accounts to initiate a transfer of financial assets between the checking account and the respective savings account.

[0034] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among the checking account and the one or more savings accounts.

[0035] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising a data store, a processor and a product program; (b) linking a checking account to the financial management network; (c) linking a first savings account to the checking account and to the financial management network; (d) linking a second savings account to the checking account and to the financial management network; (e) providing one or more rules to the product program; and (f) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account, first savings account, and second savings account according to a relative priority

assigned to the checking account, first savings account, and second savings account subject to the one or more rules.

[0036] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets between one or more of the first savings account and second savings account and the checking account according to an optimization algorithm.

[0037] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to the checking account from one or more of the first savings account and second savings account according to the optimization algorithm.

[0038] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to one or more of the first savings account and second savings account from the checking account according to the optimization algorithm.

[0039] In an exemplary embodiment, the optimization algorithm determines a relative priority among the savings accounts at least partially based upon an interest rate associated with each of the first savings account and second savings account.

[0040] In an exemplary embodiment, the optimization algorithm determines the relative priority based at least partially on one or more factors including: an objective customer service rating, a subjective customer service rating, an associated fee, an account limit, a transfer limit, and historical interest rates or historical interest rate volatility.

[0041] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising at least one data store, one or more processors and a product program; (b) linking a checking account to the financial management network; (c) linking one or more savings accounts to the checking account and to the financial management network; (d) providing one or more rules to the product program; and (e) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account and the one or more savings accounts according to a relative priority assigned to the checking account and/or the one or more savings accounts

subject to the one or more rules, and (f) individually instructing some or all of a user's online savings banks to send cash to the checking account and/or pull cash from the checking account.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein:

[0043] FIG. 1 is a schematic diagram of a financial management system according to an exemplary embodiment of the present disclosure;

[0044] FIG. 2 is a schematic diagram illustrating linked financial accounts in the financial management system of FIG. 1.

[0045] FIG. 3 is a schematic diagram of the financial management network of FIG. 1;

[0046] FIG. 4A is a schematic view of an exemplary embodiment of the image layer of the client interface shown in FIG. 1.

[0047] FIG. 4B is a schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0048] FIG. 4C is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0049] FIG. 4D is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

~~[0050] FIG. 4E is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;~~

[0051] FIG. 5 is a process diagram of steps a user may take to configure the financial management system of FIG. 1 for use, according to an exemplary embodiment of the present disclosure;

[0052] FIG. 6A is an operational flow chart of the financial management system of FIG. 1 according to an exemplary embodiment of the present disclosure:

[0053] FIG. 6B-1 and FIG. 6B-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as **S203**;

[0054] FIG. 6C is a flow chart of the area of detail identified in FIG. 6A as **S205**; and

[0055] FIG. 6D-1 and FIG. 6D-2 together illustrate [[is]] a flow chart of the area of detail identified in FIG. 6A as **S208**.

DETAILED DESCRIPTION

[0056] In embodiments, the present invention generally relates to systems, product programs, and methods of using the same for managing multiple financial asset accounts, determining the optimal allocation of financial assets across financial accounts and the automated transfer of financial assets between a first financial account and at least one second financial account so that the financial assets are allocated in an optimal manner among the financial accounts according to certain criteria and without ongoing user intervention. As used herein, the term financial account will be understood to include a collection of one or more units of a financial asset having an associated monetary value, such as a currency. Financial accounts may be collections of financial assets that are held, maintained, and/or otherwise managed by a financial institution, such as a bank, brokerage firm or credit union. In embodiments, a financial account may be, for example, a checking account or savings account or money market fund account. As described herein, an interest rate refers to a percentage increase, or in the event of a negative interest rate, a percentage decrease, of the value of the financial assets in an account at set intervals of time, effected via deposits to the financial account called interest payments. Interest payments in financial accounts such as checking and savings accounts may be in the form of, for example, cash. In embodiments, interest payments may be in a form dependent upon the type of financial account to which they are applied, for example, yields in the form of coupons on bonds and/or bills in the case of a money market fund.

[0057] In embodiments, the present invention further relates to systems, product programs, and methods of using the same for allocating and transferring financial assets between a first financial account and at least a second financial account according to an optimization algorithm so that a user's financial assets are distributed across the financial accounts in a manner such that the financial assets receive the maximum amount of interest payments available as determined by the respective interest rates of the financial accounts within boundary conditions or constraints that may be user-selected and/or imposed by a financial institution or other body, such as the system administrator.

[0058] In embodiments, a boundary condition may be a requirement imposed by the financial institution that a minimum amount of assets be maintained in in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a minimum account balance. In other embodiments, such boundary condition could relate to a minimum account balance that a user desires to keep in his/her account, irrespective of the requirements imposed by the financial institution. A minimum account balance may be, for example, $1 USD. Such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts.

[0059] In embodiments, a boundary condition may be a maximum amount of financial assets in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a maximum account balance. In embodiments, a maximum account balance may correspond to a financial asset limit independent of financial management system **1000**, for example, a government or third-party insurance limit, such as the maximum FDIC insurance limit (which currently stands at $250,000 USD, but which may change from time to time). In such embodiments, the boundary condition may be set at a margin of safety below the reference financial asset limit, for example, $249,500 USD in the case of the FDIC insurance limit for an individual account, such that principal plus accrued interest remain below the FDIC insurance limit. In embodiments, such a boundary condition may correspond to a maximum financial asset limit as specified by a third-party financial institution, for example, $1,000,000. Accordingly, such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts. In

embodiments, such a boundary condition may correspond to the user's maximum desired balance, which may be higher or lower than the default boundary condition set by product program **110**.

[0060] In embodiments, a boundary condition may be a maximum and/or minimum amount of financial assets that may be transferred into and/or out of a given financial account, e.g., a transfer limit. In embodiments, such a boundary condition may apply to either or both incoming and outgoing transfers of financial assets on anyone of accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In embodiments, the boundary condition may apply to any given period of time, for example, one day, one week, or one month, to name a few. In embodiments, the boundary condition may apply to a limit on ingoing and/or outgoing transfers occurring in a single transfer of financial assets, for example, a maximum outbound transfer of $150,000 USD, or a maximum inbound transfer of $250,000 USD, or a maximum daily transfer limit of $500,000 USD, and may differ across different accounts.

[0061] In embodiments, a boundary condition may be a maximum number of transfers of financial assets to be initiated over a given period of time. In embodiments, such a boundary condition may correspond to a limit set by a financial institution, such as a maximum of six transfers with respect to a given financial account before associated fees are incurred.

[0062] In embodiments, a boundary condition may depend upon a different variable, for example, a minimum difference in interest rates associated with two financial accounts and/or a minimum difference in financial assets in two financial accounts before a transfer of financial assets there between is initiated.

[0063] Turning to FIG. 1, an exemplary embodiment of a financial management system is generally designated **1000**. Financial management system **1000** may be an interconnection of elements that comprise at least a financial management network **100**, a client interface **200**, and interfaces to a first financial account, such as a checking account **300**, and one or more second financial accounts, such as savings accounts **400** *a*, **400** *b*, **400** *c*. Although the presently-described exemplary embodiment includes three savings accounts, it will be understood that, in

embodiments, a financial management system **1000** may be linked to any number of savings accounts and/or other types of financial accounts through their associated computer interfaces.

[0064] Financial management network **100**, client interface **200**, account interfaces **300**, **400** *a*, **400** *b*, **400** *c*, and/or any component thereof, may be interconnected along one or more electronic data networks **1100**, for example, a wired and/or wireless data communication system such as the World Wide Web, a mobile data network, and/or local intranet, to name a few. In embodiments, a financial management system may be an interconnection of elements that comprise any number, combination, and/or separation of elements described above.

[0065] Financial management network **100** may include web servers, application servers and databases as described herein, for implementing a multi-tier web application that includes access and security restrictions between the web servers, application servers and databases. For example, the application servers and databases can be accessed on the internet only by system administrators using specialized software and virtual private networks that communicate using SSL certificates with tightly controlled access lists.

[0066] As described further herein, financial management system **1000** is configured so that financial management network **100** periodically analyzes changing conditions among the one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, and checking account **300** that may impact the optimum allocation of funds among the accounts. For example, interest rates payable by the accounts, FDIC insurance limits, maximum/minimum account limits, transfer limits and the like may periodically change for some or all of the accounts. Such changing conditions are periodically monitored by the financial management network **100** to determine the optimal allocation of a user's financial assets among checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* to receive the benefit of the highest interest rates available subject to any or all of the constraints described above in any combination or separation, subject to any and/or all of the boundary conditions described above in any combination or separation. Such optimal allocation may be made in accordance with a particular schedule or automatically when a changing condition occurs that impacts on the optimal allocation.

[0067] The financial management network may then instruct one or more of the interfaces for savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets indirectly there between, through a corresponding crediting and debiting action on checking account **300** as an intermediary to achieve this optimized distribution of the user's financial assets.

[0068] In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account **400** *a* is instructed to initiate a transfer of financial assets M_1, into checking account **300** (through a debiting action). In a separate, second step, savings account **400** *c* is instructed to initiate a transfer of financial assets M_1 into savings account **400** *c* from the checking account **300** (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

[0069] The above-described processes of financial management network **100** may be at least partially automated so that a user may attain the benefits of an optimized allocation of his or her financial assets across savings accounts **400** *a*, **400** *b*, **400** *c*, without spending a substantially increased amount of time and effort monitoring these accounts.

[0070] In embodiments, financial management system **1000** may include any number of savings accounts. Accordingly, in embodiments, financial management system **1000** may link a single savings account and a single checking account. In embodiments, financial management system may include more than one checking account. In embodiments, financial management system **1000** may include any number of financial accounts, including, for example, checking accounts, savings accounts, brokerage accounts or money market fund accounts in any combination or separation.

[0071] In the exemplary embodiment shown, checking account **300** may be maintained by a traditional banking institution, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be

maintained by respective online banking institutions. Accordingly, checking account **300** may be a financial account with a low or zero value interest rate it, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be a financial account with respective interest rates i_2, i_3, i_4 that are each greater than the interest rate i_1 of checking account **300**. In this manner, financial assets stored in savings accounts **400** *a*, **400** *b*, and/or **400** *c* may be supplemented by interest payments at a greater percentage than would be earned by a corresponding amount of financial assets stored in the checking account **300** during a comparative interval of time. Interest rates i_2, i_3, i_4 may each be substantially similar to one another, may have different values, and/or may fluctuate over time so that interest rates i_2, i_3, and i_4, do not necessarily have a constant relative relationship. In embodiments, checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* may be different financial accounts at the same third party institution that have different associated interest rates i_2, i_3, i_4. It will be understood that, in embodiments, accounts **300**, **400** *a*, **400** *b*, **400** *c* may be different types of financial accounts and may use different currencies. For example, each account may be a non-commercial account, a commercial account, a trust account, an escrow account, a non-profit, foundation or endowment account, or any other type of account that can be accessed by the financial management network **100** in accordance with this disclosure.

[0072] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* includes financial assets to which a user/account holder has access, and to which other individuals or entities may have access when authorized by a user/account holder. A user may include, for example, a single account owner, one or more joint account owners, or one or more persons acting on behalf of an at least partial account holder, such as a proxy or trustee, financial advisor, private wealth manager, and/or an automated system acting upon instructions provided by a user, being one or more of the above, to name a few. For example, the user might be an individual, a couple, a financial advisor administering the system on behalf of an individual or a couple, or a CFO or treasurer of a company who has authority to act on behalf of that entity's accounts.

[0073] As shown, savings accounts **400** *a*, **400** *b*, **400** *c* are linked across data network **1100** through checking account **300**. Referring additionally to FIG. 2, checking account **300** is linked between each of accounts **400** *a*, **400** *b*, **400** *c* so that checking account **300** may act as a hub through which financial assets may be transferred indirectly between savings accounts **400** *a*, **400** *b*, **400** *c*. The savings accounts may be viewed as

connected to the checking account hub as various spokes. By using such hub-and-spoke architecture, rather than making transfers directly between savings accounts, the disclosed system is able to avoid limitations that may be imposed on transfers from savings account (e.g., certain banking regulations in the United States currently limit savings accounts to no more than 6 outbound transfers per month).

[0074] Furthermore, by using such hub-and-spoke architecture in which transfers are made through previously-verified ACH links between the checking account at the hub and the savings accounts at the spokes, the presently disclosed system is highly secure. In accordance with this architecture and as disclosed herein, the financial management network **100** does not originate funds transfers, but only acts as agent for the user/account holder, providing instructions on the user's behalf to the user's savings banks to make the funds transfers along ACH conduits that the user has setup with each online account and whose security has been previously verified by the user and the banks. For example, it is not possible for someone who may breach other robust security measures built into the disclosed financial management system **1000** and/or financial management network **100** to link their own online account and syphon funds away from the user/account holder, since the breaching party will not be able to complete the trial deposit verification procedures currently in place by banks for confirming the secure linking together of new accounts, since access to the user's checking account is also required to confirm trial deposits (or other mechanisms typically used to confirm rightful ownership of accounts).

[0075] Accordingly, financial assets may be transferred between savings accounts **400** *a*, **400** *b*, **400** *c* by using checking account **300** as an intermediary. For example, an amount of financial assets M, may be transferred between savings account **400** *a* and savings account **400** *c* in a two-step process: in a first step, financial assets M_1, are transferred from savings account **400** *a* to checking account **300**; in a separate, second step, financial assets M, are transferred to savings account **400** *c* from checking account **300**. A lapse in time between the first step and second step described above may be associated with, for example, the length of time that the checking account **300** or an intermediary funds transfer network, such as the ACH network or FedWire, takes to process the transfer in the first step, along with the amount of time that the system described herein takes to i) confirm that the first step has been completed

successfully and ii) refresh user account balances and recalculate the required funds transfers for the second step, taking into account any changes in relevant account balances between the first and second step.

[0076] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* may retain financial assets so that a substantially large number of possible distributions of a user's financial assets is possible. As described above, it may be desirable to redistribute financial assets among savings accounts **400** *a*, **400** *b*, **400** *c*, for example, to gain the benefit of a higher interest rate offered on one account, or to help maintain the level of financial assets in some or all of the accounts above a minimum value or below a maximum value, for example, to stay below an insurance program limit, such as FDIC insurance, or to stay above a minimum balance requirement (either for the avoidance of account fees or to keep an account open).

[0077] Accordingly, financial management network **100** is configured to implement an optimization algorithm to provide a user with the optimum distribution of financial assets across savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** so that the user's financial assets in financial management network **100** are eligible for the greatest amount of interest payments offered on savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, subject to the aforementioned constraints.

[0078] In embodiments, financial management network **100** may be at least partially automated so that financial management network **100** can send instructions to implement financial transfers between accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring direct input from a user. In such embodiments, financial management network **100** may be governed by a set of rules or conditions chosen by the user and/or persons or entities authorized by the user, including the system administrator. As described further herein, financial management network may be provided with a variable level of automation so that a user is afforded a degree of direct control over the operation of financial management network **100**.

[0079] Still referring to FIG. 1, client interface **200** is an access point configured to transmit data between a user and at least financial management network **100** along data network **1100**. In embodiments, client interface **200** may additionally be configured to transmit

data directly between a user and checking account **300** and/or savings accounts **400** *a*, **400** *b*, and/or **400** *c*. In embodiments, client interface **200** may be, for example, a desktop or terminal computer, or may be a mobile device incorporating a computer such as a smartphone, PDA, wearable computer, laptop computer, or tablet computer. It will be understood that any device capable of connecting to data network **1100** may be configurable as a suitable client interface.

[0080] Client interface **200** includes a display **210** that is configured to provide data from financial management network **100** in a format visually accessible to a user, such as letters, numbers, symbols, and/or graphics, to name a few. In embodiments, display **210** may be, for example, a video monitor, a screen, or a projector. Client interface **200** also includes at least one input device **220** through which a user may input data to at least financial management network **100** along data network **1100**. In embodiments, input device **220** may be, for example, a keyboard, mouse, keypad, touchpad, voice recognition program, motion sensor and/or other input device capable of sending data to financial management network **100** through data network **1100** in response to a corresponding physical input and/or visual input and/or audible input. In embodiments, a client interface **200** may include additional and/or alternative features for the receipt and input of data there through. Still further, in embodiments, the financial management network **100** may provide information and receive instructions via an API, for example connected to the computer system of a financial advisor, rather than via human input. In embodiments, a display and input device may together be provided on a client interface, for example, through one or more capacitive touchscreens. In this regard, a user may access and/or input information directly to financial management network **100**, checking account **300**, and/or savings account **400**, and/or may indirectly access and/or input information to checking account **300** and/or savings account **400** via financial management network **100** through client interface **200**.

[0081] Turning to FIG. 3, financial management network **100** may comprise a product program **110**, a credential data store **120**, and rule data store **130**. In embodiments, financial management network **100** may include a single data store, or any number, combination, and/or separation of elements described above.

[0082] Product program **110** may be an application or software operable via one or more processors **112**. In embodiments, product program **110** may comprise a computing environment having one or more real and/or virtual data servers to provide network-based services to a user, such as a cloud computing environment, and provides a hub that is connected between credential data store **120**, rule data store **130**, client interface **200**, checking account **300**, and savings accounts **400** *a*, **400** *b*, **400** *c* along data network **1100**.

[0083] Referring additionally to FIG. 4A, product program **110** includes a visual layer **114** that is transmitted through data network **1100** to at least client interface **200**. Visual layer **114** may be, for example, an application layer or website configured to be displayed on display **210** of client interface **200**. In this manner, display **210** of client interface **200** and visual layer **114** of product program **110** are together configured to communicate to display data input and/or output by product program **110** in a manner accessible to the user as described above.

[0084] Accordingly, visual layer **114** may include one or more indicia **116** that may include for example, letters, numbers, colors, patterns, and/or symbols, to name a few. Visual layer **114** may also include one or more input fields **18** in which a user may input data through control device **220**, for example, letters, numbers, symbols, and/or markings such as radio buttons, check boxes, or text boxes. Data supplied from input fields **118** are transmitted to product program **110** through data network **1100**.

[0085] Credential data store **120** and rule data store **130** are repositories of data connected to product program **110** along data network **1100**. Either or both of credential data store **120** and rule data store **130** may be configured as a database, for example, a relational database or key-value data storage system. Credential data store **120** and/or rule data store **130** may be supported on one or more network-based environments that may comprise one or more virtual and/or physical servers, for example, a cloud computing environment. Credential data store **120** and rule data store **130** may be supported on a common cloud computing environment or separate cloud computing environments. In embodiments, data associated with financial management system **1000** may be stored on a single data store, two data stores as shown, or, in embodiments, any number of data stores. In embodiments, data associated with financial management system **1000** may be stored on multiple data stores, for example, for

security purposes so that data is compartmentalized to inhibit unauthorized access. In embodiments, data may be transmitted to data stores **120**, **130** by a user through client interface **200** or by another path through product program **110**, for example, data input by a user or system administrator or via an API.

[0086] Credential data store **120** may include data associated with information capable of accessing any of checking account **300**, savings accounts **400** *a*, **400** *b*, **400** *c*. For example, credentials such as account numbers, routing numbers, challenge questions that may be posed by an account interface and associated answers, login names, passwords, PIN codes, e-mail addresses, contact telephone numbers, digital certificates, and/or web cookies, to name a few of the credentials that may need to be provided to gain access to a user's checking and/or savings accounts.

[0087] Accordingly, data stored on credential data store **120** may comprise confidential information, for example, information deemed secure by a user so that only the user and/or user-approved individuals and/or entities that are intended to be privy to such information may be granted access. In embodiments, one or more electronic security measures **122** may be incorporated into the architecture of credential data store **120** and/or product program **110**, and/or may be disposed upstream of credential data store **120** along data network **1100** to inhibit unauthorized access to information associated with data stored on credential data store **120**.

[0088] Rule data store **130** may include data that determines the configuration, scheduling, and/or sequence of operations of financial management network **100** with respect to accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In this manner, rule data store **130** may store data associated with information supplied by a user through client interface **200** in the form of, for example, rules, boundary conditions, schedules, limits, tasks, commands, applications, and/or action identifications, to name a few.

[0089] Data associated with information relating to boundary conditions described above with respect to one or more accounts **300**, **400** *a*, **400** *b*, **400** *c* may include, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial

transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few. All such boundary conditions may be set by a user, a user's financial advisor, a financial institution, governmental or other body or by product program **110**.

[0090] Data associated with information relating to a sequence of operations of financial management network **100** may include, for example, a length of time associated with initiating and/or restricting one or more actions of product program **110**, for example, the cessation of further transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, identifying the value of interest rates i_1, i_2, i_3, and/or, from information sources associated with, or independent from, third-party financial institutions, and/or providing data to a user through client interface **200**, for example, information relating to checking account **300** and/or savings accounts **400** *a*, **400** *b*, **400** *c* and/or prompting a user to input data through client interface **200**.

[0091] In this manner, program product **110** is configured to take one or more actions and/or restrict one or more actions on at least savings accounts **400** *a*, **400** *b*, **400** *c* based at least in part upon data received from rule data store **130**. Such one or more actions may include the transfer of financial assets from one or more savings accounts **400** *a*, **400** *b*, **400** *c* to checking account **300** and/or the transfer of financial assets to one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0092] In the exemplary embodiment shown, program product **110** instructs one or more of savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets with respect to checking account **300**. In this manner, program product **110** is configured to initiate the transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** solely by initiating crediting and debiting actions on checking account **300** from the perspective of the savings accounts **400** *a*, **400** *b*, **400** *c* so that no financial transfers are required to be initiated from checking account **300**. Financial transfers may be implemented via the Automated Clearing

House (ACH) network, or another method of electronic funds transfer known by those skilled in the art of the present disclosure.

[0093] In this regard, financial management network **100** may be configured such that program product **110** may initiate and/or restrict one or more actions on one or more of savings accounts **400** *a*, **400** *b*, **400** *c* based on data stored in rule data store **130**. In this manner, a set of rules may be stored in rule data store **130** in advance of a financial transfer so that the financial management network is at least partially automated to implement financial transfers based on the rules in rule data store **130**. In this manner, financial management network **100** is configured such that a user is not required to continuously monitor and/or implement financial transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such an automated configuration allows financial management network **100** to provide instructions for the implementation of a greater number of financial transfers without direct user input than might be practical for a user to perform directly, and with greater discipline. Accordingly, financial management network **100** affords a user the benefit of an increased and/or finer control of the distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, for example, to optimize the amount of interest earned on the financial assets in accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring additional time or effort by the user, and/or to ensure that financial assets are distributed across accounts **300**, **400** *a*, **400** *b*, **400** *c* to in a manner to be maximally covered by one or more insurance programs such as FDIC. Additionally or alternatively, financial management network **100** may afford a user such control to allocate the financial assets in accounts, **300**, **400** *a*, **400** *b*, **400** *c* in an optimized manner to take advantage of other beneficial factors, for example, available insurance coverage and/or maintaining a checking account at target balance.

[0094] It will be understood that, in embodiments, a financial management system may include a first financial account having a first interest rate and one or more additional financial accounts having respective interest rates that are greater than the first interest rate. A financial management network may be associated with such financial management systems so that financial assets may be transferred between the first financial account and any or each of the other financial account(s) in any combination or separation as described above.

[0095] Referring additionally to FIG. 5, a process diagram of steps a user engages in to configure financial management system **1000** for use is illustrated in accordance with an exemplary embodiment of the present disclosure.

[0096] With additional reference to FIG. 4A, in a first step S **101**, a user accesses the product program **110** through client interface **200** so that an image layer **114** of the product program can appear on display **210** to relay data to the user. A user may access product program **110**, for example, by entering a website URL into an internet browser, selecting a shortcut to such website URL via an icon on a smartphone, tablet computer, wearable computer or similar device, or initiating a software application.

[0097] In a second step S **102**, a user registers an account with product program **110** by providing data to product program **110** through client interface **200** over data network **1100**. In embodiments, a user may provide data to product program **110** that is associated with information such as, for example, an e-mail address, telephone number, username, password, and/or biographical information such as name, address, and/or date of birth, to name a few, as well as personal demographic information such as age, occupation, income, approximate balance of financial assets, to name a few. The data provided by the user in step S**202** is received by the product program **110** and transmitted to credential data store **120** over data network **1100** so that a user thereafter may re-submit such data, or a portion thereof, through client interface **200** to access additional features of the product program **110**. In embodiments, client interface **200** may store such data, for example, in a web browser or local storage medium, so that this data can be transferred from its stored location to product program **110** upon command by a user. In embodiments, this data may be stored on a different data store.

[0098] In embodiments, second step S**102** or another step in the configuration of financial management system **1000** may include a user providing data to product program **110** through client interface **200** associated with information needed to setup an account at more than one financial institution and/or more than one account at a single financial institution. In this manner, financial management system **1000** may be configured to facilitate a user in registering, for example, for multiple financial accounts through a single, common

application and/or substantially simplified registration process as compared to individual registration processes associated with different financial institutions and/or financial accounts.

[0099] With additional reference to FIG. 4B, in a third step **S103**, data is provided to product program **110** that is associated with information related to checking account **300**. Such information may include, for example, login name and password, account numbers, routing numbers, names, addresses, third party financial institution information, PIN numbers, answers to challenge questions, a contact telephone number or email address, and/or other identification and/or access information, as well as the client's desired target checking account balance. The data provided in step **S203** may be stored in credential data store **120** and/or rule data store **130** in any combination or separation. In embodiments, such data may be associated with, for example, public information on the third party financial institution associated with checking account **300** and/or a history of one or more transactions or statuses of checking account **300**. In embodiments, such data may be associated with information relating to, for example, account numbers, routing numbers, PIN numbers, and/or other access information associated with checking account **300**.

[0100] With additional reference to FIG. 4C, in a fourth step **S104**, data is provided to product program **110** that is associated with information related to savings accounts **400** *a*, **400** *b*, **400** *c*. Such information may be substantially similar to the types of information provided in step **S103** with regard to checking account **300**, and may accordingly be stored in credential data store **120** and/or rule data store **130** in any combination or separation as described above in step **S104**. In embodiments, a user may supply information related to any of accounts **300**, **400** *a*, **400** *b*, **400** *c* described over the course of a single connection session with product program **110**, or over any number of sessions. It will be understood that a process for configuring a financial management system for use will include any number of additional steps relating to the input of data relating to identification and/or access information of a financial account in accordance with the number of financial accounts associated with the financial management system.

[0101] In a fifth step **S105**, data is provided to product program **110** that is associated with information related to a rules for transferring assets between checking account **300** and one

or more of savings accounts **400** *a*, **400** *b*, **400** *c*. Such rules may include, for example: i) a minimum or target account balance set by a user, financial institution, or other body; ii) a minimum or maximum limit of financial assets in a financial account set by a user, product program **110**, a financial institution, or other body; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time as set by a user, financial institution, or governmental or other body; iv) a maximum number of financial transfers that may be performed over a given period as set by a user, financial institution, or governmental or other body; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts as set by a user or by product program **110**; and/or vii) a minimum difference in financial assets required before initiating a transfer of financial assets between financial accounts as set by a user or product program **110**, to name a few.

[0102] It will be understood that the data supplied to product program **110** may in whole or in part be supplied by a source other than a user, for example, a financial advisor or system administrator or by one or more default settings of product program **110**. It will be understood that the steps described above to configure financial management system **1000** may be completed in any order, combination, or separation as described above. In embodiments, such a process may include additional and/or alternative steps.

[0103] Turning to FIG. 6A, and still referring to FIG. 1, an operational flow chart of a process of financial management system **1000** is illustrated in accordance with an exemplary embodiment of the present disclosure. It will be understood that this operational flow chart may be applicable to financial management system **1000** or any other financial management system based on the inventive concepts disclosed herein.

[0104] In a first step **S201**, input data is provided to product program **110** to initiate an optimization process which will culminate in the transfer of financial assets between one or more of savings accounts **400** *a*, **400** *b*, and **400** *c* and checking account **300**. Input data may be provided substantially in real-time, for example, by a user or system administrator, and/or may be stored data in rule data store **130** to be input under certain conditions, such as a scheduled task. For example, a first instance of the optimization process described herein may be initiated

by a user through client device **200**, and one or more successive instances of the optimization process may be initiated by product program **110** as a scheduled task. If no data instructing product program **110** to initiate a transfer is supplied to product program **110**, first step S**201** may be repeated. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of first step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met. A successive iteration of first step S**201** may also be initiated by a user or system administrator on an ad hoc basis. For example, a client or his/her financial advisor may access the financial management network **100** to manually initiate an optimization in between scheduled optimizations.

[0105] If an optimization process is to be initiated, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in a second step S**202**. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or or may be supplied by another source such as an independent reporting service or by the system administrator or via an API (application program interface). Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, a corresponding interest rate i_1, i_2, i_3, i_4, and/or one or more account balances.

[0106] In a third step S**203**, processor **112** of product program **110** applies one or more rules from rule data store **130** to the data obtained from the one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in step S**202** to determine the optimal allocation of financial assets across financial accounts **300**, **400** *a*, **400** *b*, **400** *c* in a first-step optimization algorithm, as described further herein. Accordingly, step S**203** yields a set of data relating to an allocation of financial assets that may be different from the allocation of financial assets retrieved from step S**202**.

[0107] In a fourth step S**204**, product program **110** determines the net amount of transfers of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c* in order to arrive at the optimized allocation of financial assets determined in step S**203**. As described above, in embodiments, financial management system **1000** is configured to instruct transfers of financial assets in two steps: a first set of one or more transfers of financial assets from any one or more of savings

accounts **400** *a*, **400** *b*, **400** *c*; and a second set of one or more transfers of financial assets into any one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0108] Accordingly, in a fifth step **S205**, product program **110** determines the optimum set of transfers of financial assets to be initiated from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, into checking account **300** as described further herein.

[0109] In a sixth step **S206**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets into checking account **300** in amounts determined in step **S205**. In embodiments, step **S206** may include transfers from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, step **S206** may involve no transfers of financial assets from any of savings accounts **400** *a*, **400** *b*, **400** *c*, as described further herein.

[0110] In embodiments, instructions provided to savings accounts **400** *a*, **400** *b*, **400** *c* may require the product program **110** to retrieve credentials from credential data store **120** to first access savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, checking account **300** may also be accessed in a similar manner. In embodiments, one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may involve more than one level or layer of credential input on the part of product program **110**, e.g., to satisfy multi-level or multi-factor authentication protocols.

[0111] For example, some financial institutions and banks will recognize a login from an unauthorized client computer and prompt the user/account holder to provide further authentication in addition to the account holder's username and password before allowing access to the account holder's account. Such multi-factor authentication protocols may involve a bank's website indicating that it will be transmitting a pre-determined or random authentication code to the user's cell phone by voice or text, or by email to the user's email address, which cell phone number and email address the user or system administrator has previously entered in his user data on the bank's website when the account was initially set up. The user must then retrieve the transmitted code from his landline phone or cell phone or from his email provider within a preset limited time period and correctly enter the code on the bank's website before being permitted to continue with the user login.

[0112] Comparably, a financial institution that manages one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may detect access to an account by a new origination point along data network **1100**, e.g. a point other than client device **200**, and may require a response, answer, and/or code to be input in response to an inquiry before permitting connection of an account to the financial management network **100**. Typically, such a response, answer, and/or code is provided by a user through client device **200** or another device connected to the relevant account.

[0113] However, in such a case, product program **110** may be configured to communicate directly with one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* as a proxy for the user, for example, to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses. Such communication between product program **110** and one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few. Accordingly, product program **110** (in certain embodiments, via a selected third-party vendor) may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts **300**, **400** *a* **400** *b*, **400** *c* on behalf of the account holder, without intervention by the account holder or user.

[0114] In particular, with respect to multi-factor authentication, the financial management network **100** implements unique and inventive concepts that permit it to act as proxy for the user and respond to any multi-factor authentication that may be required for account access in a way that does not require user intervention, while simultaneously maintaining rigid security measures to avoid unauthorized access to the user's accounts by other parties. For this purpose, and to the extent necessary, a limited power of attorney is provided by the user/account holder to the financial management network **100** to permit the administrators of the financial management network **100** to act as agent for the user/account holder.

[0115] As described herein, the one or more processors of the financial management network **100** perform multiple processes that permit an account holder to access account

information across his various accounts and that permit the financial management network **100** to interface with banks holding the one or more user accounts, and in particular to permit the financial management network **100** to login as the user by using the user's credentials stored in credential data store **120**. Once logged into a user's account, these processes can verify the accounts that are linked, fetch balances, instruct transfers, prepare transaction histories, retrieve 1099-INT tax forms or other client communications provided by the associated banks.

[0116] To reduce latencies and provide a high performance processing framework, the financial management network **100** may be configured to run multiple processes in parallel. For example, multiple processes may be executed to provide headless web browsers that are used to navigate to and interact with the websites of multiple banks at the same time, for example to fetch balances, send funds transfer instructions, retrieve year-end 1099-INT tax statements, and the like.

[0117] As noted above, processes may also be implemented by the financial management network **100** to handle multi-factor authentication required by some banks and financial institutions before permitting account access, without user intervention. To enable the financial management network **100** to directly respond to a multi-factor authentication request within the user present, the following procedure is implemented.

[0118] When a user first links an account to the financial management network **100**, the user supplies their username and password to the financial management network **100**, and a process within the financial management network **100** controls a web browser and uses the user's credentials to attempt to log in to the bank's website holding the account.

[0119] If the bank responds to the log in attempt by issuing challenge questions or by requiring additional multi-factor authentication such as entry of a code sent to the user, then the financial management network **100** will prompt the user for the additional information that the bank website has requested.

[0120] For example, after a user links an American Express savings account to the financial management network **100** for the first time, the financial management network **100** will

attempt to log in to the American Express savings account using the provided username and password.

[0121] If the web page indicates that additional multi-factor authentication is required, for example, input of a code that is sent to the user's cell phone or email address, then a process running within the product program **110** will present to the user the list of email addresses and/or phone numbers that is stored on the American Express site to which the authentication code can be sent, and will prompt the user to select one of the listed addresses or phone numbers. The process then passes the selected option to the American Express site so that the site sends the code using the selected option. Once received by the user at his selected address or phone number, the user enters the code into the financial management network **100**, which then forwards the code to the American Express site to respond to the multi-factor authentication request and gain access to the site. Once the product program **110** has access to the American Express site, it adds to the user data stored by the site an additional multi-factor authentication endpoint, e.g., an additional phone number or email address, that is accessible either directly by the product program **110** or, in some cases, via a third-party software service provider, and to which subsequent authentication codes may be sent.

[0122] Upon subsequent log ins by the product program **110** to the American Express site when the user is not present, the product program **110** can selected the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing description, e.g. a phone number known to the product program **110**, which the product program **110** (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program **110** can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts.

[0123] To enhance security, the credential data store **120** is formed as an encrypted key/value database to protect the users' sensitive data which may include email addresses, user names, passwords, account numbers, PIN numbers, security questions and answers, and the like.

[0124] In some embodiments, data is encrypted before it is passed to the credential data store **120**, and the data is further encrypted in credential data store **120** before being stored.

[0125] To further enhance security and protect against unauthorized acts that may compromise critical operations, the financial management system **100** may, through product program **110** or through other means, implement a two-man rule algorithm, for example as may be implemented using Shamir's Secret Sharing algorithm, to require that any such critical operations be authorized by at least two persons having appropriate authority.

[0126] Reverting back to FIG. 6A, in a seventh step S**207**, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c*. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or may be supplied by another source such as an independent reporting service, or by the system administrator. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, an interest rate i_1, i_2, i_3, i_4, and/or one or more account balances. Accordingly, step S**207** is substantially similar to step S**202** described above.

[0127] Step S**207** is performed again after the transfers of financial assets in step S**206** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c* may have changed following step S**206**. In particular, the transfers of financial assets initiated in step S**206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or other user-set constraints such as maximum, minimum or target account balances.

[0128] In an eighth step S**208**, a second-step optimization algorithm is applied to the information gathered in step S**207** to ensure that the transfers of financial assets into savings accounts **400** *a*, **400** *b*, **400** *c* originally determined in step S**204** will satisfy the rules in rule data

store **130**. Accordingly, the second step optimization algorithm applied in step S**208** is similar to the first-step optimization algorithm applied in step S**203**, but relates to optimizing the second-step transfers into one or more of savings accounts, **400** *a*, **400** *b*, **400** *c* originally determined in step S**203**.

[0129] If no conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred since the first-step financial transfers were initiated in step S**206**, the second-step financial transfers may proceed as originally determined in step S**204**. However, if one or more conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred in the interim, the second-step optimization algorithm may adjust the second-step financial transfers to compensate for these changed conditions according to the rules in rule data store **130**. In this manner, steps S**207** and S**208** together serve as a verification and/or adjustment of the second-step financial transfers originally determined in step S**204**.

[0130] In a ninth step S**209**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets out from checking account **300** in amounts determined in step S**208**. In embodiments, step S**209** may include transfers into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**. In embodiments, step S**209** may involve no transfers of financial assets into any of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**, for example, due to a lack of available financial assets that may be determined in step S**208** due to a changed condition of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* between steps S**206** and S**207** or due to changes in interest rates or other user-set constraints.

[0131] In a tenth step S**210**, the process may terminate following the last instructed financial transfer in step S**209** and confirmation that the recipient accounts have received their intended transfers. For example, the financial management network **100** may periodically (e.g., daily) check the account balances and account activity in the recipient accounts to confirm that the intended transfers have been completed. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of step S**210** and step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met

after step S**210** is complete. In embodiments, a user or system administrator may manually trigger another optimization before such interval or predetermined condition is met.

[0132] Turning to FIG. 6B, the first-step optimization algorithm shown in step S**203** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0133] In a first step S**203** *a* of the first-step optimization algorithm, the product program **110** determines the available financial assets for optimization by deducting from the sum of the account balances in step S**202** (FIG. 6A) the minimum account balances for each of accounts **300**, **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in all of accounts **300**, **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**.

[0134] In a second step S**203** *b*, product program **110** determines whether sufficient financial assets are available for optimization. In embodiments, a positive, nonzero value determined in step S**203** *a* may be sufficient for optimization. In embodiments, sufficient financial assets for optimization may be determined by a rule in rule data store **130**, for example, a minimum difference in financial assets between two given accounts for a transfer of financial assets to occur. If sufficient financial assets are unavailable for optimization, the process may be terminated.

[0135] If sufficient financial assets are available for optimization, product program **110** may proceed to rank order savings accounts **400** *a*, **400** *b*, **400** *c* to determine the priority order in which available financial assets will be transferred for optimization in a third step S**203** *c*. Savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by interest rate, descending from the highest interest rate. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by a different factor.

In a fourth step S**203** *d*, two or more of savings accounts **400** *a*, **400** *b*, **400** *c* may have an identical value for a factor by which savings accounts **400** *a*, **400** *b*, **400** *c* are rank ordered, for example, an identical interest rate. In such embodiments, financial management network **100** may utilize subjective and/or objective tiebreaker factors or rules stored in rule data store **130** to determine which of the one or more savings accounts offering the same interest rate should be given priority for a given financial transfer. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or rate volatility, to name a few.

[0136] In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank-ordered by a different factor, or by a combination of factors that may or may include interest rates as described above. Such different factors may be subjective and/or objective, for example, so that one account may be rank-ordered lower than another account having a higher interest rate.

[0137] Once savings accounts **400** *a*, **400** *b*, **400** *c* have been rank ordered, the first-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or product program **110**.

[0138] Accordingly, in step **S203** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0139] If the first-ranked savings account cannot by itself receive all available financial assets for optimization, the process proceeds to a sixth step **S203** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0140] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to a seventh step **S203** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0141] In this manner, financial management system **1000** provides an optimization process with a "waterfall" configuration that first determines an available pool of financial assets for optimization, and proceeds to prepare to instruct a transfer of the maximum amount of financial assets allowed by a set of boundary conditions sequentially into accounts that are rank-ordered, for example, by interest rate. It will be understood that, in embodiments,

steps **203** *e*, **203** *f*, **203** *g*, may continue corresponding to the number of savings accounts included in a financial management system.

[0142] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to an eighth step S**203** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** *h* may override a maximum account limit applied in step S**203** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would be transferred to (or remain within) checking account **300**. The process then proceeds to step S**204** (FIG. 6A).

[0143] Turning to FIG. 6C, the first-step transfers of financial assets shown in step S**205** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0144] Following the determination in step S**204** (FIG. 6A) of the net amount of financial assets to be transferred into checking account **300** for the first step of optimization, product program **110** proceeds to determine the available amount of financial assets in savings accounts **400** *a*, **400** *b*, **400** *c* for transfer into checking account **300** in a first step S**205** *a*. Product program **110** makes such a determination by deducting from the savings account balances retrieved in step S**202** (FIG. 6A) the minimum account balances for each of accounts **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in accounts **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**. If no financial assets are available for transfer in the first-step of optimization, the process may proceed directly to step S**208** (FIG. 6A).

[0145] If sufficient financial assets are available for transfer into checking account **300** in the first-step of optimization, product program proceeds to determine the priority order in which available financial assets will be transferred out of savings accounts **400** *a*, **400** *b*, **400** *c*. The priority order for the transfer of financial assets into checking account **300** may be the reverse of the rank order determined in step S**203** *c* (FIG. 6B) so that financial assets are first pulled from the lowest-ranked savings account. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be ordered by a different factor.

[0146] In a third step S**205** *c*, product program **110** proceeds to determine if it is possible to transfer all the available financial assets for the first-step of optimization from the third rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a minimum account balance for the third-rank ordered savings account, for example, a user-defined or financial institution-defined minimum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a minimum account balance; ii) a minimum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0147] Accordingly, in step S**205** *c*, the first-step optimization algorithm determines whether the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization, the process proceeds to step S**206** (FIG. 6A).

[0148] If the third-ranked savings account cannot by itself send all available financial assets required for optimization by itself, the process proceeds to a fourth step S**203** *d* in which product program **110** determines the maximum amount of available financial assets that can be transferred out of the third-ranked savings account, and any remaining available financial assets for transfer into checking account **300** thereafter. Product program **110** then determines whether the second-ranked savings account can send all remaining financial assets required for transfer under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can send all available remaining financial assets for transfer, the process proceeds to step S**206** (FIG. 6A).

[0149] If the second-ranked savings account cannot by itself send all remaining available financial assets required for optimization by itself, the process proceeds to a fifth step S**203** *e*, in which product program **110** determines the maximum amount of remaining financial assets for transfer that can be transferred from the second-ranked savings account, and any remaining available financial assets required for optimization thereafter.

[0150] In a sixth step, product program **110** then determines that the remaining financial assets for transfer will be transferred out of the first-ranked savings account. The process then proceeds to step S**206** (FIG. 6A).

[0151] Turning to FIG. 6D, the second-step optimization algorithm shown in step S**208** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0152] The second-step optimization algorithm begins in a similar manner to the first-step optimization algorithm described above, in that product program **110** determines the available amount of financial assets for transfer in the second-step of optimization (S**208** *a*); whether sufficient financial assets are available for the transfers in the second step of optimization (S**208** *b*); rank-orders the savings accounts **400** *a*, **400** *b*, **400** *c* (S**208** *c*); and determines whether any tie-breaking rules need to be applied to complete the rank-ordering of savings accounts **400** *a*, **400** *b*, **400** *c* (S**208** *d*). Accordingly, and as described above, the second-step optimization algorithm verifies the preliminary determination of financial assets to be

transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in step S**204** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c*, or such other conditions described below, may have changed following step S**206**. In particular, the transfers of financial assets initiated in step S**206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or a change in user settings.

[0153] In the event that no intervening conditions have affected accounts **300**, **400** *a*, **400** *b*, **400** *c*, the second step transfers may proceed in the manner originally determined in step S**204** (FIG. 6A). However, if one or more conditions of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* have changed since the determination in step S**204**, product program **110** proceeds to adjust for such changes in the manner described below.

[0154] In a fifth step S**208** *e*, the second-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few, in any order, separation, and/or combination. All such rules may be set

by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0155] Accordingly, in step S**208** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0156] If the first-ranked savings account cannot by itself receive all available financial assets for optimization by itself, the process proceeds to a sixth step S**208** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0157] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to a seventh step S**208** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0158] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to an eighth step S**208** *h*, in which product program **110** determines the maximum amount of available financial assets for

optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** ***h*** may override a maximum account limit applied in step S**208** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would remain in checking account **300**. The process then proceeds to step S**209** (FIG. 6A).

[0159] In the manner described above, the optimization algorithm of financial management network **1000** is configured to adjust for changing conditions that may affect one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*. Accordingly, if such an adjustment results in one or more instructed financial transfers to be constrained by one or more boundary conditions, for example, transfer limits, one or more optimization algorithms or processes may need to be run in order to fully optimize a user's financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such additional optimization algorithms may be run immediately, after a specific period of time has elapsed, or the system may wait until the next regularly-scheduled optimization.

[0160] In other embodiments, the instructions to transfer funds between accounts **300**, **400** *a*, **400** *b*, and **400** *c* may be repeated in the midst of the optimization to overcome boundary conditions (such as maximum daily transfer limits) rather than waiting until the end to re-run the entire optimization again. For example, if the financial management network **100** determines that a transfer of $500,000 is required, but the daily transfer limit is $250,000, the financial management network **100** may perform two transfers of $250,000 each in succession on the same or on subsequent days, as part of the first or second step transfer process, rather than repeat the entire optimization process just to effect the second transfer of $250,000.

[0161] Referring additionally to FIGS. 4C and 4D, an exemplary embodiment of the application of the optimization algorithm described above is illustrated as seen by a user on the image layer **114**. In the exemplary embodiment shown, the optimization algorithm determines the optimized distribution of the user's assets by generating a rank order of one or more savings accounts according to relative interest rates. In embodiments, image layer **114** may be configured

to display relative interest rates of savings accounts other than, or in addition to, savings accounts in which a user has financial assets.

[0162] As shown in the exemplary embodiment of FIG. 4C, account **1**, account **2**, account **3**, account **4**, and account **5** are listed in descending order according to their respective interest rates. However, as shown, account **1** and account **2** have an identical interest rate of 0.90%, and account **3** and account **4** have an identical interest rate of 0.85%. In such instances, financial management network **100** may utilize subjective and/or objective factors to determine which of the one or more savings accounts offering the same interest rate should be given priority for financial transfers. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or interest rate volatility, to name a few. Such factors may be input into rule data store **130**, for example, by a system administrator. In the exemplary embodiment shown, account **1** is given priority over account **2** because account **1** does not impose a limit on account balances, whereas account **2** limits account balances to a maximum of $1,000,000. In this manner, the optimization algorithm is operable to distribute an amount of financial assets across two or more accounts so that the financial assets are deposited into a highest-ranked financial account that offers the combination of highest rates and least restrictive policies, and/or into a descending hierarchy of financial accounts subject, to rules applied by product program **110** as described above. In embodiments, the optimization algorithm or display/list of accounts may prioritize financial accounts according to a different factor.

[0163] Turning to FIG. 4D, another exemplary embodiment of a financial management system is illustrated, and includes a checking account **500** linked between a first, second, third, and fourth savings account **600** *a*, **600** *b*, **600** *c*, **600** *d*, respectively. Once the optimization algorithm has determined the optimized allocation of financial assets across available savings accounts, the product program **110** instructs savings accounts **600** *a*, **600** *b*, **600** *c*, and/or **600** *d* to initiate transfers of financial assets in one or more steps in series. In the exemplary embodiment shown, the optimization algorithm has determined that a total of $125.33 USD should be transferred into checking account **500** from savings accounts **600** *a* and **600** *b*, and a total of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d* from checking account **500**. In this manner, the optimization algorithm has determined that financial

assets in the amount of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d*, for example, to take advantage of a higher interest rate associated with those savings accounts, and that a portion ($125.33 USD) of these financial assets should be removed from savings accounts **600** *a* and **600** *b* through checking account **500**, for example, due to a lower interest rate associated with those savings accounts. The optimization algorithm has also determined the relative amounts of financial assets to be transferred from each of savings accounts **600** *a* ($0.31) and **600** *b* ($125.02 USD) for the transfer of $125.33 USD into checking account **500**, and the relative amounts of financial assets to be transferred to each of savings accounts **600** *c* ($3,558.78) and **600** *d* ($5,204.74) in accordance with various boundary conditions determined by rules stored in rule data store **130** or otherwise provided through product program **110**, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body or by product program **110**. The optimization algorithm has also determined that the net transfer of funds out of checking account **500** ought to be positive, reflecting the fact that the balance of financial assets in checking account **500** immediately prior to the initiation of the optimization exceeded a previously specified desired minimum or target balance for such checking account **500**.

[0164] In accordance with the embodiments described above, the transfers occur in two separate steps: in a first step, an amount of $0.31 USD is instructed to be transferred from savings account **600** *a* to checking account **500** in parallel with a transfer of $125.02 USD from savings account **600** *b* to the same checking account **500**; in a second step, an amount of $3,558.78 USD is instructed to be transferred into savings account **600** *c* from checking account **500** in parallel with a transfer of $5,204.74 USD into savings account **600** *d* from checking account **500**. As described above, the transfers illustrated in the second step are subject

to a second-step optimization algorithm as a check against a changed property of one or more of accounts **500**, **600** *a*, **600** *b*, **600** *c*, **600** *d*, for example, a change in account limits, a change in the amount of financial assets disposed in an account, a change in the FDIC maximum insurance limit, and/or a change in interest rates associated with savings accounts **600** *a*, **600** *b*, **600** *c*, **600** *d*.

[01650] It will be understood that any point between or during any of the steps described above, product program **110** may provide to a user through client interface **200** information relating to the processes described above substantially in real-time or with any amount of delay, for example the status of each transfer, confirmation codes and/or numbers relating to a transfer of financial assets between any of the accounts described above.

[0166] It will be understood that the steps described above are exemplary according to the present disclosure, and are not intended to be limiting. A financial management network may include greater, fewer, and/or alternative steps to those disclosed above.

[0167] In embodiments, financial management system **1000** may be configured to implement a truncated, extended, and/or modified version of the optimization process described above, for example, so that different variables of the optimization algorithm may be optionally input by the user or by product program **110**. In an exemplary embodiment, a user may designate an amount of financial assets to be optimally allocated into savings accounts **400** *a*, **400** *b*, and **400** *c* from checking account **300**. Accordingly, with additional reference to FIG. 4C, visual layer **114** may provide one or more inputs **119** to a user to designate such an amount of financial assets to be transferred, With reference to FIG. 6D, product program **110** may then proceed to optimize the distribution of the financial assets from checking account **300** designated by the user in the manner described above. In this manner, financial management system **1000** is configured to instruct an automated or intelligent transfer of funds from checking account **300** into savings accounts **400** *a*, **400** *b*, and/or **400** *c* from checking **300** in an optimized manner.

[0168] In another embodiment, and with reference to FIG. 6C, a user may designate an amount of financial assets for product program **110** to instruct to be transferred from one or more

of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300**, which may otherwise be determined by product program **110** as the "first-step" transfers in step **S204** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into checking account **300**, product program **110** institutes steps **S205** *a* through **S205** *e* as shown in FIG. 6C.

[0169] Similarly, in another embodiment, and with reference to FIG. 6D, a user may designate an amount of financial assets for product program **110** to instruct to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, from checking account **300** which may otherwise be determined by product program **110** as the "second-step" transfers in step **S208** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into savings accounts **400** *a*, **400** *b*, **400** *c*, product program **110** institutes steps **S208** *a* through **S208** *h* as shown in FIG. 6D.

[0170] In another embodiment, the product program **110** determines an optimized distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, but does not automatically effect transfers of the funds through financial management network **100**. Rather, a user may opt to implement the financial transfers necessary to achieve such a distribution without using financial management network **100**, for example, by implementing one or more electronic funds transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*, by for example, ACH, wire transfer, credit transfer, or another modality of electronic funds transfer.

[0171] While the financial management network **100** in exemplary embodiments has been described as optimizing financial assets among accounts by having one checking account acting as the hub and multiple savings accounts on the spokes, by using the inventive concepts described herein, financial systems that have different hub-spoke configurations may also be implemented and the distribution of financial assets optimized among their accounts. For

example, the financial management system **1000** may also include configurations in which there may be more than one account at the hub of the system.

[0172] For example, funds may be moved and optimized between a brokerage account and a checking account that both act as passive accounts forming the hub of the system and other accounts on the spokes that initiate transfers of funds into and request transfers of funds out from such two hub accounts. In such embodiment, the user may be able to set two different target balances for the respective checking and brokerage accounts.

[0173] Based on the inventive concepts disclosed herein, in such systems having two or more accounts at the hub, transfers may be effected automatically between these hub accounts as well as between the hub accounts and other accounts on the spokes of the financial management system **1000** to optimize the financial return among all of the accounts based upon requests initiated at the spoke accounts for transfers into and out of the hub accounts.

[0174] In other embodiments, transfers between the multiple hub accounts (for example, a checking account and a brokerage account) may be initiated automatically, or manually by a user, as a means of moving funds between the two hub accounts via transfers to and/or from the accounts on the spokes (for example, online savings accounts.) As a result of the inventive concept described herein, funds may be transferred out of one of the hub accounts in an amount that would otherwise exceed the daily transfer limits imposed by that account, since the transfer is effected as an ACH credit to the spoke account, rather than as an outbound transfer from the hub account.

[0175] In embodiments, transfers of financial funds may occur indirectly between savings accounts through an intermediary checking account as described above, or a user may opt, either within or without financial management network **100**, to transfer financial assets directly between savings accounts without passing through a checking account. In such embodiments, ACH, or a modality of electronics fund transfer other than ACH, such as wire transfer or credit transfer, may be advantageous as wire transferred- or credit-transferred financial assets are processed substantially in real-time as compared to ACH, which typically occurs over a two-to-three day period. Because such transfers may be accompanied by a fee,

such methods may be beneficial in embodiments where associated fees are relatively small relative to the amount of financial assets being transferred and the potential for enhanced interest income on these assets.

[0176] While this invention has been described in conjunction with the embodiments outlined above, many alternatives, modifications and variations will be apparent to those skilled in the art upon reading the foregoing disclosure. Accordingly, the exemplary embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention, which is defined by the following claims.

ABSTRACT

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account, by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

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First Named Inventor/Applicant Name:	Gary E. Zimmerman
Filer:	Jonathan Daniel Hall
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Patent-Appeals-and-Interference:				
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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	100	100
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Prem_Amend.pdf	142092 b077dd84293de0e71c8580a4c13448d4a4700596	no	3
Warnings:					
Information:					
2	Specification	SubSpecAnnotated.pdf	337219 539af02375aef59d107aa08d1bb2d34fe619bd67	no	48
Warnings:					
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Gary Zimmerman et al.

Filed: April 16, 2020

Assignee: Six Trees Capital LLC

Docket No.: 103771-500

Title: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

REPLY TO NOTICE OF INCOMPLETE REPLY

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This paper is filed in reply to the Notice to File Corrected Application Papers mailed April 23, 2020 and the Notice of Incomplete Reply mailed June 25, 2020.

Please enter and consider the following:

Amendments to the Specification begin on page **2** of this paper.

Remarks begin on page **3** of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace the Specification with the appended Replacement Specification filed herewith in both annotated and clean form. No new matter is added.

REMARKS

This paper is filed in reply to the Notice to File Corrected Application Papers mailed April 23, 2020, demanding a Substitute Specification and the Notice of Incomplete Reply mailed June 25, 2020. Appended are **both** an annotated and clean substitute specification. No new matter is added by entry of the amendments in the substitute specification.

Applicant authorizes any and all fees necessary for the continued prosecution of the present application to be charged to Deposit Account No. 23-1665.

Respectfully submitted,
Six Trees Capital LLC

Dated: July 21, 2020

/Jonathan D Hall/
Jonathan D. Hall
Reg. No. 67,130

CONTACT INFORMATION:
WIGGIN &DANA LLP
One Century Tower
New Haven, CT 06508-1832
Telephone: (212) 551-2616
Facsimile: (203) 782-2889
Email: JHall@wiggin.com

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FIELD

[0001] The present application is a Continuation of United States Patent Application No. 15/678,453 filed August 16, 2017 and entitled "SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS." U.S. 15/678,453 claims priority to U.S. 14/606,931 filed January 27, 2015, bearing the same title. U.S. 14/606,931 claims priority to provisional application serial no. 61/932,495 filed on January 28, 2014, bearing the same title. The contents of U.S. 15/678,453, U.S. 14/606,931 and U.S. 61/932,495 are hereby incorporated by reference herein in their entirety.

[0002] The present invention generally relates to systems, product programs and methods of using the same for optimizing the distribution of financial assets among financial accounts via a fully-automated approach that does not require user intervention on an ongoing basis. The present invention further relates to systems, product programs, and methods of using the same for automated management of financial assets, including the transfer of financial assets between financial accounts according to a set of rules that optimize the distribution of the financial assets among those accounts according to certain criteria, and subject to certain constraints.

BACKGROUND

[0003] In many economies, financial institutions, for example, banks, brokerage firms and credit unions, offer account holders interest payments at set interest rates for maintaining financial assets in accounts operated by such financial institutions. However, these set interest rates may vary over time depending on overall financial markets and each financial institution's need for deposits, and may differ from one financial institution to another. The current scheme of interest return on financial assets stored in various financial accounts provides challenges to an account holder in managing multiple accounts and optimizing the allocation of his or her financial assets among such accounts to obtain the best overall interest return, while simultaneously maximizing the degree to which such assets are kept safe via diversification and

deposit insurance schemes, such as that provided by the Federal Deposit Insurance Corporation (FDIC).

[0004] For example, many traditional "brick and mortar" financial institutions offer personal checking accounts at comparatively low or zero interest rates, but provide substantially instantaneous access to financial assets in those checking accounts. In today's world of electronic banking, such checking accounts may be configured to allow for ingoing and/or outgoing transfer of financial assets to and from other accounts via batch electronic transfers such as Automated Clearing House (ACH) transfers or wire transfers such as FedWire transfers. One feature of ACH transfers is that they may also be provided with mechanisms to reverse erroneous or unauthorized transfers within a designated period such as 60 days.

[0005] In contrast to low or zero interest bearing checking accounts, other financial institutions, such as online banking institutions, may be attractive in that they offer to a user savings accounts with higher interest rates than their "brick and mortar" counterparts, but sometimes place restrictions on access to financial assets by a user, for example, by requiring a waiting period for funds to clear or transfer, or by placing limitations on the method by which such funds may be transferred or accessed. At present, many of these online banking institutions allow for funds to be transferred into or out of their online savings accounts via ACH transfers, which they provide to their customers free of charge. In some cases, online banking institutions also provide for the ability to send or receive funds via wire transfers.

[0006] Since interest rates may be subject to frequent and/or unpredictable fluctuations among various financial institutions, account holders must continuously monitor, plan, and/or effect transfers of financial assets among their various accounts in order to gain the maximum benefit of interest rates offered across different financial accounts at a given time. Moving funds from one account to another can often require multiple steps, careful coordination, and mathematical adjustments to the amounts being transferred due to the time that elapses in the process of making such funds transfers.

[0007] Prior attempts to optimize returns on financial assets using, for example, automated cash sweep systems, have sought to allocate cash across multiple accounts so as to provide increased FDIC insurance protection, but not necessarily to optimize interest yield.

[0008] For example, there are prior art cash sweep systems that operate as "brokered deposit" systems. Such brokered deposit systems involve deposits that are sold from bank to bank. Since such deposits are characterized as a lower tier of capital from a regulatory perspective, optimization systems involving such brokered deposits are less attractive, since banks are only willing to pay below-market interest rates for such deposits.

[0009] Among the inventive concepts incorporated in the system described herein, the optimization of interest earnings among a user's accounts is structured differently from such brokered deposit systems. Since i) the user's accounts are conventional deposit accounts that they hold directly in their own names, ii) the banks cannot dictate the extent to which they receive funds, and iii) the banks do not pay a fee to receive such funds, these deposits are not considered by the regulators to be "brokered." As such, these deposits receive a higher interest rate than funds that are subject to brokered deposit systems. Optimizing the distribution of financial assets among such conventional deposit accounts thus provides higher yields to the user, while simultaneously affording the banks more favorable regulatory treatment as it relates to these deposits.

[0010] Prior art sweep systems using brokered deposit accounts are also deficient in that they may not provide full insurance to the account holder/user, since the account holder/user may have outside deposits or CDs at the same institutions that serve as program banks under the brokered deposit system, and overlapping deposits may result in the user inadvertently exceeding the deposit insurance coverage limits. On the other hand, the invention disclosed herein permits the account holder/user to easily and directly control overall limits on a per bank basis, thereby providing control and reducing the likelihood that there will be uninsured deposits.

[0011] Still further, in prior art cash sweep systems, the accounts are not directly held by the user and therefore cannot be directly accessed by the user without coordination with the cash sweep administrator. Further, if the main bank controlling, for example, the brokered deposit

network were to fail, the user would lose access to the funds being held by the related banks involved in the brokered deposits for a period of time.

[0012] Accordingly, there is a need for a financial management system that can avoid the deficiencies of prior art systems. These deficiencies are obviated by the invention described herein, in which all accounts are not only optimized, but at all times are directly accessible to the user/account holder without needing to coordinate with a third party.

[0013] The financial management system disclosed herein can determine the optimal allocation of financial assets across different financial accounts set up by a user/account holder, and then instruct or facilitate the transfer of financial assets among multiple accounts to allocate an account holder's financial assets in an optimal manner so that the user receives the maximum available amount of interest return on the financial assets disposed across the various accounts, subject to the constraints imposed by simultaneously maximizing FDIC insurance coverage, or any other such constraints that may be set by the user or administrator of the financial management network.

[0014] The disclosed financial management system can be configured to allocate an account holder's financial assets among the different accounts to be optimized subject to additional or alternative factors or constraints, such as keeping assets within insurance limits set by deposit insurance schemes or other purchased insurance products, keeping within transfer limits imposed by the banks and/or minimum and/or maximum account balances as may be required by financial institutions or desired by the user, maintaining checking account balances at specified deposit levels and/or to provide a user with other advantages that different types of financial accounts have to offer.

[0015] The disclosed financial management system can operate in an at least a partially automated manner to effect such financial transfers with little or no monitoring and/or intervention by the user/account holder and/or at no marginal cost to the user per transfer effected.

[0016] As detailed further herein, a unique and inventive concept of the underlying architecture of the system disclosed herein is that any transfers of funds required to achieve

optimized interest returns originate as requests made by online banks through the Automated Clearing House (ACH) for either an ACH credit to the user's linked checking account or as an ACH debit that pulls funds from the checking account.

[0017] Significantly, among the many inventive concepts included in the disclosed system, the checking account at the hub of the disclosed system is passive in that the checking account does not control the flow of funds into or out of the checking account. Advantageously, this arrangement avoids funds transfer limitations often imposed by brick-and-mortar banks, as well as fees that are normally charged for funds transfers from a checking account. Because transfers are handled by the online banks who assume the costs for such ACH transfers, there are no costs incurred by the user of the disclosed system.

SUMMARY

[0018] As used herein and as will be clear from the context, the term "account" may refer to the account holder's account per se, or to the associated physical interface that permits the account to be electronically accessed by either the user or the financial management system disclosed herein. Further, the terms "user," "client," "account holder," "customer," and "member" are used interchangeably in this disclosure

[0019] According to an exemplary embodiment, a financial management system is disclosed, comprising a first financial management network that connects a checking account, a first savings account, and a second savings account. The financial management network comprises at least one data store, a processor and a product program for implementing the desired transactions, as further discussed herein. The financial management network, checking account, first savings account, and second savings account are each interconnected along a data network.

[0020] In an exemplary embodiment, the checking account is associated with a first interest rate.

[0021] In an exemplary embodiment, the first savings account is associated with an interest rate that is higher than the first interest rate.

[0022] In an exemplary embodiment, the second savings account is associated with an interest rate that is equal to or higher than the first interest rate.

[0023] In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

[0024] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among one or more of the checking account, first savings account, and second savings account.

[0025] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets in one or more of the checking account, first savings account, and second savings account.

[0026] In an exemplary embodiment, the one or more rules determine an allowable amount of financial assets to be transferred between one or both of the first savings account and second savings account and the checking account.

[0027] In an exemplary embodiment, the one or more rules determine an allowable amount of transfers of financial assets between one or both of the first savings account and second savings account and the checking account over a given period of time.

[0028] In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

[0029] In an exemplary embodiment, the credentials include one or more of: a login name, a login password, an account number, a routing number, a name, an address, a telephone number, an email address, information relating to a third party financial institution, a PIN number, and answers to a one or more predetermined questions.

[0030] In an exemplary embodiment, the processor is configured to determine an allocation of financial assets among the checking account, first savings account, and second savings account, based upon a relative priority of the checking account, first savings account, and second savings account subject to the one or more rules.

[0031] According to an exemplary embodiment, a financial management network is disclosed that utilizes links that a user/account holder has established between a checking account, and one or more savings accounts. Such links are made accessible to the financial management system which can then instruct transfers between the linked accounts in the manner disclosed herein.

[0032] In an exemplary embodiment the financial management network comprises at least one data store, and one or more processors for implementing a product program as further disclosed herein. Each of the financial management network, checking account, and one or more savings accounts are interconnected along a data network.

[0033] In an exemplary embodiment, the one or more processors are configured to apply one or more rules stored in the at least one data store to instruct at least one savings account of the one or more savings accounts to initiate a transfer of financial assets between the checking account and the respective savings account.

[0034] In an exemplary embodiment, the one or more rules determine an optimal allocation of financial assets among the checking account and the one or more savings accounts.

[0035] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising a data store, a processor and a product program; (b) linking a checking account to the financial management network; (c) linking a first savings account to the checking account and to the financial management network; (d) linking a second savings account to the checking account and to the financial management network; (e) providing one or more rules to the product program; and (f) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account, first savings account, and second savings account according to a relative priority

assigned to the checking account, first savings account, and second savings account subject to the one or more rules.

[0036] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets between one or more of the first savings account and second savings account and the checking account according to an optimization algorithm.

[0037] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to the checking account from one or more of the first savings account and second savings account according to the optimization algorithm.

[0038] In an exemplary embodiment, the method further comprises the step of instructing the transfer of financial assets to one or more of the first savings account and second savings account from the checking account according to the optimization algorithm.

[0039] In an exemplary embodiment, the optimization algorithm determines a relative priority among the savings accounts at least partially based upon an interest rate associated with each of the first savings account and second savings account.

[0040] In an exemplary embodiment, the optimization algorithm determines the relative priority based at least partially on one or more factors including: an objective customer service rating, a subjective customer service rating, an associated fee, an account limit, a transfer limit, and historical interest rates or historical interest rate volatility.

[0041] According to an exemplary embodiment, a method of using a financial management system to optimize financial assets is disclosed, and comprises: (a) providing a financial management network comprising at least one data store, one or more processors and a product program; (b) linking a checking account to the financial management network; (c) linking one or more savings accounts to the checking account and to the financial management network; (d) providing one or more rules to the product program; and (e) initiating an optimization algorithm in which the product program determines an optimal allocation of financial assets among the checking account and the one or more savings accounts according to a relative priority assigned to the checking account and/or the one or more savings accounts

subject to the one or more rules, and (f) individually instructing some or all of a user's online savings banks to send cash to the checking account and/or pull cash from the checking account.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein:

[0043] FIG. 1 is a schematic diagram of a financial management system according to an exemplary embodiment of the present disclosure;

[0044] FIG. 2 is a schematic diagram illustrating linked financial accounts in the financial management system of FIG. 1.

[0045] FIG. 3 is a schematic diagram of the financial management network of FIG. 1;

[0046] FIG. 4A is a schematic view of an exemplary embodiment of the image layer of the client interface shown in FIG. 1.

[0047] FIG. 4B is a schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0048] FIG. 4C is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0049] FIG. 4D is schematic view of another exemplary embodiment of the image layer of the client interface shown in FIG. 1;

[0051] FIG. 5 is a process diagram of steps a user may take to configure the financial management system of FIG. 1 for use, according to an exemplary embodiment of the present disclosure;

[0052] FIG. 6A is an operational flow chart of the financial management system of FIG. 1 according to an exemplary embodiment of the present disclosure:

[0053] FIG. 6B-1 and FIG. 6B-2 together illustrate a flow chart of the area of detail identified in FIG. 6A as S**203**;

[0054] FIG. 6C is a flow chart of the area of detail identified in FIG. 6A as S**205**; and

[0055] FIG. 6D-1 and FIG. 6D-2 together illustrate a flow chart of the area of detail identified in FIG. 6A as S**208**.

DETAILED DESCRIPTION

[0056] In embodiments, the present invention generally relates to systems, product programs, and methods of using the same for managing multiple financial asset accounts, determining the optimal allocation of financial assets across financial accounts and the automated transfer of financial assets between a first financial account and at least one second financial account so that the financial assets are allocated in an optimal manner among the financial accounts according to certain criteria and without ongoing user intervention. As used herein, the term financial account will be understood to include a collection of one or more units of a financial asset having an associated monetary value, such as a currency. Financial accounts may be collections of financial assets that are held, maintained, and/or otherwise managed by a financial institution, such as a bank, brokerage firm or credit union. In embodiments, a financial account may be, for example, a checking account or savings account or money market fund account. As described herein, an interest rate refers to a percentage increase, or in the event of a negative interest rate, a percentage decrease, of the value of the financial assets in an account at set intervals of time, effected via deposits to the financial account called interest payments. Interest payments in financial accounts such as checking and savings accounts may be in the form of, for example, cash. In embodiments, interest payments may be in a form dependent upon the type of financial account to which they are applied, for example, yields in the form of coupons on bonds and/or bills in the case of a money market fund.

[0057] In embodiments, the present invention further relates to systems, product programs, and methods of using the same for allocating and transferring financial assets between a first financial account and at least a second financial account according to an optimization algorithm so that a user's financial assets are distributed across the financial accounts in a manner

such that the financial assets receive the maximum amount of interest payments available as determined by the respective interest rates of the financial accounts within boundary conditions or constraints that may be user-selected and/or imposed by a financial institution or other body, such as the system administrator.

[0058] In embodiments, a boundary condition may be a requirement imposed by the financial institution that a minimum amount of assets be maintained in in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a minimum account balance. In other embodiments, such boundary condition could relate to a minimum account balance that a user desires to keep in his/her account, irrespective of the requirements imposed by the financial institution. A minimum account balance may be, for example, $1 USD. Such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts.

[0059] In embodiments, a boundary condition may be a maximum amount of financial assets in one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, e.g., a maximum account balance. In embodiments, a maximum account balance may correspond to a financial asset limit independent of financial management system **1000**, for example, a government or third-party insurance limit, such as the maximum FDIC insurance limit (which currently stands at $250,000 USD, but which may change from time to time). In such embodiments, the boundary condition may be set at a margin of safety below the reference financial asset limit, for example, $249,500 USD in the case of the FDIC insurance limit for an individual account, such that principal plus accrued interest remain below the FDIC insurance limit. In embodiments, such a boundary condition may correspond to a maximum financial asset limit as specified by a third-party financial institution, for example, $1,000,000. Accordingly, such a boundary condition may be placed on one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*, for, example, by the user, by a financial institution, or by a default setting of product program **110**, and may differ across different accounts. In embodiments, such a boundary condition may correspond to the user's maximum desired balance, which may be higher or lower than the default boundary condition set by product program **110**.

[0060] In embodiments, a boundary condition may be a maximum and/or minimum amount of financial assets that may be transferred into and/or out of a given financial account, e.g., a transfer limit. In embodiments, such a boundary condition may apply to either or both incoming and outgoing transfers of financial assets on anyone of accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In embodiments, the boundary condition may apply to any given period of time, for example, one day, one week, or one month, to name a few. In embodiments, the boundary condition may apply to a limit on ingoing and/or outgoing transfers occurring in a single transfer of financial assets, for example, a maximum outbound transfer of $150,000 USD, or a maximum inbound transfer of $250,000 USD, or a maximum daily transfer limit of $500,000 USD, and may differ across different accounts.

[0061] In embodiments, a boundary condition may be a maximum number of transfers of financial assets to be initiated over a given period of time. In embodiments, such a boundary condition may correspond to a limit set by a financial institution, such as a maximum of six transfers with respect to a given financial account before associated fees are incurred.

[0062] In embodiments, a boundary condition may depend upon a different variable, for example, a minimum difference in interest rates associated with two financial accounts and/or a minimum difference in financial assets in two financial accounts before a transfer of financial assets there between is initiated.

[0063] Turning to FIG. 1, an exemplary embodiment of a financial management system is generally designated **1000**. Financial management system **1000** may be an interconnection of elements that comprise at least a financial management network **100**, a client interface **200**, and interfaces to a first financial account, such as a checking account **300**, and one or more second financial accounts, such as savings accounts **400** *a*, **400** *b*, **400** *c*. Although the presently-described exemplary embodiment includes three savings accounts, it will be understood that, in embodiments, a financial management system **1000** may be linked to any number of savings accounts and/or other types of financial accounts through their associated computer interfaces.

[0064] Financial management network **100**, client interface **200**, account interfaces **300**, **400** *a*, **400** *b*, **400** *c*, and/or any component thereof, may be interconnected along

one or more electronic data networks **1100**, for example, a wired and/or wireless data communication system such as the World Wide Web, a mobile data network, and/or local intranet, to name a few. In embodiments, a financial management system may be an interconnection of elements that comprise any number, combination, and/or separation of elements described above.

[0065] Financial management network **100** may include web servers, application servers and databases as described herein, for implementing a multi-tier web application that includes access and security restrictions between the web servers, application servers and databases. For example, the application servers and databases can be accessed on the internet only by system administrators using specialized software and virtual private networks that communicate using SSL certificates with tightly controlled access lists.

[0066] As described further herein, financial management system **1000** is configured so that financial management network **100** periodically analyzes changing conditions among the one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, and checking account **300** that may impact the optimum allocation of funds among the accounts. For example, interest rates payable by the accounts, FDIC insurance limits, maximum/minimum account limits, transfer limits and the like may periodically change for some or all of the accounts. Such changing conditions are periodically monitored by the financial management network **100** to determine the optimal allocation of a user's financial assets among checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* to receive the benefit of the highest interest rates available subject to any or all of the constraints described above in any combination or separation, subject to any and/or all of the boundary conditions described above in any combination or separation. Such optimal allocation may be made in accordance with a particular schedule or automatically when a changing condition occurs that impacts on the optimal allocation.

[0067] The financial management network may then instruct one or more of the interfaces for savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets indirectly there between, through a corresponding crediting and debiting action on checking account **300** as an intermediary to achieve this optimized distribution of the user's financial assets.

[0068] In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account **400** *a* is instructed to initiate a transfer of financial assets M_1, into checking account **300** (through a debiting action). In a separate, second step, savings account **400** *c* is instructed to initiate a transfer of financial assets M_1 into savings account **400** *c* from the checking account **300** (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

[0069] The above-described processes of financial management network **100** may be at least partially automated so that a user may attain the benefits of an optimized allocation of his or her financial assets across savings accounts **400** *a*, **400** *b*, **400** *c*, without spending a substantially increased amount of time and effort monitoring these accounts.

[0070] In embodiments, financial management system **1000** may include any number of savings accounts. Accordingly, in embodiments, financial management system **1000** may link a single savings account and a single checking account. In embodiments, financial management system may include more than one checking account. In embodiments, financial management system **1000** may include any number of financial accounts, including, for example, checking accounts, savings accounts, brokerage accounts or money market fund accounts in any combination or separation.

[0071] In the exemplary embodiment shown, checking account **300** may be maintained by a traditional banking institution, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be maintained by respective online banking institutions. Accordingly, checking account **300** may be a financial account with a low or zero value interest rate it, and savings accounts **400** *a*, **400** *b*, and **400** *c* may be a financial account with respective interest rates i_2, i_3, i_4 that are each greater than the interest rate i_1 of checking account **300**. In this manner, financial assets stored in savings accounts **400** *a*, **400** *b*, and/or **400** *c* may be supplemented by interest payments at a greater percentage than would be earned by a corresponding amount of financial assets stored in the

checking account **300** during a comparative interval of time. Interest rates i_2, i_3, i_4 may each be substantially similar to one another, may have different values, and/or may fluctuate over time so that interest rates i_2, i_3, and i_4, do not necessarily have a constant relative relationship. In embodiments, checking account **300** and savings accounts **400** *a*, **400** *b*, **400** *c* may be different financial accounts at the same third party institution that have different associated interest rates i_2, i_3, i_4. It will be understood that, in embodiments, accounts **300**, **400** *a*, **400** *b*, **400** *c* may be different types of financial accounts and may use different currencies. For example, each account may be a non-commercial account, a commercial account, a trust account, an escrow account, a non-profit, foundation or endowment account, or any other type of account that can be accessed by the financial management network **100** in accordance with this disclosure.

[0072] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* includes financial assets to which a user/account holder has access, and to which other individuals or entities may have access when authorized by a user/account holder. A user may include, for example, a single account owner, one or more joint account owners, or one or more persons acting on behalf of an at least partial account holder, such as a proxy or trustee, financial advisor, private wealth manager, and/or an automated system acting upon instructions provided by a user, being one or more of the above, to name a few. For example, the user might be an individual, a couple, a financial advisor administering the system on behalf of an individual or a couple, or a CFO or treasurer of a company who has authority to act on behalf of that entity's accounts.

[0073] As shown, savings accounts **400** *a*, **400** *b*, **400** *c* are linked across data network **1100** through checking account **300**. Referring additionally to FIG. 2, checking account **300** is linked between each of accounts **400** *a*, **400** *b*, **400** *c* so that checking account **300** may act as a hub through which financial assets may be transferred indirectly between savings accounts **400** *a*, **400** *b*, **400** *c*. The savings accounts may be viewed as connected to the checking account hub as various spokes. By using such hub-and-spoke architecture, rather than making transfers directly between savings accounts, the disclosed system is able to avoid limitations that may be imposed on transfers from savings account (e.g., certain banking regulations in the United States currently limit savings accounts to no more than 6 outbound transfers per month).

[0074] Furthermore, by using such hub-and-spoke architecture in which transfers are made through previously-verified ACH links between the checking account at the hub and the savings accounts at the spokes, the presently disclosed system is highly secure. In accordance with this architecture and as disclosed herein, the financial management network **100** does not originate funds transfers, but only acts as agent for the user/account holder, providing instructions on the user's behalf to the user's savings banks to make the funds transfers along ACH conduits that the user has setup with each online account and whose security has been previously verified by the user and the banks. For example, it is not possible for someone who may breach other robust security measures built into the disclosed financial management system **1000** and/or financial management network **100** to link their own online account and syphon funds away from the user/account holder, since the breaching party will not be able to complete the trial deposit verification procedures currently in place by banks for confirming the secure linking together of new accounts, since access to the user's checking account is also required to confirm trial deposits (or other mechanisms typically used to confirm rightful ownership of accounts).

[0075] Accordingly, financial assets may be transferred between savings accounts **400** *a*, **400** *b*, **400** *c* by using checking account **300** as an intermediary. For example, an amount of financial assets M, may be transferred between savings account **400** *a* and savings account **400** *c* in a two-step process: in a first step, financial assets M_1, are transferred from savings account **400** *a* to checking account **300**; in a separate, second step, financial assets M, are transferred to savings account **400** *c* from checking account **300**. A lapse in time between the first step and second step described above may be associated with, for example, the length of time that the checking account **300** or an intermediary funds transfer network, such as the ACH network or FedWire, takes to process the transfer in the first step, along with the amount of time that the system described herein takes to i) confirm that the first step has been completed successfully and ii) refresh user account balances and recalculate the required funds transfers for the second step, taking into account any changes in relevant account balances between the first and second step.

[0076] Each of accounts **300**, **400** *a*, **400** *b*, **400** *c* may retain financial assets so that a substantially large number of possible distributions of a user's financial assets is possible. As

described above, it may be desirable to redistribute financial assets among savings accounts **400** *a*, **400** *b*, **400** *c*, for example, to gain the benefit of a higher interest rate offered on one account, or to help maintain the level of financial assets in some or all of the accounts above a minimum value or below a maximum value, for example, to stay below an insurance program limit, such as FDIC insurance, or to stay above a minimum balance requirement (either for the avoidance of account fees or to keep an account open).

[0077] Accordingly, financial management network **100** is configured to implement an optimization algorithm to provide a user with the optimum distribution of financial assets across savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** so that the user's financial assets in financial management network **100** are eligible for the greatest amount of interest payments offered on savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, subject to the aforementioned constraints.

[0078] In embodiments, financial management network **100** may be at least partially automated so that financial management network **100** can send instructions to implement financial transfers between accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring direct input from a user. In such embodiments, financial management network **100** may be governed by a set of rules or conditions chosen by the user and/or persons or entities authorized by the user, including the system administrator. As described further herein, financial management network may be provided with a variable level of automation so that a user is afforded a degree of direct control over the operation of financial management network **100**.

[0079] Still referring to FIG. 1, client interface **200** is an access point configured to transmit data between a user and at least financial management network **100** along data network **1100**. In embodiments, client interface **200** may additionally be configured to transmit data directly between a user and checking account **300** and/or savings accounts **400** *a*, **400** *b*, and/or **400** *c*. In embodiments, client interface **200** may be, for example, a desktop or terminal computer, or may be a mobile device incorporating a computer such as a smartphone, PDA, wearable computer, laptop computer, or tablet computer. It will be understood that any device capable of connecting to data network **1100** may be configurable as a suitable client interface.

[0080] Client interface **200** includes a display **210** that is configured to provide data from financial management network **100** in a format visually accessible to a user, such as letters, numbers, symbols, and/or graphics, to name a few. In embodiments, display **210** may be, for example, a video monitor, a screen, or a projector. Client interface **200** also includes at least one input device **220** through which a user may input data to at least financial management network **100** along data network **1100**. In embodiments, input device **220** may be, for example, a keyboard, mouse, keypad, touchpad, voice recognition program, motion sensor and/or other input device capable of sending data to financial management network **100** through data network **1100** in response to a corresponding physical input and/or visual input and/or audible input. In embodiments, a client interface **200** may include additional and/or alternative features for the receipt and input of data there through. Still further, in embodiments, the financial management network **100** may provide information and receive instructions via an API, for example connected to the computer system of a financial advisor, rather than via human input. In embodiments, a display and input device may together be provided on a client interface, for example, through one or more capacitive touchscreens. In this regard, a user may access and/or input information directly to financial management network **100**, checking account **300**, and/or savings account **400**, and/or may indirectly access and/or input information to checking account **300** and/or savings account **400** via financial management network **100** through client interface **200**.

[0081] Turning to FIG. 3, financial management network **100** may comprise a product program **110**, a credential data store **120**, and rule data store **130**. In embodiments, financial management network **100** may include a single data store, or any number, combination, and/or separation of elements described above.

[0082] Product program **110** may be an application or software operable via one or more processors **112**. In embodiments, product program **110** may comprise a computing environment having one or more real and/or virtual data servers to provide network-based services to a user, such as a cloud computing environment, and provides a hub that is connected between credential data store **120**, rule data store **130**, client interface **200**, checking account **300**, and savings accounts **400** *a*, **400** *b*, **400** *c* along data network **1100**.

[0083] Referring additionally to FIG. 4A, product program **110** includes a visual layer **114** that is transmitted through data network **1100** to at least client interface **200**. Visual layer **114** may be, for example, an application layer or website configured to be displayed on display **210** of client interface **200**. In this manner, display **210** of client interface **200** and visual layer **114** of product program **110** are together configured to communicate to display data input and/or output by product program **110** in a manner accessible to the user as described above.

[0084] Accordingly, visual layer **114** may include one or more indicia **116** that may include for example, letters, numbers, colors, patterns, and/or symbols, to name a few. Visual layer **114** may also include one or more input fields **18** in which a user may input data through control device **220**, for example, letters, numbers, symbols, and/or markings such as radio buttons, check boxes, or text boxes. Data supplied from input fields **118** are transmitted to product program **110** through data network **1100**.

[0085] Credential data store **120** and rule data store **130** are repositories of data connected to product program **110** along data network **1100**. Either or both of credential data store **120** and rule data store **130** may be configured as a database, for example, a relational database or key-value data storage system. Credential data store **120** and/or rule data store **130** may be supported on one or more network-based environments that may comprise one or more virtual and/or physical servers, for example, a cloud computing environment. Credential data store **120** and rule data store **130** may be supported on a common cloud computing environment or separate cloud computing environments. In embodiments, data associated with financial management system **1000** may be stored on a single data store, two data stores as shown, or, in embodiments, any number of data stores. In embodiments, data associated with financial management system **1000** may be stored on multiple data stores, for example, for security purposes so that data is compartmentalized to inhibit unauthorized access. In embodiments, data may be transmitted to data stores **120**, **130** by a user through client interface **200** or by another path through product program **110**, for example, data input by a user or system administrator or via an API.

[0086] Credential data store **120** may include data associated with information capable of accessing any of checking account **300**, savings accounts **400** *a*, **400** *b*, **400** *c*. For example,

credentials such as account numbers, routing numbers, challenge questions that may be posed by an account interface and associated answers, login names, passwords, PIN codes, e-mail addresses, contact telephone numbers, digital certificates, and/or web cookies, to name a few of the credentials that may need to be provided to gain access to a user's checking and/or savings accounts.

[0087] Accordingly, data stored on credential data store **120** may comprise confidential information, for example, information deemed secure by a user so that only the user and/or user-approved individuals and/or entities that are intended to be privy to such information may be granted access. In embodiments, one or more electronic security measures **122** may be incorporated into the architecture of credential data store **120** and/or product program **110**, and/or may be disposed upstream of credential data store **120** along data network **1100** to inhibit unauthorized access to information associated with data stored on credential data store **120**.

[0088] Rule data store **130** may include data that determines the configuration, scheduling, and/or sequence of operations of financial management network **100** with respect to accounts **300**, **400** *a*, **400** *b*, and **400** *c*. In this manner, rule data store **130** may store data associated with information supplied by a user through client interface **200** in the form of, for example, rules, boundary conditions, schedules, limits, tasks, commands, applications, and/or action identifications, to name a few.

[0089] Data associated with information relating to boundary conditions described above with respect to one or more accounts **300**, **400** *a*, **400** *b*, **400** *c* may include, for example: i) a minimum account balance; ii) a maximum limit of financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few. All such boundary conditions may be set by a user, a user's financial advisor, a financial institution, governmental or other body or by product program **110**.

[0090] Data associated with information relating to a sequence of operations of financial management network **100** may include, for example, a length of time associated with initiating and/or restricting one or more actions of product program **110**, for example, the cessation of further transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300**, identifying the value of interest rates i_1, i_2, i_3, and/or, from information sources associated with, or independent from, third-party financial institutions, and/or providing data to a user through client interface **200**, for example, information relating to checking account **300** and/or savings accounts **400** *a*, **400** *b*, **400** *c* and/or prompting a user to input data through client interface **200**.

[0091] In this manner, program product **110** is configured to take one or more actions and/or restrict one or more actions on at least savings accounts **400** *a*, **400** *b*, **400** *c* based at least in part upon data received from rule data store **130**. Such one or more actions may include the transfer of financial assets from one or more savings accounts **400** *a*, **400** *b*, **400** *c* to checking account **300** and/or the transfer of financial assets to one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0092] In the exemplary embodiment shown, program product **110** instructs one or more of savings accounts **400** *a*, **400** *b*, **400** *c* to initiate a transfer of financial assets with respect to checking account **300**. In this manner, program product **110** is configured to initiate the transfer of financial assets between savings accounts **400** *a*, **400** *b*, **400** *c* and checking account **300** solely by initiating crediting and debiting actions on checking account **300** from the perspective of the savings accounts **400** *a*, **400** *b*, **400** *c* so that no financial transfers are required to be initiated from checking account **300**. Financial transfers may be implemented via the Automated Clearing House (ACH) network, or another method of electronic funds transfer known by those skilled in the art of the present disclosure.

[0093] In this regard, financial management network **100** may be configured such that program product **110** may initiate and/or restrict one or more actions on one or more of savings accounts **400** *a*, **400** *b*, **400** *c* based on data stored in rule data store **130**. In this manner, a set of rules may be stored in rule data store **130** in advance of a financial transfer so that the financial management network is at least partially automated to implement financial transfers based on the

rules in rule data store **130**. In this manner, financial management network **100** is configured such that a user is not required to continuously monitor and/or implement financial transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such an automated configuration allows financial management network **100** to provide instructions for the implementation of a greater number of financial transfers without direct user input than might be practical for a user to perform directly, and with greater discipline. Accordingly, financial management network **100** affords a user the benefit of an increased and/or finer control of the distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, for example, to optimize the amount of interest earned on the financial assets in accounts **300**, **400** *a*, **400** *b*, **400** *c* without requiring additional time or effort by the user, and/or to ensure that financial assets are distributed across accounts **300**, **400** *a*, **400** *b*, **400** *c* to in a manner to be maximally covered by one or more insurance programs such as FDIC. Additionally or alternatively, financial management network **100** may afford a user such control to allocate the financial assets in accounts, **300**, **400** *a*, **400** *b*, **400** *c* in an optimized manner to take advantage of other beneficial factors, for example, available insurance coverage and/or maintaining a checking account at target balance.

[0094] It will be understood that, in embodiments, a financial management system may include a first financial account having a first interest rate and one or more additional financial accounts having respective interest rates that are greater than the first interest rate. A financial management network may be associated with such financial management systems so that financial assets may be transferred between the first financial account and any or each of the other financial account(s) in any combination or separation as described above.

[0095] Referring additionally to FIG. 5, a process diagram of steps a user engages in to configure financial management system **1000** for use is illustrated in accordance with an exemplary embodiment of the present disclosure.

[0096] With additional reference to FIG. 4A, in a first step S **101**, a user accesses the product program **110** through client interface **200** so that an image layer **114** of the product program can appear on display **210** to relay data to the user. A user may access product program **110**, for example, by entering a website URL into an internet browser, selecting a

shortcut to such website URL via an icon on a smartphone, tablet computer, wearable computer or similar device, or initiating a software application.

[0097] In a second step S **102**, a user registers an account with product program **110** by providing data to product program **110** through client interface **200** over data network **1100**. In embodiments, a user may provide data to product program **110** that is associated with information such as, for example, an e-mail address, telephone number, username, password, and/or biographical information such as name, address, and/or date of birth, to name a few, as well as personal demographic information such as age, occupation, income, approximate balance of financial assets, to name a few. The data provided by the user in step S**202** is received by the product program **110** and transmitted to credential data store **120** over data network **1100** so that a user thereafter may re-submit such data, or a portion thereof, through client interface **200** to access additional features of the product program **110**. In embodiments, client interface **200** may store such data, for example, in a web browser or local storage medium, so that this data can be transferred from its stored location to product program **110** upon command by a user. In embodiments, this data may be stored on a different data store.

[0098] In embodiments, second step S**102** or another step in the configuration of financial management system **1000** may include a user providing data to product program **110** through client interface **200** associated with information needed to setup an account at more than one financial institution and/or more than one account at a single financial institution. In this manner, financial management system **1000** may be configured to facilitate a user in registering, for example, for multiple financial accounts through a single, common application and/or substantially simplified registration process as compared to individual registration processes associated with different financial institutions and/or financial accounts.

[0099] With additional reference to FIG. 4B, in a third step S**103**, data is provided to product program **110** that is associated with information related to checking account **300**. Such information may include, for example, login name and password, account numbers, routing numbers, names, addresses, third party financial institution information, PIN numbers, answers to challenge questions, a contact telephone number or email address, and/or other identification and/or access information, as well as the client's desired target checking account balance. The

data provided in step S**203** may be stored in credential data store **120** and/or rule data store **130** in any combination or separation. In embodiments, such data may be associated with, for example, public information on the third party financial institution associated with checking account **300** and/or a history of one or more transactions or statuses of checking account **300**. In embodiments, such data may be associated with information relating to, for example, account numbers, routing numbers, PIN numbers, and/or other access information associated with checking account **300**.

[0100] With additional reference to FIG. 4C, in a fourth step S**104**, data is provided to product program **110** that is associated with information related to savings accounts **400** *a*, **400** *b*, **400** *c*. Such information may be substantially similar to the types of information provided in step S**103** with regard to checking account **300**, and may accordingly be stored in credential data store **120** and/or rule data store **130** in any combination or separation as described above in step S**104**. In embodiments, a user may supply information related to any of accounts **300**, **400** *a*, **400** *b*, **400** *c* described over the course of a single connection session with product program **110**, or over any number of sessions. It will be understood that a process for configuring a financial management system for use will include any number of additional steps relating to the input of data relating to identification and/or access information of a financial account in accordance with the number of financial accounts associated with the financial management system.

[0101] In a fifth step S**105**, data is provided to product program **110** that is associated with information related to a rules for transferring assets between checking account **300** and one or more of savings accounts **400** *a*, **400** *b*, **400** *c*. Such rules may include, for example: i) a minimum or target account balance set by a user, financial institution, or other body; ii) a minimum or maximum limit of financial assets in a financial account set by a user, product program **110**, a financial institution, or other body; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time as set by a user, financial institution, or governmental or other body; iv) a maximum number of financial transfers that may be performed over a given period as set by a user, financial institution, or governmental or other body; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts as set by a user

or by product program **110**; and/or vii) a minimum difference in financial assets required before initiating a transfer of financial assets between financial accounts as set by a user or product program **110**, to name a few.

[0102] It will be understood that the data supplied to product program **110** may in whole or in part be supplied by a source other than a user, for example, a financial advisor or system administrator or by one or more default settings of product program **110**. It will be understood that the steps described above to configure financial management system **1000** may be completed in any order, combination, or separation as described above. In embodiments, such a process may include additional and/or alternative steps.

[0103] Turning to FIG. 6A, and still referring to FIG. 1, an operational flow chart of a process of financial management system **1000** is illustrated in accordance with an exemplary embodiment of the present disclosure. It will be understood that this operational flow chart may be applicable to financial management system **1000** or any other financial management system based on the inventive concepts disclosed herein.

[0104] In a first step **S201**, input data is provided to product program **110** to initiate an optimization process which will culminate in the transfer of financial assets between one or more of savings accounts **400** *a*, **400** *b*, and **400** *c* and checking account **300**. Input data may be provided substantially in real-time, for example, by a user or system administrator, and/or may be stored data in rule data store **130** to be input under certain conditions, such as a scheduled task. For example, a first instance of the optimization process described herein may be initiated by a user through client device **200**, and one or more successive instances of the optimization process may be initiated by product program **110** as a scheduled task. If no data instructing product program **110** to initiate a transfer is supplied to product program **110**, first step **S201** may be repeated. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of first step **S201** so that step **S201** can only repeat following a set interval of time and/or a predetermined condition is met. A successive iteration of first step **S201** may also be initiated by a user or system administrator on an ad hoc basis. For example, a client or his/her financial advisor may access the financial management network **100** to manually initiate an optimization in between scheduled optimizations.

[0105] If an optimization process is to be initiated, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in a second step S**202**. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or or may be supplied by another source such as an independent reporting service or by the system administrator or via an API (application program interface). Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, a corresponding interest rate i_1, i_2, i_3, i_4, and/or one or more account balances.

[0106] In a third step S**203**, processor **112** of product program **110** applies one or more rules from rule data store **130** to the data obtained from the one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* in step S**202** to determine the optimal allocation of financial assets across financial accounts **300**, **400** *a*, **400** *b*, **400** *c* in a first-step optimization algorithm, as described further herein. Accordingly, step S**203** yields a set of data relating to an allocation of financial assets that may be different from the allocation of financial assets retrieved from step S**202**.

[0107] In a fourth step S**204**, product program **110** determines the net amount of transfers of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c* in order to arrive at the optimized allocation of financial assets determined in step S**203**. As described above, in embodiments, financial management system **1000** is configured to instruct transfers of financial assets in two steps: a first set of one or more transfers of financial assets from any one or more of savings accounts **400** *a*, **400** *b*, **400** *c*; and a second set of one or more transfers of financial assets into any one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**.

[0108] Accordingly, in a fifth step S**205**, product program **110** determines the optimum set of transfers of financial assets to be initiated from one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, into checking account **300** as described further herein.

[0109] In a sixth step S**206**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets into checking account **300** in amounts determined in step S**205**. In embodiments, step S**206** may include transfers from one or more of

savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, step S**206** may involve no transfers of financial assets from any of savings accounts **400** *a*, **400** *b*, **400** *c*, as described further herein.

[0110] In embodiments, instructions provided to savings accounts **400** *a*, **400** *b*, **400** *c* may require the product program **110** to retrieve credentials from credential data store **120** to first access savings accounts **400** *a*, **400** *b*, **400** *c*. In embodiments, checking account **300** may also be accessed in a similar manner. In embodiments, one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may involve more than one level or layer of credential input on the part of product program **110**, e.g., to satisfy multi-level or multi-factor authentication protocols.

[0111] For example, some financial institutions and banks will recognize a login from an unauthorized client computer and prompt the user/account holder to provide further authentication in addition to the account holder's username and password before allowing access to the account holder's account. Such multi-factor authentication protocols may involve a bank's website indicating that it will be transmitting a pre-determined or random authentication code to the user's cell phone by voice or text, or by email to the user's email address, which cell phone number and email address the user or system administrator has previously entered in his user data on the bank's website when the account was initially set up. The user must then retrieve the transmitted code from his landline phone or cell phone or from his email provider within a preset limited time period and correctly enter the code on the bank's website before being permitted to continue with the user login.

[0112] Comparably, a financial institution that manages one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may detect access to an account by a new origination point along data network **1100**, e.g. a point other than client device **200**, and may require a response, answer, and/or code to be input in response to an inquiry before permitting connection of an account to the financial management network **100**. Typically, such a response, answer, and/or code is provided by a user through client device **200** or another device connected to the relevant account.

[0113] However, in such a case, product program **110** may be configured to communicate directly with one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* as a proxy for the user, for example, to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses. Such communication between product program **110** and one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few. Accordingly, product program **110** (in certain embodiments, via a selected third-party vendor) may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts **300**, **400** *a* **400** *b*, **400** *c* on behalf of the account holder, without intervention by the account holder or user.

[0114] In particular, with respect to multi-factor authentication, the financial management network **100** implements unique and inventive concepts that permit it to act as proxy for the user and respond to any multi-factor authentication that may be required for account access in a way that does not require user intervention, while simultaneously maintaining rigid security measures to avoid unauthorized access to the user's accounts by other parties. For this purpose, and to the extent necessary, a limited power of attorney is provided by the user/account holder to the financial management network **100** to permit the administrators of the financial management network **100** to act as agent for the user/account holder.

[0115] As described herein, the one or more processors of the financial management network **100** perform multiple processes that permit an account holder to access account information across his various accounts and that permit the financial management network **100** to interface with banks holding the one or more user accounts, and in particular to permit the financial management network **100** to login as the user by using the user's credentials stored in credential data store **120**. Once logged into a user's account, these processes can verify the accounts that are linked, fetch balances, instruct transfers, prepare transaction histories, retrieve 1099-INT tax forms or other client communications provided by the associated banks.

[0116] To reduce latencies and provide a high performance processing framework, the financial management network **100** may be configured to run multiple processes in parallel. For example, multiple processes may be executed to provide headless web browsers that are used to navigate to and interact with the websites of multiple banks at the same time, for example to fetch balances, send funds transfer instructions, retrieve year-end 1099-INT tax statements, and the like.

[0117] As noted above, processes may also be implemented by the financial management network **100** to handle multi-factor authentication required by some banks and financial institutions before permitting account access, without user intervention. To enable the financial management network **100** to directly respond to a multi-factor authentication request within the user present, the following procedure is implemented.

[0118] When a user first links an account to the financial management network **100**, the user supplies their username and password to the financial management network **100**, and a process within the financial management network **100** controls a web browser and uses the user's credentials to attempt to log in to the bank's website holding the account.

[0119] If the bank responds to the log in attempt by issuing challenge questions or by requiring additional multi-factor authentication such as entry of a code sent to the user, then the financial management network **100** will prompt the user for the additional information that the bank website has requested.

[0120] For example, after a user links an American Express savings account to the financial management network **100** for the first time, the financial management network **100** will attempt to log in to the American Express savings account using the provided username and password.

[0121] If the web page indicates that additional multi-factor authentication is required, for example, input of a code that is sent to the user's cell phone or email address, then a process running within the product program **110** will present to the user the list of email addresses and/or phone numbers that is stored on the American Express site to which the authentication code can be sent, and will prompt the user to select one of the listed addresses or phone numbers. The

process then passes the selected option to the American Express site so that the site sends the code using the selected option. Once received by the user at his selected address or phone number, the user enters the code into the financial management network **100**, which then forwards the code to the American Express site to respond to the multi-factor authentication request and gain access to the site. Once the product program **110** has access to the American Express site, it adds to the user data stored by the site an additional multi-factor authentication endpoint, e.g., an additional phone number or email address, that is accessible either directly by the product program **110** or, in some cases, via a third-party software service provider, and to which subsequent authentication codes may be sent.

[0122] Upon subsequent log ins by the product program **110** to the American Express site when the user is not present, the product program **110** can selected the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing description, e.g. a phone number known to the product program **110**, which the product program **110** (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program **110** can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts.

[0123] To enhance security, the credential data store **120** is formed as an encrypted key/value database to protect the users' sensitive data which may include email addresses, user names, passwords, account numbers, PIN numbers, security questions and answers, and the like.

[0124] In some embodiments, data is encrypted before it is passed to the credential data store **120**, and the data is further encrypted in credential data store **120** before being stored.

[0125] To further enhance security and protect against unauthorized acts that may compromise critical operations, the financial management system **100** may, through product program **110** or through other means, implement a two-man rule algorithm, for example as may be implemented using Shamir's Secret Sharing algorithm, to require that any such critical operations be authorized by at least two persons having appropriate authority.

[0126] Reverting back to FIG. 6A, in a seventh step **S207**, product program **110** retrieves data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c*. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be transferred over data network **1100** directly from a third party financial institution, and/or may be supplied by another source such as an independent reporting service, or by the system administrator. Data relating to one or more of accounts **300**, **400** *a*, **400** *b*, and/or **400** *c* may be associated with information such as, for example, an interest rate i_1, i_2, i_3, i_4, and/or one or more account balances. Accordingly, step **S207** is substantially similar to step **S202** described above.

[0127] Step **S207** is performed again after the transfers of financial assets in step **S206** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c* may have changed following step **S206**. In particular, the transfers of financial assets initiated in step **S206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or other user-set constraints such as maximum, minimum or target account balances.

[0128] In an eighth step **S208**, a second-step optimization algorithm is applied to the information gathered in step **S207** to ensure that the transfers of financial assets into savings accounts **400** *a*, **400** *b*, **400** *c* originally determined in step **S204** will satisfy the rules in rule data store **130**. Accordingly, the second step optimization algorithm applied in step **S208** is similar to the first-step optimization algorithm applied in step **S203**, but relates to optimizing the second-step transfers into one or more of savings accounts, **400** *a*, **400** *b*, **400** *c* originally determined in step **S203**.

[0129] If no conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred since the first-step financial transfers were initiated in step **S206**, the second-step financial transfers may proceed as originally determined in step **S204**. However, if one or more conditions affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c* have occurred in the

interim, the second-step optimization algorithm may adjust the second-step financial transfers to compensate for these changed conditions according to the rules in rule data store **130**. In this manner, steps S**207** and S**208** together serve as a verification and/or adjustment of the second-step financial transfers originally determined in step S**204**.

[0130] In a ninth step S**209**, one or more of savings accounts **400** *a*, **400** *b*, **400** *c* are instructed to initiate a transfer of financial assets out from checking account **300** in amounts determined in step S**208**. In embodiments, step S**209** may include transfers into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**. In embodiments, step S**209** may involve no transfers of financial assets into any of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300**, for example, due to a lack of available financial assets that may be determined in step S**208** due to a changed condition of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* between steps S**206** and S**207** or due to changes in interest rates or other user-set constraints.

[0131] In a tenth step S**210**, the process may terminate following the last instructed financial transfer in step S**209** and confirmation that the recipient accounts have received their intended transfers. For example, the financial management network **100** may periodically (e.g., daily) check the account balances and account activity in the recipient accounts to confirm that the intended transfers have been completed. In embodiments, a timer and/or true/false condition switch may be disposed between successive iterations of step S**210** and step S**201** so that step S**201** can only repeat following a set interval of time and/or a predetermined condition is met after step S**210** is complete. In embodiments, a user or system administrator may manually trigger another optimization before such interval or predetermined condition is met.

[0132] Turning to FIG. 6B, the first-step optimization algorithm shown in step S**203** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0133] In a first step S**203** *a* of the first-step optimization algorithm, the product program **110** determines the available financial assets for optimization by deducting from the sum of the account balances in step S**202** (FIG. 6A) the minimum account balances for each of

accounts **300**, **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in all of accounts **300**, **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**.

[0134] In a second step S**203** *b*, product program **110** determines whether sufficient financial assets are available for optimization. In embodiments, a positive, nonzero value determined in step S**203** *a* may be sufficient for optimization. In embodiments, sufficient financial assets for optimization may be determined by a rule in rule data store **130**, for example, a minimum difference in financial assets between two given accounts for a transfer of financial assets to occur. If sufficient financial assets are unavailable for optimization, the process may be terminated.

[0135] If sufficient financial assets are available for optimization, product program **110** may proceed to rank order savings accounts **400** *a*, **400** *b*, **400** *c* to determine the priority order in which available financial assets will be transferred for optimization in a third step S**203** *c*. Savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by interest rate, descending from the highest interest rate. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank ordered by a different factor.

In a fourth step S**203** *d*, two or more of savings accounts **400** *a*, **400** *b*, **400** *c* may have an identical value for a factor by which savings accounts **400** *a*, **400** *b*, **400** *c* are rank ordered, for example, an identical interest rate. In such embodiments, financial management network **100** may utilize subjective and/or objective tiebreaker factors or rules stored in rule data store **130** to determine which of the one or more savings accounts offering the same interest rate should be given priority for a given financial transfer. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or rate volatility, to name a few.

[0136] In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be rank-ordered by a different factor, or by a combination of factors that may or may include interest rates as described above. Such different factors may be subjective and/or objective, for example, so that one account may be rank-ordered lower than another account having a higher interest rate.

[0137] Once savings accounts **400** *a*, **400** *b*, **400** *c* have been rank ordered, the first-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or product program **110**.

[0138] Accordingly, in step S**203** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**204** (FIG. 6A).

[0139] If the first-ranked savings account cannot by itself receive all available financial assets for optimization, the process proceeds to a sixth step S**203** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the first-ranked savings account, and any remaining available financial

assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0140] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to a seventh step **S203** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step **S204** (FIG. 6A).

[0141] In this manner, financial management system **1000** provides an optimization process with a "waterfall" configuration that first determines an available pool of financial assets for optimization, and proceeds to prepare to instruct a transfer of the maximum amount of financial assets allowed by a set of boundary conditions sequentially into accounts that are rank-ordered, for example, by interest rate. It will be understood that, in embodiments, steps **203** *e*, **203** *f*, **203** *g*, may continue corresponding to the number of savings accounts included in a financial management system.

[0142] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization, the process proceeds to an eighth step **S203** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step **S203** *h* may override a maximum account limit applied in step **S203** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of

savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would be transferred to (or remain within) checking account **300**. The process then proceeds to step S**204** (FIG. 6A).

[0143] Turning to FIG. 6C, the first-step transfers of financial assets shown in step S**205** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0144] Following the determination in step S**204** (FIG. 6A) of the net amount of financial assets to be transferred into checking account **300** for the first step of optimization, product program **110** proceeds to determine the available amount of financial assets in savings accounts **400** *a*, **400** *b*, **400** *c* for transfer into checking account **300** in a first step S**205** *a*. Product program **110** makes such a determination by deducting from the savings account balances retrieved in step S**202** (FIG. 6A) the minimum account balances for each of accounts **400** *a*, **400** *b*, **400** *c* according to the rules stored in rule data store **130**. Accordingly, in step S**203** *a*, product program **110** determines the remaining financial assets in accounts **400** *a*, **400** *b*, **400** *c* after the respective minimum account balances have been satisfied. In embodiments, minimum account balances may additionally or alternatively be input by a user through client device **200**, a system administrator, or by a default setting of product program **110**. If no financial assets are available for transfer in the first-step of optimization, the process may proceed directly to step S**208** (FIG. 6A).

[0145] If sufficient financial assets are available for transfer into checking account **300** in the first-step of optimization, product program proceeds to determine the priority order in which available financial assets will be transferred out of savings accounts **400** *a*, **400** *b*, **400** *c*. The priority order for the transfer of financial assets into checking account **300** may be the reverse of the rank order determined in step S**203** *c* (FIG. 6B) so that financial assets are first pulled from the lowest-ranked savings account. In embodiments, savings accounts **400** *a*, **400** *b*, **400** *c* may be ordered by a different factor.

[0146] In a third step S**205** *c*, product program **110** proceeds to determine if it is possible to transfer all the available financial assets for the first-step of optimization from the third rank-

ordered savings account according to the rules in rule data store **130** in a fifth step **S203** *e*. In an exemplary embodiment, such rules may comprise a minimum account balance for the third-rank ordered savings account, for example, a user-defined or financial institution-defined minimum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a minimum account balance; ii) a minimum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts, to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0147] Accordingly, in step **S205** *c*, the first-step optimization algorithm determines whether the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can send all available financial assets required for transfer in the first step of optimization, the process proceeds to step **S206** (FIG. 6A).

[0148] If the third-ranked savings account cannot by itself send all available financial assets required for optimization by itself, the process proceeds to a fourth step **S203** *d* in which product program **110** determines the maximum amount of available financial assets that can be transferred out of the third-ranked savings account, and any remaining available financial assets for transfer into checking account **300** thereafter. Product program **110** then determines whether the second-ranked savings account can send all remaining financial assets required for transfer under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can send all available remaining financial assets for transfer, the process proceeds to step **S206** (FIG. 6A).

[0149] If the second-ranked savings account cannot by itself send all remaining available financial assets required for optimization by itself, the process proceeds to a fifth step **S203** *e*, in which product program **110** determines the maximum amount of remaining financial assets for transfer that can be transferred from the second-ranked savings account, and any remaining available financial assets required for optimization thereafter.

[0150] In a sixth step, product program **110** then determines that the remaining financial assets for transfer will be transferred out of the first-ranked savings account. The process then proceeds to step **S206** (FIG. 6A).

[0151] Turning to FIG. 6D, the second-step optimization algorithm shown in step **S208** of FIG. 6A will be described in detail according to an exemplary embodiment of the present disclosure.

[0152] The second-step optimization algorithm begins in a similar manner to the first-step optimization algorithm described above, in that product program **110** determines the available amount of financial assets for transfer in the second-step of optimization (**S208** *a*); whether sufficient financial assets are available for the transfers in the second step of optimization (**S208** *b*); rank-orders the savings accounts **400** *a*, **400** *b*, **400** *c* (**S208** *c*); and determines whether any tie-breaking rules need to be applied to complete the rank-ordering of savings accounts **400** *a*, **400** *b*, **400** *c* (**S208** *d*). Accordingly, and as described above, the second-step optimization algorithm verifies the preliminary determination of financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in step **S204** because one or more conditions of any of accounts **300**, **400** *a*, **400** *b*, **400** *c*, or such other conditions described below, may have changed following step **S206**. In particular, the transfers of financial assets initiated in step **S206** may take a period of time to be processed, for example, one or more days, so that intervening conditions may have occurred, for example, a change in one or more of interest rates i_1, i_2, i_3, a change in the amount of financial assets in an account such as checking account **300** due to, for example, a deposit or withdrawal, or another change in a condition affecting one or more of accounts, **300**, **400** *a*, **400** *b*, **400** *c*, for example, a change in the FDIC insurance limit or a change in user settings.

[0153] In the event that no intervening conditions have affected accounts **300**, **400** *a*, **400** *b*, **400** *c*, the second step transfers may proceed in the manner originally determined in step S**204** (FIG. 6A). However, if one or more conditions of one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c* have changed since the determination in step S**204**, product program **110** proceeds to adjust for such changes in the manner described below.

[0154] In a fifth step S**208** *e*, the second-step optimization algorithm determines if it is possible to transfer all the available financial assets for optimization determined in step S**203** *a* into the first rank-ordered savings account according to the rules in rule data store **130** in a fifth step S**203** *e*. In an exemplary embodiment, such rules may comprise a maximum account balance for a given account, for example, the FDIC insurance limit and/or a user-defined maximum account balance. In other embodiments, the rules applied from rule data store **130** may include, for example: for example: i) a maximum account balance; ii) a maximum limit of financial assets in a financial account, such as the maximum FDIC insurance limit; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few, in any order, separation, and/or combination. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body, or by product program **110**.

[0155] Accordingly, in step S**208** *e*, the first-step optimization algorithm determines whether the first-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the first-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0156] If the first-ranked savings account cannot by itself receive all available financial assets for optimization by itself, the process proceeds to a sixth step S**208** *f* in which product program **110** determines the maximum amount of available financial assets for optimization that

can be transferred into the first-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the second-ranked savings account can receive all available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the second-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0157] If the second-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to a seventh step S**208** *g*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the second-ranked savings account, and any remaining available financial assets for optimization thereafter. Product program **110** then determines whether the third-ranked savings account can receive all remaining available financial assets for optimization under the rules in rule data store **130**. If product program **110** determines that the third-ranked savings account can receive all available financial assets for optimization, the process proceeds to step S**209** (FIG. 6A).

[0158] If the third-ranked savings account cannot by itself receive all remaining available financial assets for optimization by itself, the process proceeds to an eighth step S**208** *h*, in which product program **110** determines the maximum amount of available financial assets for optimization that can be transferred into the third-ranked savings account, and that any remaining available financial assets for optimization thereafter will be transferred into the first-ranked savings account. In this manner, step S**203** *h* may override a maximum account limit applied in step S**208** *e*. In embodiments, product program **110** may be configured such that the available financial assets for optimization do not exceed the maximum allowable account balances of savings accounts **400** *a*, **400** *b*, **400** *c* according to the rules in rule data store **130**, such that any excess funds would remain in checking account **300**. The process then proceeds to step S**209** (FIG. 6A).

[0159] In the manner described above, the optimization algorithm of financial management network **1000** is configured to adjust for changing conditions that may affect one or more of accounts **300**, **400** *a*, **400** *b*, **400** *c*. Accordingly, if such an adjustment results in one or

more instructed financial transfers to be constrained by one or more boundary conditions, for example, transfer limits, one or more optimization algorithms or processes may need to be run in order to fully optimize a user's financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*. Such additional optimization algorithms may be run immediately, after a specific period of time has elapsed, or the system may wait until the next regularly-scheduled optimization.

[0160] In other embodiments, the instructions to transfer funds between accounts **300**, **400** *a*, **400** *b*, and **400** *c* may be repeated in the midst of the optimization to overcome boundary conditions (such as maximum daily transfer limits) rather than waiting until the end to re-run the entire optimization again. For example, if the financial management network **100** determines that a transfer of $500,000 is required, but the daily transfer limit is $250,000, the financial management network **100** may perform two transfers of $250,000 each in succession on the same or on subsequent days, as part of the first or second step transfer process, rather than repeat the entire optimization process just to effect the second transfer of $250,000.

[0161] Referring additionally to FIGS. 4C and 4D, an exemplary embodiment of the application of the optimization algorithm described above is illustrated as seen by a user on the image layer **114**. In the exemplary embodiment shown, the optimization algorithm determines the optimized distribution of the user's assets by generating a rank order of one or more savings accounts according to relative interest rates. In embodiments, image layer **114** may be configured to display relative interest rates of savings accounts other than, or in addition to, savings accounts in which a user has financial assets.

[0162] As shown in the exemplary embodiment of FIG. 4C, account **1**, account **2**, account **3**, account **4**, and account **5** are listed in descending order according to their respective interest rates. However, as shown, account **1** and account **2** have an identical interest rate of 0.90%, and account **3** and account **4** have an identical interest rate of 0.85%. In such instances, financial management network **100** may utilize subjective and/or objective factors to determine which of the one or more savings accounts offering the same interest rate should be given priority for financial transfers. Such factors may include, for example, objective or subjective customer service ratings, associated fees and/or account or transfer limits, and/or historical interest rates or interest rate volatility, to name a few. Such factors may be input into rule data

store **130**, for example, by a system administrator. In the exemplary embodiment shown, account **1** is given priority over account **2** because account **1** does not impose a limit on account balances, whereas account **2** limits account balances to a maximum of $1,000,000. In this manner, the optimization algorithm is operable to distribute an amount of financial assets across two or more accounts so that the financial assets are deposited into a highest-ranked financial account that offers the combination of highest rates and least restrictive policies, and/or into a descending hierarchy of financial accounts subject, to rules applied by product program **110** as described above. In embodiments, the optimization algorithm or display/list of accounts may prioritize financial accounts according to a different factor.

[0163] Turning to FIG. 4D, another exemplary embodiment of a financial management system is illustrated, and includes a checking account **500** linked between a first, second, third, and fourth savings account **600** *a*, **600** *b*, **600** *c*, **600** *d*, respectively. Once the optimization algorithm has determined the optimized allocation of financial assets across available savings accounts, the product program **110** instructs savings accounts **600** *a*, **600** *b*, **600** *c*, and/or **600** *d* to initiate transfers of financial assets in one or more steps in series. In the exemplary embodiment shown, the optimization algorithm has determined that a total of $125.33 USD should be transferred into checking account **500** from savings accounts **600** *a* and **600** *b*, and a total of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d* from checking account **500**. In this manner, the optimization algorithm has determined that financial assets in the amount of $8,763.52 USD should be transferred into savings accounts **600** *c* and **600** *d*, for example, to take advantage of a higher interest rate associated with those savings accounts, and that a portion ($125.33 USD) of these financial assets should be removed from savings accounts **600** *a* and **600** *b* through checking account **500**, for example, due to a lower interest rate associated with those savings accounts. The optimization algorithm has also determined the relative amounts of financial assets to be transferred from each of savings accounts **600** *a* ($0.31) and **600** *b* ($125.02 USD) for the transfer of $125.33 USD into checking account **500**, and the relative amounts of financial assets to be transferred to each of savings accounts **600** *c* ($3,558.78) and **600** *d* ($5,204.74) in accordance with various boundary conditions determined by rules stored in rule data store **130** or otherwise provided through product program **110**, for example: i) a minimum account balance; ii) a maximum limit of

financial assets in a financial account; iii) a maximum and/or minimum transfer limit of financial assets to be transferred in a given financial transfer or within a specific period of time; iv) a maximum number of financial transfers that may be performed over a given period; v) a minimum difference in interest rates required before initiating a transfer of financial assets between financial accounts; and/or vii) a minimum difference in financial assets required to initiate a transfer of financial assets between financial accounts to name a few. All such rules may be set by a user, a user's financial advisor, a financial institution, or governmental or other body or by product program **110**. The optimization algorithm has also determined that the net transfer of funds out of checking account **500** ought to be positive, reflecting the fact that the balance of financial assets in checking account **500** immediately prior to the initiation of the optimization exceeded a previously specified desired minimum or target balance for such checking account **500**.

[0164] In accordance with the embodiments described above, the transfers occur in two separate steps: in a first step, an amount of $0.31 USD is instructed to be transferred from savings account **600** *a* to checking account **500** in parallel with a transfer of $125.02 USD from savings account **600** *b* to the same checking account **500**; in a second step, an amount of $3,558.78 USD is instructed to be transferred into savings account **600** *c* from checking account **500** in parallel with a transfer of $5,204.74 USD into savings account **600** *d* from checking account **500**. As described above, the transfers illustrated in the second step are subject to a second-step optimization algorithm as a check against a changed property of one or more of accounts **500**, **600** *a*, **600** *b*, **600** *c*, **600** *d*, for example, a change in account limits, a change in the amount of financial assets disposed in an account, a change in the FDIC maximum insurance limit, and/or a change in interest rates associated with savings accounts **600** *a*, **600** *b*, **600** *c*, **600** *d*.

[01650] It will be understood that any point between or during any of the steps described above, product program **110** may provide to a user through client interface **200** information relating to the processes described above substantially in real-time or with any amount of delay, for example the status of each transfer, confirmation codes and/or numbers relating to a transfer of financial assets between any of the accounts described above.

[0166] It will be understood that the steps described above are exemplary according to the present disclosure, and are not intended to be limiting. A financial management network may include greater, fewer, and/or alternative steps to those disclosed above.

[0167] In embodiments, financial management system **1000** may be configured to implement a truncated, extended, and/or modified version of the optimization process described above, for example, so that different variables of the optimization algorithm may be optionally input by the user or by product program **110**. In an exemplary embodiment, a user may designate an amount of financial assets to be optimally allocated into savings accounts **400** *a*, **400** *b*, and **400** *c* from checking account **300**. Accordingly, with additional reference to FIG. 4C, visual layer **114** may provide one or more inputs **119** to a user to designate such an amount of financial assets to be transferred, With reference to FIG. 6D, product program **110** may then proceed to optimize the distribution of the financial assets from checking account **300** designated by the user in the manner described above. In this manner, financial management system **1000** is configured to instruct an automated or intelligent transfer of funds from checking account **300** into savings accounts **400** *a*, **400** *b*, and/or **400** *c* from checking **300** in an optimized manner.

[0168] In another embodiment, and with reference to FIG. 6C, a user may designate an amount of financial assets for product program **110** to instruct to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of financial assets to be transferred from one or more of savings accounts **400** *a*, **400** *b*, **400** *c* into checking account **300**, which may otherwise be determined by product program **110** as the "first-step" transfers in step **S204** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into checking account **300**, product program **110** institutes steps **S205** *a* through **S205** *e* as shown in FIG. 6C.

[0169] Similarly, in another embodiment, and with reference to FIG. 6D, a user may designate an amount of financial assets for product program **110** to instruct to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c* from checking account **300** in an optimized manner. In this manner, a user may directly supply to product program **110** the amount of

financial assets to be transferred into one or more of savings accounts **400** *a*, **400** *b*, **400** *c*, from checking account **300** which may otherwise be determined by product program **110** as the "second-step" transfers in step S**208** (FIG. 6A). Once a user has supplied the amount of financial assets to be instructed for transfer into savings accounts **400** *a*, **400** *b*, **400** *c*, product program **110** institutes steps S**208** *a* through S**208** *h* as shown in FIG. 6D.

[0170] In another embodiment, the product program **110** determines an optimized distribution of financial assets across accounts **300**, **400** *a*, **400** *b*, **400** *c*, but does not automatically effect transfers of the funds through financial management network **100**. Rather, a user may opt to implement the financial transfers necessary to achieve such a distribution without using financial management network **100**, for example, by implementing one or more electronic funds transfers among accounts **300**, **400** *a*, **400** *b*, **400** *c*, by for example, ACH, wire transfer, credit transfer, or another modality of electronic funds transfer.

[0171] While the financial management network **100** in exemplary embodiments has been described as optimizing financial assets among accounts by having one checking account acting as the hub and multiple savings accounts on the spokes, by using the inventive concepts described herein, financial systems that have different hub-spoke configurations may also be implemented and the distribution of financial assets optimized among their accounts. For example, the financial management system **1000** may also include configurations in which there may be more than one account at the hub of the system.

[0172] For example, funds may be moved and optimized between a brokerage account and a checking account that both act as passive accounts forming the hub of the system and other accounts on the spokes that initiate transfers of funds into and request transfers of funds out from such two hub accounts. In such embodiment, the user may be able to set two different target balances for the respective checking and brokerage accounts.

[0173] Based on the inventive concepts disclosed herein, in such systems having two or more accounts at the hub, transfers may be effected automatically between these hub accounts as well as between the hub accounts and other accounts on the spokes of the financial management

system **1000** to optimize the financial return among all of the accounts based upon requests initiated at the spoke accounts for transfers into and out of the hub accounts.

[0174] In other embodiments, transfers between the multiple hub accounts (for example, a checking account and a brokerage account) may be initiated automatically, or manually by a user, as a means of moving funds between the two hub accounts via transfers to and/or from the accounts on the spokes (for example, online savings accounts.) As a result of the inventive concept described herein, funds may be transferred out of one of the hub accounts in an amount that would otherwise exceed the daily transfer limits imposed by that account, since the transfer is effected as an ACH credit to the spoke account, rather than as an outbound transfer from the hub account.

[0175] In embodiments, transfers of financial funds may occur indirectly between savings accounts through an intermediary checking account as described above, or a user may opt, either within or without financial management network **100**, to transfer financial assets directly between savings accounts without passing through a checking account. In such embodiments, ACH, or a modality of electronics fund transfer other than ACH, such as wire transfer or credit transfer, may be advantageous as wire transferred- or credit-transferred financial assets are processed substantially in real-time as compared to ACH, which typically occurs over a two-to-three day period. Because such transfers may be accompanied by a fee, such methods may be beneficial in embodiments where associated fees are relatively small relative to the amount of financial assets being transferred and the potential for enhanced interest income on these assets.

[0176] While this invention has been described in conjunction with the embodiments outlined above, many alternatives, modifications and variations will be apparent to those skilled in the art upon reading the foregoing disclosure. Accordingly, the exemplary embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention, which is defined by the following claims.

ABSTRACT

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account, by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/850,150

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	3 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	785		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/850,150	04/16/2020	3693	785	103771-500	3	1

CONFIRMATION NO. 1088

UPDATED FILING RECEIPT

27267
WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

OC000000118641979

Date Mailed: 07/23/2020

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Gary E. Zimmerman, New York, NY;
Richard D. Wu, Chicago, IL;
Gabriel Jorge Gironda, Austin, TX;

Applicant(s)

Six Trees Capital LLC, New York, NY;

Assignment For Published Patent Application

Six Trees Capital LLC, New York, NY

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 15/678,453 08/16/2017 PAT 10657504
which is a DIV of 14/606,931 01/27/2015 PAT 10268995
which claims benefit of 61/932,495 01/28/2014

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/22/2020
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/850,150**
Projected Publication Date: Request for Non-Publication Acknowledged
Non-Publication Request: Yes
Early Publication Request: No
** **SMALL ENTITY** **
Title

SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

Preliminary Class

705

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative,

this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 06/11/2021

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3699	

NOTIFICATION DATE	DELIVERY MODE
06/11/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@wiggin.com

Office Action Summary	Application No. 16/850,150	Applicant(s) Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3699	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 16 April 2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-3 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-3 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Status of Claims

This action is in reply to the application filed on 4-16-2020. Claims 1-3 are currently pending and have been examined.

Specification Objection

The specification of the disclosure is objected to due to the following discrepancies: Paragraph 122 recites, "Upon subsequent log ins by the product program 110 to the American Express site when the user is not present, the product program 110 **can selected** the additional multi- factor authentication..." It appears "...can select..." was intended. Examiner has considered this suggested correction in interpretation of the specification. Correction is required. See MPEP § 608.01(b).

Priority

Acknowledgment is made of Applicant's claim for a domestic priority date of 8-16-2017. See the rejection under 112-a below.

Claim Objections

Claim 1 ends with a semicolon. Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, the case claims priority ultimately to provisional application 61932495, yet this provisional contains no description of multi-factor authentication or endpoints. Accordingly, the closest priority date the Examiner will consider is 1-27-2015, the filing date of patent number 10268995, 8-17-2016.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the Applicants regards as the invention.

Claim 1 discloses accessing, receiving and transmitting. It is unclear who or what is preforming these steps. For purposes of examination, the examiner will assume it is the third party entity.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. E.g., *Alice*, 573 U.S. at 216. In determining whether a claim falls within an excluded category, we are guided by the Court's two-part framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that

framework, we first determine what concept the claim is "directed to." See *Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); see *also Bilski v. Kappos,* 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk."). According to the Court, concepts determined to be abstract ideas and, thus, patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

In Diamond v. Diehr, the claim at issue recited a mathematical formula, but the Court held that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diamond v. Diehr*, 450 U.S. 175, 187 (1981). Having said that, the Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* at 191 (citing *Benson* and *Flook*). Nevertheless, the Court noted that "[i]t is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 187; see *also BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1352 (Fed. Cir. 2016) (Even if the individual components were known, "an inventive concept can be found in the ordered combination of claim

limitations that transform the abstract idea of filtering content into a particular, practical application of that abstract idea" (emphasis added).).

If the claim is "directed to" an abstract idea, we next "must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

B. Office Patent Eligibility Guidance

In an effort to achieve clarity and consistency in how the Office applies the Court's two part test, the Office published revised guidance on the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019).[1] In Step One of our analysis, we look to see whether the claims, as written, fall within one of the four statutory categories identified in § 101. *Id.* at 53 ("Examiners should determine whether a claim satisfies the criteria for subject matter eligibility by evaluating the claim in accordance with the criteria discussed in MPEP[2] 2106, i.e., whether the claim is to a statutory category (Step 1) and the *Alice/Mayo* test for judicial exceptions (Steps 2A and 2B)").

[1] "All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance." *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. at 51.
[2] All Manual of Patent Examining Procedure ("MPEP") citations herein are to MPEP, Rev. 08.2017, January 2018.

Under the guidance, we then look to whether the claim recites:

(1) Step 2A – Prong One: any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity, such as a fundamental economic practice, or mental processes);

and (2) Step 2A – Prong Two: additional elements that integrate the judicial exception into a practical application (see MPEP § 2106.05(a)–(c), (e)–(h)).

See 2019 *Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. at 54–55 ("Revised Step 2A").

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (see MPEP § 2106.05(d));

or (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. *See id.* at 56 ("Step 2B: *If the Claim Is Directed to a Judicial Exception, Evaluate Whether the Claim Provides an Inventive Concept.")*.

STEP 1

Is the claim(s) directed to a process, machine, manufacture or composition of matter?

Claims 1-3 are all directed to a statutory category (e.g., a process, machine, manufacture, or composition of matter). The answer is YES.

STEP 2

The Supreme Court

> set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, . . . determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, "[w]hat else is there in the claims before us? To answer that question, . . . consider the elements of each claim both individually and "as an ordered combination" to determine whether the additional elements "transform the nature of the claim" into a patent-eligible application. [The Court] described step two of this analysis as a search for an "'inventive concept'"—i.e., an element or combination of elements that is "sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself."

Alice Corp., Pty. Ltd. v CLS Bank Intl, 573 U.S. 208, 217–18 (2014) (citations omitted) (citing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012)). To perform this test, we must first determine what the claims are directed to. This begins by determining whether the claims recite one of the judicial exceptions (a law of nature, a natural phenomenon, or an abstract idea). Then, if claims recite a judicial exception, determining whether the claims at issue are directed to the recited judicial exception, or whether the recited judicial exception is integrated into a practical application of that exception, i.e., that the claims "apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is

more than a drafting effort designed to monopolize the judicial exception." Revised Guidance at 54. If the claims are directed to a judicial exception, then finally determining whether the claims provide an inventive concept because the additional elements recited in the claims provide significantly more than the recited judicial exception.

STEP 2A, Prong 1

Claims 1-3 recite a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network (100) that monitors changed conditions pertaining to accounts (300,400a-400c). The information is utilized in a credential data store to permit the financial management system (1000) to access multiple accounts over a data network (1100) and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

The practice of online financial account access and security is a fundamental economic practice, well-known, and extensively used for many years. without the involvement of technological means. It is also a building block of ingenuity in promoting commerce. Thus, the invention is an example of a conceptual idea subject to the Supreme Court's "concern

that patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity." See *Alice*, 573 U.S. at 216 (citations omitted). Thus the claims are directed to a certain method of organizing human activity.

STEP 2A, Prong 2

The next issue is whether the claims not only recite, but are more precisely directed to this concept itself or whether they are instead directed to some technological implementation or application of, or improvement to, this concept i.e. integrated into a practical application.[3]

"[T]he relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea [ ] on a generic computer." *Alice*, 573 U.S. at 225. They do not.

Viewed as a whole, Applicants' claims simply recite accessing an account, receiving and sending data as performed by generic hardware. The claims do not, for example, purport to improve the functioning of the computer itself. Nor do they effect an improvement in any other technology or technical field. They do not describe any particular improvement in the manner a computer functions. Instead, the claims at issue amount to nothing significantly more than an instruction to apply the abstract idea. Under precedent, that is not enough to transform an abstract idea into a patent-eligible invention. See *Alice*, 573 U.S. at 225-26.

[3] See, e.g., *Alice*, 573 U.S. at 223, discussing *Diamond v. Diehr*, 450 U.S. 175 (1981).

The examiner therefore concludes that the claims are directed to a certain method of organizing human activity as distinguished from a technological improvement for achieving or applying that result. The claim does not integrate the judicial exception into a practical application.

Step 2B

The next issue is whether the claims provide an inventive concept because the additional elements recited in the claims provide significantly more than the recited judicial exception. Taking the claim elements separately, the function performed by the computer at each step of the process is purely conventional. Receiving and transmitting data are generic, routine, conventional computer activities that are performed only for their conventional uses.[4]

---

[4] MPEP 2106.05(d)(II) The courts have recognized the following computer functions as well-understood, routine, and conventional functions when they are claimed in a merely generic manner (*e.g.,* at a high level of generality) or as insignificant extra-solution activity.

- i. Receiving or transmitting data over a network, *e.g.,* using the Internet to gather data, *Symantec,* 838 F.3d at 1321, 120 USPQ2d at 1362 (utilizing an intermediary computer to forward information); *TLI Communications LLC v. AV Auto. LLC,* 823 F.3d 607, 610, 118 USPQ2d 1744, 1745 (Fed. Cir. 2016) (using a telephone for image transmission); *OIP Techs., Inc., v. Amazon.com, Inc.,* 788 F.3d 1359, 1363, 115 USPQ2d 1090, 1093 (Fed. Cir. 2015) (sending messages over a network); *buySAFE, Inc. v. Google, Inc.,* 765 F.3d 1350, 1355, 112 USPQ2d 1093, 1096 (Fed. Cir. 2014) (computer receives and sends information over a network); but see *DDR Holdings, LLC v. Hotels.com, L.P.,* 773 F.3d 1245, 1258, 113 USPQ2d 1097, 1106 (Fed. Cir. 2014) ("Unlike the claims in *Ultramercial,* the claims at issue here specify ***how*** interactions with the Internet are manipulated to yield a desired result--a result that overrides the routine and conventional sequence of events ordinarily triggered by the click of a hyperlink." (emphasis added));

iv. Storing and retrieving information in memory, *Versata Dev. Group, Inc. v. SAP Am., Inc.,* 793 F.3d 1306, 1334, 115 USPQ2d 1681, 1701 (Fed. Cir. 2015); *OIP Techs.,* 788 F.3d at 1363, 115 USPQ2d at 1092-93.

None of these activities are used in some unconventional manner nor do any produce some unexpected result. In short, each step does no more than require a generic computer to perform generic computer functions. As to the data operated upon, "even if a process of collecting and analyzing information is 'limited to particular content' or a particular 'source,' that limitation does not make the collection and analysis other than abstract." *SAP America, Inc. v. InvestPic LLC*, 898 F.3d 1161 ,1 168 (Fed. Cir. 2018).

Considered as an ordered combination, the computer components of Applicants' claims add nothing that is not already present when the steps are considered separately. That paragraphs 64, 79, 82 96 and 113, and Figures 4A-7 of the Specification indicates that standard, off-the-shelf computer technology is usable to implement the claimed invention only bolsters the notion that the claimed invention does not focus on an improvement in computers as tools, but rather certain independently abstract ideas that use computers as tools. (*Elec. Power*, 830 F.3d at 1354). Accordingly, Applicants' Specification itself describes the additional elements as being well-understood, routine, and conventional. Such conventional computer processes operating on conventional hardware "do not alone transform an otherwise abstract idea into patent-eligible subject matter." *FairWarning IP, LLC v. Iatric Sys., Inc.,* 839 F.3d 1089, 1096 (Fed. Cir. 2016) (citing *DDR Holdings,* 773 F.3d at 1256).

Dependent claim 2 recites storing which is insignificant extra-solution activity and a mental process. It also recites utilizing which is insignificant extra-solution activity.

Dependent claim 3 describes data wehich is nonfunctional descriptive material.

Conclusion of Law

The examiner concludes that the claims do not provide an inventive concept because the additional elements recited in the claims do not provide significantly more than the recited judicial exception. From these determinations the examiner further notes that the claims do not recite an improvement to the functioning of the computer itself or to any other technology or technical field, a particular machine, a particular transformation, or other meaningful limitations. From this the examiner finds the claims are directed to a certain method of organizing human activity without significantly more.

Nonstatutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/forms/. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to:

http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-3 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 10657504. Although the claims at issue are not identical, they are not patentably distinct from each other because both cases deal with multifactor authentication in optimizing financial assets.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter with substantially similar claim language.

Claim Rejections - 35 USC § 102 (Post-AIA)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

Claims 1-3 Claims are rejected under 35 U.S.C. 102(a)(1) and 102(a)(2) as being anticipated by US8495720, *Counterman*.

As per claim(s) 1, *Counterman* teaches:

(1) accessing, via one or more processors, the online account using the account holder's credentials (At least column 3, lines 34-37 and abstract);

(2) receiving a multi-factor authentication request from the online account, the multi- factor authentication request indicating that a response is required from the account holder before further access to the online account is granted (At least claims 1, 11, 13 and 15);

(3) transmitting the request to the account holder and receiving the response thereto from the account holder (At least claims 1, 11, 13 and 15);

(4) transmitting the account holder's response to the online account to satisfy the multi-factor authentication request (At least claims 1, 11, 13 and 15).

As to claim(s) 2, *Counterman* recites:

(5) storing one or more of the account holder's endpoints for the online account in a database associated with the online account (At least column 2, lines 42-45);

(6) utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests (At least column 1, lines 58-62; column 3, lines 55-59; column 4, lines 48-54 and column 10, lines 31-34).

With respect to claim(s) 3, *Counterman* discusses:

the endpoint includes an email address, a landline phone number, or a cellular phone number (At least column 4, line 62 to column 5, line 2).

Conclusion

Additional prior art made of record and not relied upon that is considered pertinent to patentee's disclosure can be found on the attached PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert R. Niquette whose telephone number is 571-270-3613. The examiner can normally be reached on Monday through Friday, 5:30 AM to 2:00 PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Namrata Boveja, can be reached at 571-272-8105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3699

Notice of References Cited	Application/Control No. 16/850,150	Applicant(s)/Patent Under Reexamination Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3699	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140351146-A1	11-2014	Johnson; Bruce E.	G06Q30/02	705/71
*	B	US-20150066719-A1	03-2015	Agrawal; Prashant Kumar	G06Q40/02	705/35
*	C	US-20080319887-A1	12-2008	Pizzi; John E.	G06Q40/02	705/35
*	D	US-8495720-B2	07-2013	Counterman; Raymond	H04L9/3226	726/8
*	E	US-20140337636-A1	11-2014	ADAMS; Neil Patrick	H04W12/06	713/186
*	F	US-20080249947-A1	10-2008	Potter; Eric R.	G06F21/40	705/67
*	G	US-10268995-B1	04-2019	Zimmerman; Gary E.	G06Q20/10	1/1
	H					
	I					
	J					
	K					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3699

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	05/25/2021								
	1	✓								
	2	✓								
	3	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3699

CPC - Searched*		
Symbol	Date	Examiner
G06Q 20/10	05/25/2021	RRN
G06Q 20/22	05/25/2021	RRN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
705	All	05/25/2021	RRN

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2E search	05/25/2021	RRN
PLUS search	05/25/2021	RRN
WIPO database search	05/25/2021	RRN
Inventor search	05/25/2021	RRN
NPL search	06/01/2021	STIC Staff

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

STIC Scientific and Technical Information Center

EIC Search Report

Examiner	NIQUETTE, ROBERT
Art Unit	3699
Serial #	16850150
Date Completed	06/01/2021
Assigned EIC	3600
Searcher	Haoyi Chen (CPA Global)
Tracking #	631984

This document includes the following content:

Search Histories

Complete lists of all files searched within each database collection, along with all keyword/synonym strings and any applicable chemical structure or biosequence queries used by the Searcher in completing the prior art search are included in this report.

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EIC	Phone	Email
1600	571-272-0473	STIC-EIC1600/2900@uspto.gov
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2100	571-272-4225	STIC-EIC2100@uspto.gov
2400	571-272-4225	see EIC 2100
2600	571-272-4235	STIC-EIC2600@uspto.gov
2800	571-272-2540	STIC-EIC2800@uspto.gov
2900	571-272-4240	see EIC 3700
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3700	571-272-4240	STIC-EIC3700@uspto.gov

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Search Request

Effective Filing Date: 8-16-2017

Description

This is a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network (100) that monitors changed conditions pertaining to accounts (300,400a-400c). The information is utilized in a credential data store to permit the financial management system (1000) to access multiple accounts over a data network (1100) and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

Search Strategy

Databases: Argentina Patents Fulltext, Australia Patents Fulltext, Austria Patents Fulltext, Belgium Patents Fulltext, Brazil Patents Fulltext, Canada Patents Fulltext, China Patents Fulltext, Denmark Patents Fulltext, Derwent Chemistry Resource, Derwent Patents Citation Index®, Derwent World Patents Index®, Eurasia Patents Fulltext, European Patents Fulltext, Finland Patents Fulltext, France Patents Fulltext, Germany Patents Fulltext, Global Patents Bibliographic, Great Britain Patents Fulltext, IFI CLAIMS® US Patents and Legal Status, IMS Patent Focus, India Patents Fulltext™, INPADOC / Family and Legal Status, Ireland Patents Fulltext, Italy Patents Fulltext, Japan Patents Fulltext, JAPIO - Patent Abstracts of Japan, Korea Patents Fulltext, LitAlert®, Luxembourg Patents Fulltext, Mexico Patents Fulltext, Monaco Patents Fulltext, Netherlands Patents Fulltext, Norway Patents Fulltext, Portugal Patents Fulltext, Russia Patents Fulltext, Spain Patents Fulltext, Sweden Patents Fulltext, Switzerland Patents Fulltext, United States Patents Fulltext, WIPO PCT Patents Fulltext

Set#	Searched for	Results
S1	(auto or dynamic* or preprogram* or program* or robot* or unman* or comput* or machin* or (self n/1 (regulat* or direct* or execut* or control*)))	132579098
S2	((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or move* or moving or reassign* or reallocat* or swap*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi*	53591319
S3	asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*	44714467
S4	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook*)	10740530
S5	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1)	156899401
S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick	109503

	OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)) n/5 (multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*)	
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	1443681
S8	credential* or certificat* or passport* or pass$2word* or pin or pins or key or keys or token* or (pass* n/1 (code* or word)) or verified or identif*	73754022
S9	S1 n/30 S2	9256200
S10	S9 n/30 S3	298350
S11	S10 n/150 S4	21848
S12	S11 n/150 S5	2923
S13	S12 n/150 S6	360
S14	S13 n/150 S7	130
S15	S14 n/150 S8	39
S16	S15 and apda(<20170816)	38
S17	S8 n/30 S4	1556380
S18	S17 n/30 S6	20051
S19	S18 n/150 S10	413
S20	CPC(G06Q20/10 or G06Q20/227 or G06Q40/08)	158784
S21	S20 and S19 and apda(<20170816)	143
S22	S21 and S5	136
S23	S22 and S7	125
S24	S22 and S7	90°

Method and apparatus for analyzing financial data

Publication info: Dheer, Sanjeev; Dilip, Venkatachari (Inventors). CASHEDGE, INC.; Cashedge Inc (Assignees). US 7797207 B1 . (Published 14 Sep 2010).
ProQuest document link

Abstract (summary): A system analyzes multiple financial accounts having a common account holder and identifies a particular attribute, such as interest rate, associated with each of the multiple financial accounts. The system then makes a determination regarding whether an adjustment of funds among the multiple financial accounts would benefit the account holder. If the adjustment of funds would benefit the account holder, then recommending the adjustment of funds to the account holder and offering to perform the recommended adjustment of funds. The system executes the adjustment of funds if the account holder accepts the offer to perform the recommended adjustment of funds.

Application number: US 2000621946 (24 July 2000)

Keywords in context:

Specification: ...

Thus, the systems available today do not provide a mechanism for automatically analyzing multiple user accounts to identify fund transfers that would be favorable to the user.

The systems and methods described herein addresses these and other problems by automatically analyzing multiple user accounts, both asset accounts and debt accounts, to determine whether an adjustment of funds between accounts would benefit the account holder.

TECHNICAL FIELD

The present invention relates to the analysis of financial data and, more particularly, to the analysis of multiple financial accounts and other market data to determine whether the allocation of assets and/or liabilities among the multiple financial accounts is optimal.

SUMMARY

The system and methods described herein perform an automated analysis of multiple user accounts to determine whether those accounts are optimized based on, for example, the best available interest rates, interest rates on the user's accounts, and the user's account balances. The analysis system makes recommendations, ... "client" are interchangeable. "Account holder" refers to any person having access to an account. A particular account may have multiple account holders (e.g., a joint checking account having husband and wife as account holders or a corporate account identifying several corporate employees as account holders). Various financial account and financial institution examples ... system and procedures described herein can be used with any type of asset account and any type of debt account. Example asset accounts include savings accounts, money market accounts, checking accounts (both interest-bearing and non-interest-bearing), certificates of deposit (CDs), mutual funds, bonds, and equities. Example debt accounts include credit card accounts, mortgage accounts, home equity ... report information regarding current financial market conditions. For example, a particular market information service may collect information from many financial institutions to generate a report identifying the average interest rates for savings, checking, or other accounts. The report may also identify the

highest rates for each type of account and the financial institution offering those rates. Multiple market information service servers 110 may be coupled to ... providing a different type of market data.

Financial management system 118 performs various account analysis functions to determine whether a user's financial accounts (e.g., both asset accounts and debt accounts) are optimized. These analysis functions are discussed in greater detail below. Wireless device 112 and client computer 114 allow a user to access information via the network 108. For example, the user can access account information from one of the financial institution ... management system 138 is also coupled to market information service server 140 through a communication link 152, which allows the financial management system to retrieve various information regarding market interest rates and other market data. Financial institution servers 132 and 134 are capable of communicating with one another via a communication link 154, which allows the ... password, and user preferences. Financial management system 220 also stores financial institution data 226 and market information 228. Financial institution data 226 includes, for example, transaction routing data, account offerings, account interest rates, and minimum account balances. Market information 228 includes data such as average interest rates for different types of accounts (both asset accounts and debt accounts), the best available interest rates for each type of account, and the financial institutions offering the ... sheet analysis and recommendation module 234 makes the appropriate recommendations to the account holder.

Asset analysis and recommendation engine 254 analyzes the user's asset account information by applying the various asset analysis logic rules to the asset account information. The asset analysis and recommendation engine 254 also considers market data collected by collection module 256 when analyzing the user's ... their own set of logic rules and does not select from one of the several sets of alternate debt analysis logic 280 and 282. The alternate logic rules 280 and 282 may provide different approaches to debt account analysis, such as a conservative approach, a moderate approach, or an aggressive approach. In a particular embodiment, at least one of the alternate logic rules 280, 282 is associated with a financial and/or investment celebrity, who defines the particular set of logic rules based on their financial and/or investment expertise. ... loan will only be required for a short period of time, the rules may suggest opening (or taking advantage of an existing) overdraft protection account.

The various logic rules discussed above, which are used by the financial management system to determine whether funds should be adjusted between accounts, may define how to determine whether ... determining whether accounts are "almost optimized" include: the savings (extra interest earned or less interest paid) that would result from an adjustment of funds, the difference in interest rates, the time required to implement the adjustment of funds, fees associated with the adjustment of funds, and the "risk" associated with the adjustment. The ... The fourth column of table 430 identifies the various account offerings from a particular financial institution. In this example, Bank of America offers a savings account, two types of checking accounts ... (interest bearing and non-interest bearing), a three month certificate of deposit (CD), a home equity loan, a credit card account, and overdraft protection for a checking account. The next column indicates the type of account (e.g., an asset account or a debt account).

The user preferences are determined by the user based on the manner in which ... or for specific accounts. For example, the user preferences for John Smith specify that a minimum balance of $1500 should be maintained in the interest checking account. These user preferences are typically incorporated into the logic rules, discussed above, which are used to determine when and how to adjust funds between ... review recommendations generated by the financial management system. In the example of FIG. 15, one recommendation 552 is shown-to transfer funds from the Wells Fargo Checking account into the Chase Savings account. A recommended amount to transfer 554 has also been identified. If the recommendation is executed, the projected savings 556 over ...

Claims: 4. A method as recited in claim 1 wherein the first account is a checking account and the second account is a savings account. 7. A method as recited in claim 1 wherein the first account is a checking account and the second account

is an investment account. 15. A computer-readable medium as recited in claim 12 wherein the first account is a checking account and the second account is a savings account. 18. A computer-readable medium as recited in claim 12 wherein the first account is a checking account and the second account is an investment account.

Multi-Channel Transaction System for Transferring Assets Between Accounts at Different Financial Institutions

Publication info: Dheer, Sanjeev (Inventor). Unassigned; Unassigned or assigned to individual (Assignees). US 20150154570 A1 . (Published 04 Jun 2015).
ProQuest document link

Abstract (summary): Embodiments of a system for providing an integrated financial system to facilitate the transfer of funds among accounts held at different financial institutions and over different networks are described. The system executes a transaction involving a withdrawal of assets from a first account at a first financial institution and a deposit of at least a portion of the withdrawn assets to a second account at a second financial institution. The first account and the second account are maintained by different corporate entities, and may have the same or different account holders. The financial institutions are coupled to one another through different types of networks. The transaction is broken down into separate debit and credit legs. An integrated transfer process selects the optimum network to perform each leg of the transaction based upon constraints associated with the transaction and user preferences, such as cost and speed of the transaction, and restrictions or rules imposed by the networks and/or the financial institutions.

Application number: US 2015615198 (05 February 2015)

Keywords in context:

Specification: ... financial institutions. Financial institutions include, for example, banks, savings and loans, credit unions, mortgage companies, lending companies, and stock brokers. The financial accounts that are maintained may include asset accounts (such as savings accounts, checking accounts, certificates of deposit (CDs), mutual funds, bonds, and equities), debt accounts (such as credit card accounts, mortgage accounts, home equity loans, overdraft protection, and other types ... from a first financial institution into a different account, also held by the user, but at a second financial institution. This transfer is essentially a two step process in which, during the first step, funds are pulled from (debited) an account at a first financial institution, and in the second step, the ...

Claims: ... initiate execution of the financial transaction, wherein the approval corresponds to an acceptance of the one or more transmission characteristics, ii) a cancellation of the funds transfer request, or iii) a request to modify at least one optimization parameter of the one or more optimization parameters; and

performing, by the computerized financial management system, additional processing associated with the funds transfer request based at least in part on the determined type of the response. ... the approval corresponds to an acceptance of the one or more transmission characteristics associated with execution of the financial transaction, ii) a cancellation of the funds transfer request, or iii) a request to modify at least one optimization parameter of the one or more optimization parameters; and

performing additional processing associated with the funds transfer request based at least in part on the determined type of the response.

38. The one or more computer-readable media of claim 37, wherein the type of the response comprises the request to modify the at least one optimization parameter, wherein the at least one optimization parameter comprises at least one user preference, and

wherein the additional processing comprises at least one of:

identifying, based at least in part on a ... or more communications interfaces.

40. The method of claim 21, wherein the type of the response comprises the request to modify the at least one optimization parameter, wherein the at least one optimization parameter comprises a transaction size, and

wherein the additional processing comprises at least one of:

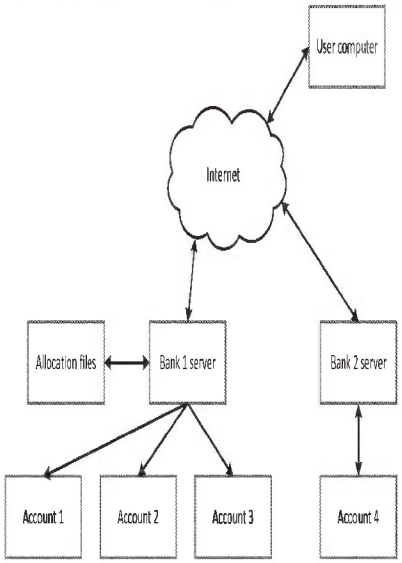
transmitting, by the computerized financial management system, the debit transaction using the first channel based at least in part on a modification to the transaction size or transmitting, by the computerized financial management system, ...

AUTOMATICALLY TRIGGERED ADAPTIVE MONEY ALLOCATION BY FINANCIAL INSTITUTION

Publication info: Cook, Curtis C. (Inventor). Cook, Curtis C. (Assignee). US 20140344141 A1 . (Published 20 Nov 2014).
ProQuest document link

Abstract (summary): In a typical scenario, a bank provides the following on-line service to their customers (users), implemented as a software program in a server associated with the bank. The server is able to access allocation files that are programmable via the internet by a user. The user specifies rules in the allocation files identifying one or more percentages associated with respective ones of the user's secondary accounts to be applied to future deposits to the user's primary account (such as a checking account). Examples of secondary accounts may include a tax account, a retirement account, etc. The user also specifies one or more priorities associated with the respective secondary accounts. When a new deposit is made to the primary account, or on a pre-set periodic basis, the rules are automatically applied by the server to transfer the pre-set percentages of the deposits to the respective secondary accounts in the priority order.

Front page drawing:



Application number: US 2013908449 (03 June 2013)

Keywords in context:

Specification: ... for the user's allocations and rules are envisioned. Once the allocations and rules have been set by the user, the Bank 1 server applies the rules to the various deposits made to Account 1. In step 28, the Bank 1 server

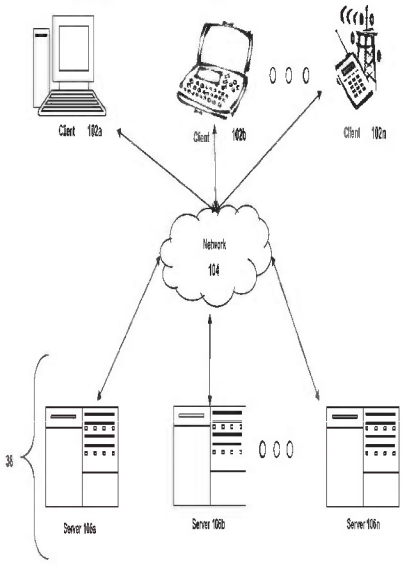
determines if there is a deposit to the primary account (Account 1). If so, then in step 30, the Bank 1 server determines whether the allocations are authorized by applying the rules set ... then in step 32, the Bank 1 server initiates the transfer of the percentages of the newly deposited funds in accordance with the user's rules to the various accounts (e.g., Accounts 2- 4). Multiple servers may be involved in the transfer. In step 34, the Bank 1 server sends a report (or makes one available on-line) to the user identifying the various transfers and the balances. FIG. 3 illustrates a sample report for the user. In the example of FIG. 3, the report identifies the primary account (Account 1) from where the transfers are made from, which in this case is the user's Acc-Chase Checking account 0748. The report identifies the source of the various deposits (subsequent to the previous allocation event), the date, the initial deposited amount, the percentage allocations from the deposit, the accounts to where the allocated percentages were transferred, the amount transferred, the total amount transferred to that account to date, the net deposit into the primary account after allocations have been made, and a "pull from option" identifying that the option to pull funds from a backup account has been set. The report may also identify the remaining balance in the primary account. As seen from the report, the user had pre-programmed allocation percentages and destination accounts for the deposit coming from the Merchant Service account 0342 that are different from the allocation percentages and destination accounts for the deposit coming from the ADT Payroll account (the user's employer's direct deposit account). Accordingly, the user may treat a payroll ...

SYSTEMS AND METHODS FOR DAILY RECOMMENDED SPEND

Publication info: Ventura, John; Smith, Matthew; Rowe, Brian Lee Yung (Inventors). Cashpath Financial LLC (Assignee). US 20160210700 A1 . (Published 21 Jul 2016).
ProQuest document link

Abstract (summary): To address the challenges of managing the cash flow of an individual, the present solution provides for an efficient and automated Recommended Spend Evaluator tool. In an industrialized market where individuals make numerous purchases on a daily bases, while simultaneously incurring and managing dozens of bills and expenses, the systems and methods of the Recommended Spend Evaluator of the present solution enables individuals to seamlessly and efficiently plan their budget, monitor their progress, and enforce their expense budget.

Front page drawing:



Application number: US 2015867725 (28 September 2015)

Keywords in context:

Specification: ... adjusted recommended daily spend amount satisfying the savings rate. In some embodiments, the method includes the spend evaluator accessing a data structure in memory storing credentials for a plurality of financial accounts. The spend evaluator can use the credentials to establish a connection with each of the plurality of financial accounts. The spend evaluator can aggregate financial information from the plurality of financial accounts ..... such as for non-bill related items (e.g., food shopping, consumable items, etc) and discretionary spending. The save sub-account may be used for planning, executing and managing the portfon of the cash flow related to saving, such as for specific events (e.g., a car, vacation or retirement). The CFM automates income flows of funds and allocation from plan to pay, spend and save sub-accounts within same account. The CFM enables holistic planning, execution, management and real-time tracking of household ... For each spending category, the user may allocate a predetermined amount of funds to each of a plurality of users for that category. For example, the user may allocate first amount for a first category for a first ... a negative free cash being cured, partially, by a reserve transfer. FIG. 4K illustrates an embodiment of the CFM user interface displaying remaining negative free cash. FIG. 4L illustrates an embodiment of the cash flow optimizer determining automatically a cure of a negative free cash via reduction to one or more discretionary expenses. FIG. 4M illustrates an embodiment of submitting via the CFM the cure to negative free cash. FIG. 4N illustrates an embodiment of the CFM displaying details and status of the pay sub-account. FIG. 4O illustrates an embodiment of adding or ... the RSE 500 can function in an aggregation mode where a user may provide, to the RSE 500 or a third-party financial account aggregator, login credentials (e.g., username and password) for one or more financial accounts. The RSE 500 or financial account aggregator may then obtain the financial account information based ... bill payments. For example, the income and bill payments may correspond to a user account that has been activated on the device via, e.g., login credentials, a token, or other authentication technique. The user account may have a unique user identifier. Cash flow data may include or indicate financial parameters ...

Compliance monitoring method and apparatus

Publication info: Dheer, Sanjeev; Sokolic, Jeremy, N. (Inventors). Unassigned; Unassigned or assigned to individual (Assignees). US 20050187862 A1 . (Published 25 Aug 2005).
ProQuest document link

Abstract (summary): A compliance monitoring system and method identifies an individual or entity to be monitored for account compliance and receives account information associated with the individual or entity. The compliance monitoring system and method obtains holdings in the account and determines whether the holdings in the account comply with a predetermined rule.

Application number: US 2003739892 (18 December 2003)

Keywords in context:

Specification: ... for identifying financial transactions to optimize a user's debt account balances.

FIG. 10 is a flow diagram illustrating a procedure for identifying financial transactions to optimize a user's balance sheet.

FIG. 11 is a flow diagram illustrating a procedure for automatically optimizing a user's asset accounts, debt accounts, and balance sheet.

FIG. 12 is a table illustrating various information associated with different financial institutions.

FIG. 13 is a table illustrating ... providing a different type of market data.

Financial management system 118 performs various account analysis functions to determine whether a user's financial accounts (e.g., both asset accounts and debt accounts) are optimized. These analysis functions are discussed in greater detail below. Wireless device 112 and client computer 114 allow a user to access information via the network 108. For example, the user can access account information from one of the financial institution ... to consider or ignore, when the financial management system performs its analysis and makes recommendations.

FIG. 11 is a flow diagram illustrating a procedure for automatically optimizing a user's asset accounts, debt accounts, and balance sheet. Initially, the procedure determines the best adjustment of the user's asset accounts (block 400). The best adjustment of the user's asset accounts may include opening a new account, closing an existing account, and/or transferring funds between ... number and routing number. The third column indicates an Internet uniform resource locator (URL) associated with the financial institution. The fourth column of table 430 identifies the various account offerings from a particular financial institution. In this example, Bank of America offers a savings account, two types of checking accounts (interest bearing and non-interest bearing), a three month certificate of deposit (CD), a home equity loan, a credit card account, and overdraft protection for a checking account. The next column indicates the type of ... 558. The user can execute the recommendation by activating the "Execute" button 560 on the screen. After activating the "Execute" button, the financial management system automatically performs the necessary steps to transfer the recommended funds between the two accounts.

In an alternate embodiment, the user is given the option to modify the amount to be transferred between the two accounts. For example, the user may only want to transfer $500 instead of the recommended $877. In this situation, ... to the compliance monitoring system via the account registration module (block 944). This information includes, for example, the financial institution, the account type, and login credentials for the account. The compliance monitoring system then accesses the employee's third party accounts and retrieves data regarding each third party account (block 946). For ...

US Patents, US Designs, US Applications, EPO Patents, EPO Applications, China Patents, China Applications, Japan Patents, Japan Applications, Korea Patents, Korea Applications, WIPO Applications, Argentina Patents, Argentina Applications, Brazil Patents, Brazil Applications, Canada Patents, Canada Applications, Chile Patents, Chile Applications, Colombia Applications, Costa Rica Applications, Cuba Patents, Cuba Applications, Dominican Republic Applications, Ecuador Patents, Ecuador Applications, El Salvador Applications, Guatemala Applications, Honduras Applications, Mexico Patents, Mexico Applications, Nicaragua Patents, Panama Applications, Peru Applications, Trinidad & Tobago Patents, Uruguay Applications, Austria Patents, Austria Applications, Belarus Patents, Belgium Patents, Belgium Applications, Bosnia & Herzegovina Patents, Bosnia & Herzegovina Applications, Bulgaria Patents, Bulgaria Applications, Croatia Patents, Croatia Applications, Czech Republic Patents, Czech Republic Applications, Czechoslovakia Patents, Czechoslovakia Applications, Denmark Patents, Denmark Applications, Estonia Patents, Estonia Applications, EUIPO Patents, Finland Patents, Finland Applications, France Patents, France Applications, Germany Patents, Germany Applications, Great Britain Patents, Great Britain Applications, Greece Patents, Greece Applications, Hungary Patents, Hungary Applications, Iceland Patents, Iceland Applications, Ireland Patents, Ireland Applications, Italy Patents, Italy Applications, Latvia Patents, Latvia Applications, Lithuania Patents, Lithuania Applications, Luxembourg Patents, Malta Patents, Monaco Patents, Montenegro Patents, Montenegro Applications, Netherlands Patents, Netherlands Applications, Norway Patents, Norway Applications, Poland Patents, Poland Applications, Portugal Patents, Portugal Applications, Republic of Moldova Patents, Republic of Moldova Applications, Romania Patents, Romania Applications, San Marino Patents, San Marino Applications, Serbia Patents, Serbia Applications, Slovakia Patents, Slovakia Applications, Slovenia Patents, Spain Patents, Spain Applications, Sweden Patents, Sweden Applications, Switzerland Patents, Switzerland Applications, Ukraine Patents, Yugoslavia/Serbia and Montenegro Patents, Yugoslavia/Serbia and Montenegro Applications, Armenia Patents, Australia Patents, Australia Applications, Cyprus Patents, Gulf Cooperation Council Patents, Hong Kong Patents, India Patents, India Applications, Indonesia Patents, Indonesia Applications, Israel Applications, Jordan Patents, Kyrgyzstan Patents, Macao Applications, Malaysia Patents, Mongolia Patents, New Zealand Patents, Philippines Patents, Philippines Applications, Saudi Arabia Patents, Singapore Patents, Singapore Applications, Taiwan Patents, Taiwan Applications, Tajikistan Patents, Tajikistan Applications, Thailand Applications, Uzbekistan Patents, Vietnam Patents, Algeria Patents, ARIPO Patents, ARIPO Applications, Egypt Patents, Kenya Patents, Malawi Patents, Morocco Patents, Morocco Applications, OAPI Patents, South Africa Patents, Tunisia Applications, Zambia Patents, Zimbabwe Patents, EAPO Patents, EAPO Applications, Georgia Patents, Georgia Applications, Kazakhstan Patents, Kazakhstan Applications, Russia Patents, Russia Applications, Turkey Patents, Turkey Applications

	Concept Searched for:
L1	Main Concept Text ========== This is a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network that monitors changed conditions pertaining to accounts. The information is utilized in a credential data store to permit the financial management system to access multiple accounts over a data network and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L2	Same Main Concept Text ==========

	Concept Modifiers (1) ========== 1. More Like Text: The information is utilized in a credential data store to permit the financial management system to access multiple accounts over a data network and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L3	Same Main Concept Text ========== Concept Modifiers (1) ========== 1. More Like Text: The information is utilized in a credential data store to permit the financial management system to access multiple accounts over a data network and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Filters (2) ========== Earliest Priority Date: To 2017-08-16 Classic Syntax limited to: (checking near1 account*) near10 (saving near1 account*)
L4	Main Concept Document ========== US10657504 Title: System and method for automated optimization of financial assets Filters (1) ========== Earliest Priority Date: To 2017-08-16

US20150081496 System and Method for an Integrated Financial Management Tool

PUBLICATION NUMBER: US 2015/0081496 A1 PUBLICATION DATE: 19-Mar-2015
APPLICATION NUMBER: US 14/031,954 FILING DATE: 19-Sep-2013
SIMPLE FAMILY: 52668863 (size 1) EARLIEST PRIORITY DATE: 19-Sep-2013
PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):
A system and method for integrating and facilitating customer experience provides a user a one-stop location for acquisition of products and services, servicing of products and services, transaction processing, and internal and external financial account management. Once a user registers an individual customer during an activation session, which may include entry of that customer's internal or external account information the system manages multiple accounts for the customer in accordance with system and user defined rules providing a means to acquire and service products and services, as well as to receive disbursements to external accounts from the system. The system also includes a [illegible] system which scans and resolves any conflicts created among system [illegible]

[0030] The financial account system receives requests from a user (e.g., a customer or a potential customer) and provides the user with access to multiple verified internal and external accounts via a financial account management tool displayed on a user device. Subsequently, the user may utilize one or more of the accounts to acquire products and services and/or modify currently owned products and/or services (e.g., service an existing insurance policy). In addition, the user may update, revise, add, etc. financial account information via the financial account management tool.

[0035] FIG. 2 illustrates an example financial account system 200 which may be implemented in the example environment 100. The financial account system includes a server 202 with a CPU 204, a network interface 206, and a memory 208. The memory 208 may store a number of software applications 210, as discussed with reference to FIG. 1, and a financial account management routine 212. The financial account management routine 212 may be executed by the CPU 204 to process requests from users and/or financial institutions related to updating, revising, verifying, etc. financial account information. Although illustrated with one server 202 in FIG. 2, financial account systems may include any suitable number of servers to process requests from user and distribute financial account management content to users.

[0038] The server 202 may utilize the aggregation system 214 to periodically (e.g., once per day) retrieve and store customer financial data for each customer in a customer financial database 224. For each customer, the financial database 224 includes account information from financial accounts of the customer regardless of which financial institution maintains the account in an implementation. For example, if a customer maintains a checking account at Bank of America™, a money market account at Fidelity Investments™, and a mortgage account at FannieMae™, the financial database 224 may include account information about all three accounts. In some implementations, the account information stored within the financial database 224 includes a complete record of all transactions (claims processing, payments, disbursements including claim payouts or dividends) on one or more accounts, such as those transactions processed by the disbursement system 218 and/or the payment system 220. In other implementations, the financial database 224 may include a record of all transactions on one or more accounts for a limited time period only (e.g., all transactions within the past three months). In still other configurations, the financial database 224 may simply maintain the current balance of one or more accounts.

[0051] Generally speaking, customer or company interactions with a financial account system can be any of: viewing a financial profile, making a purchase, requesting a quote, receiving a disbursement, making a new policy purchase, making a policy change, opening a new bank account, making a change to a bank account, applying for a new loan, making a change to a loan, making a loan payment, applying for a new credit card, interacting with PayPal™, making a change to a credit card account, making a credit card payment, opening a new mutual fund account, making a change to a mutual fund account, opening a new money market account, making a change to a money market account, initiating automated clearing house (ACH) type transactions, opening a new retirement account, making a change to a retirement account,

making a deposit, making a withdrawal, submitting a fraud report, or reporting claims activity. This list is given by way of example and not limitation. Each customer, or potential customer, interacting with a financial account system, via one of the plurality of user devices 104, for example, may access a customer "dashboard" web page displaying at least some of following example content: (1) policies and accounts with a company operating the financial account system (these are the products and services offered by the organization); (2) payments and transfers associated with policies, such as insurance policies, and accounts; (3) pending or past claims associated with the policies and accounts; (4) saved internal and external financial accounts for payments or disbursements. The dashboard page may also provide interactive features such as immediate or delayed access to customer service, options to print relevant documents, access to customer profile information, options for presentation in additional languages, access to drop down navigation menus, etc.

[0076] Next, the financial account system may store the set of rules in a rules database and send the user a confirmation message (block 1012). At this point, the financial account system is able to automatically manage the customer accounts in accordance with the rules, for example.

[0093] The system is comprised of various modules. As can be appreciated by one of ordinary skill in the art, each of the modules comprises various sub-routines, procedures, definitional statements and macros. Each of the modules are typically separately compiled and linked into a single executable program. The processes that are undergone by each of the modules may be arbitrarily redistributed to one of the other modules, combined together in a single module, or made available in, for example, a shareable dynamic link library.

WO1998058356A2 System and method for processing multiple financial applications using a three-tier value network

PUBLICATION NUMBER: WO 1998/058356 A2 PUBLICATION DATE: 23-Dec-1998
APPLICATION NUMBER: PCT/US9812/408 FILING DATE: 16-Jun-1998
SIMPLE FAMILY: 21961714 (size 3) EARLIEST PRIORITY DATE: 16-Jun-1997

PRIMARY INFORMATION (SOURCE: IFI)

Abstract (English):

A three-tier, client-server system and method provides improved financial services over a network and processes financial transactions among many user accounts and service providers, and automatically routes and receives financial transaction messages or other financial or account information, reviews account information and other financial data, and updates the financial records of user accounts and service providers in accordance with the particular financial transaction being processed. The system and method also allows access and analysis of financial data to provide improved financial services over a computerized network system. The financial transaction network includes a data center operations portion containing business critical computing module, a back office, general accounting and smart suite financial applications module; and a data warehouse and decision support module. The data center operations can be accessed by, and communicates through, an enterprise network backbone. The system also includes middle-tier application servers which are also accessed by, and communicate with the enterprise network backbone. Application servers can further be accessed by, and communicate with the bottom tier, front end clients over a proprietary virtual private extranet. And application servers can also further be accessed by the Internet, through the World Wide Web, and Java applets.

Interoperability describes the ability to exchange data and interact with a diverse set of client, server, and database systems in a transparent manner. GEFS system 200 is interoperable because the system integrates with a wide range of legacy information sources, such as the National Automated Clearinghouse Association (NACHA) 264, Society for Worldwide Interbank Financial Telecommunication (SWIFT) 265, ATM 261, and Electronic Data Interchange/Electronic Funds Transfer (EDI/EFT) 266, to provide a true value network. GEFS system 200 is also interoperable because the system makes it possible both to add to or modify the interfaces to an external system with minimum changes, and to integrate new technologies seamlessly.

NIS+ is a widely accepted system of centralized host and user account authority that provides a secure naming service for TCP/IP environments. It allows a centralized "Master" directory server to aggregate and server lookup services for all authenticated clients to use for login account and hostname-to-address lookup. It employs a system of 56-bit private keys

to add machine terminals to the environment initially. All subsequent client-server transactions are also authenticated. Users in the environment are also authenticated networkwide in this manner.

US8255336 Method and apparatus for managing transactions

PUBLICATION NUMBER: US 8255336 B2 PUBLICATION DATE: 28-Aug-2012
APPLICATION NUMBER: US 11/949,009 FILING DATE: 30-Nov-2007
SIMPLE FAMILY: 24672096 (size 24) EARLIEST PRIORITY DATE: 20-Sep-2000

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):

A system receives account access information from a user. The account is then accessed using the received access information. Data is harvested from a web page associated with the account or received from another financial data source. The user's ability to access the account is authenticated based on the obtained information

Thus, a system and method has been described that analyzes multiple user accounts to determine whether those accounts are optimized, or close to optimized, and adjusts accounts based on this analysis or based on instructions from the user. This system provides a single point of registration for a user to register all financial accounts. The system also provides a common login process and common log of transactions relating to all registered accounts. Further, the system authenticates a user's identity and verifies that the user is authorized to access particular accounts and perform certain actions related to those accounts. The system also determines whether the user, the accounts, and the requested action represent a good financial risk.

Dialog - NPL

Search Strategy

Databases: ABI/INFORM® Professional Advanced, Abstracts in New Technology & Engineering, Abstracts in New Technology & Engineering, British Library Inside Conferences, Business & Industry, Computer and Information Systems Abstracts, Computer and Information Systems Abstracts, Current Contents® Search, EconLit, Ei Compendex®, Electronics & Communications Abstracts, Electronics & Communications Abstracts, Gale Group Computer Database™, Gale Group New Product Announcements / Plus®, Gale Group Newsletter Database™, Gale Group PROMT®, Gale Group Trade & Industry Database™, Inspec®, Mechanical & Transportation Engineering Abstracts, Mechanical & Transportation Engineering Abstracts, NTIS: National Technical Information Service, ProQuest Dissertations and Theses Professional, ProQuest Newsstand Professional, SciSearch®: a Cited Reference Science Database, UBM Computer Full Text

Set#	Searched for	Results
S1	(auto* or dynamic* or preprogram* or program* or robot* or unman* or comput* or machin* or (self n/1 (regulat* or direct* or execut* or control*)))	237131314*
S2	((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or move* or moving or reassign* or reallocat* or swap*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi*	59366646*
S3	asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*	327174824*
S4	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook*)	27053598*
S5	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1)	53297698*
S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR	997169*

	tally OR portfolio OR passbook*)) n/5 (multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*)	
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	11115254*
S8	S1 n/30 S2	10067589*
S9	S8 n/30 S3	2162011*
S10	S9 n/150 S4	48218*
S11	S10 n/150 S5	7330*
S12	S11 n/150 S6	549°
S13	S12 n/150 S7	84°
S14	S13 and pd(<20170816)	73°
S15	credential* or certificat* or passport* or pass$2word* or pin or pins or key or keys or token* or (pass* n/1 (code* or word)) or verified or identif*	129036599*
S16	S15 n/30 S4	1258152*
S17	S16 n/30 S6	47027*
S18	S17 n/150 S9	200°
S19	S18 n/150 (S5 or S7)	40°
S20	S19 and pd(<20170816)	35°

THE NEW RULES OF THE ROAD

Author: Cole, Chris; Ware, Viveca; Grochala, Ann; Scanlan, Mark; Eurgubian, Elizabeth

Publication info: Independent Banker 60.1: 26-31. Independent Community Bankers of America. (Jan 2010)
ProQuest document link

Abstract (summary): Although most community banks were relieved that the FDIC decided not to impose one or more special assessments on the industry, the FDIC may still have to take extraordinary measures during 2010, perhaps imposing another special assessment or borrowing from the US Treasury. ICBA will continue to press the FDIC to hold assessment rates at reasonable levels and to broaden the assessment base to include assets minus Tier 1 capital. ICBA will continue to advocate for an industry-funded solution to the DIF liquidity and solvency problems that avoids imposing further special assessments or a further increase in DIF assessment rates during 2011. Although ICBA was able to block legislative efforts by the Farm Credit System (FCS) to expand its lending powers as part of the farm-bill debate, the system's captive regulator has been working to accommodate FCS's wishes. Community banks must also prepare for future escrow requirements that will take effect on April 1.

Links: Check USPTO-STIC for Availability

Location: United States--US

Language: English

Publication title: Independent Banker

Volume: 60

Issue: 1

Pagination: 26-31

Publisher location: Sauk Centre

Document type: Feature

Document URL: https://dialog.proquest.com/professional/docview/215799495?accountid=131444

Copyright: Copyright Independent Community Bankers of America Jan 2010

First available: 2010-06-09

Updates: 2013-02-042013-02-072013-02-14

Database: ABI/INFORM® Professional Advanced (1971 - current)

Keywords in context:

Full text: ... fees for the statement period and the year to date. ATMs and online and telephone banking systems must provide account balances that do not include funds that may be made available to cover overdrafts. However, banks may disclose an additional balance that includes funds available from overdraft coverage services (automated programs, transfers from savings or another checking account and lines of credit), so long as banks prominently state that the balance includes these additional amounts. Effective July 1, Regulation E (electronic fund transfers) will prohibit financial institutions from assessing overdraft fees for ATM and debit-card transactions that create overdrafts unless the consumer opts in. The rule applies to all consumers, including existing account holders, but not to checks, ACH debits and other

types of debit transactions. -Viveca Ware Credit CARD Act Implementation Community banks will see further regulatory changes to credit-card laws in 2010. Most of the regulatory provisions of the Credit Card Responsibility, Accountability and Disclosure Act of 2009 (Credit CARD Act) go into effect on ...

Nutter Bank Report (February 2010)

Author: Mr Kenneth Ehrlich and Michael K. Krebs

Publication info: Mondaq Business Briefing 03 Mar 2010: NA.

ProQuest document link

Abstract (summary): Originally published February 26, 2010

Headlines

Banking Agencies Issue Joint Guidance on Small Business Lending

President Outlines New Capital Plan to Support Small Business Lending

Federal Reserve Proposes Amendments to Clarify New Overdraft Fee Rules

OCC Provides Advice to National Banks Offering Tax Refund Anticipation Loans

Other Developments: RESPA GFE Questions and Massachusetts Truth in Lending

Full Reports

1. Banking Agencies Issue Joint Guidance On Small Business Lending

The federal banking agencies and state bank regulators -- through the Conference of State Bank Supervisors -- have issued new guidance on prudent lending to creditworthy small business borrowers.

Links: Check USPTO-STIC for Availability

Language: English

Publication title: Mondaq Business Briefing

Pages: NA

Publication type: Newswire

Journal code: 0KEO

Publisher: Mondaq Ltd.

Date created: 2012-08-07

Document type: Magazine/Journal

Accession number: 220247619

Document URL: https://dialog.proquest.com/professional/docview/1060677449?accountid=131444

Copyright: Copyright 2010 Gale, Cengage Learning. All rights reserved.

First available: 2012-09-23

Updates: 2012-09-23

Database: Gale Group Trade &Industry Database™ (1976 - current)

Keywords in context:

Full text: ... without a consumer's affirmative consent applies to all institutions, including those with a policy and practice of declining automated teller machine and one-time debit card transactions when an account has insufficient funds. Effective July 1, 2010, Regulation E will generally prohibit an institution from assessing any fee or charge for paying an ATM or one-time debit card transaction on an overdrawn account unless the institution satisfies certain requirements, including providing notice and obtaining the consumer's affirmative consent to the overdraft service. The final rule provides an exception ... ATM and one-time debit card transactions when the institution has a reasonable belief that the consumer's account has insufficient funds at the time. The proposed amendment to the final rule and the related commentary would explain that the exception provides relief only from the notice and opt-in requirements when no overdraft fees are assessed. Nutter Notes: The proposed amendments would also change the Federal Reserve's Regulation DD (Truth in Savings) and its official staff commentary to clarify the application of the rule to retail sweep programs and to clarify certain terminology for overdraft fee disclosures. Regulation DD requires institutions that disclose balance information to a consumer through an automated system to disclose a balance that does not include additional amounts that may be provided under an overdraft protection service, including a program involving an automatic transfer of funds from another account of the consumer. A retail sweep program involves two legally distinct subaccounts, a transaction subaccount and a savings subaccount, which together make up the consumer's sweep account. Notwithstanding the establishment of two legally distinct subaccounts, the sweep account statement typically shows a single account balance, and a single account on which all transactions into and out of the sweep account are reflected. The proposed amendment to the official commentary would clarify that Regulation DD does not require an ... to exclude from the consumer's available balance funds that may be transferred from a savings subaccount pursuant to a retail sweep program when disclosing a transaction account balance under such a program. Comments on the proposed amendments will be due 30 days after publication in the Federal Register, which is expected shortly. ...

A study of financial Quotient among information technology professionals in India

Author: Rajput, Gaurav

Publication info: Devi Ahilya Vishwavidyalaya. ProQuest Dissertations Publishing, 2016. 27531515.

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Keywords in context:

Full text: ... providers. Lease or rental agreement, insurance policies should also be reviewed. The task of review may be tedious or uninteresting but it is important because terms and financial situations change all the time. Optimize accounts An individual should avoid unnecessary bank service charges and open an online high-yield savings account, choose a rewards checking account where interests are paid according to balance and use a rewards credit card that pays and matches personal lifestyle. Card should not be chosen just ... at a particular store; rather it should be because of a long term relationship that one can live with. An individual must benefit from a credit card if he must have one (e.g., air miles, cash rebate, and auto pay) (Roth, 2009)26. When optimizing banks and credit cards, an individual should also consider the use of multiple accounts at each institution. One account that allows to target savings in a way as to save for vacation in one account, for a car in another account and for emergency funds in another account. Listverse (2007) _Top 10 Tips for Achieving Financial Freedom4 Retrieved from http://listverse.com/2007/10/16/top-. 0-tips-for-achieving-financial-freedom Roth, J.D. (2009) _The Secrets of Financial Freedom: An Interview with ...

National Banking Survey Reveals Consumers Not Following Simple Savings Strategies: One-third of U.S. adults unaware of rate paid on their savings account

Author: Anonymous

Publication info: PR Newswire [New York] 17 Oct 2007.

ProQuest document link

Abstract (summary): The findings indicate that there are areas where Americans can improve their financial circumstances by using basic savings strategies -- separating their accounts, establishing an automatic savings plan and always seeking the best rate possible, according to Countrywide Bank Managing Director for Deposits and Investment Services Pierre P. Habis.

Links: Check USPTO-STIC for Availability

Subtitle: One-third of U.S. adults unaware of rate paid on their savings account

Language: English

Publication title: PR Newswire

Publisher location: New York

Document type: WIRE FEED

Document URL: https://dialog.proquest.com/professional/docview/450909072?accountid=131444

Copyright: Copyright PR Newswire Association LLC Oct 17, 2007

First available: 2010-07-01

Database: 2 databasesView listHide listABI/INFORM® Professional Advanced, ProQuest Newsstand Professional

Keywords in context:

Full text: ... from that nest egg and that's when savings accounts stagnate," said Habis. Key findings from the survey include: -- 67 percent of adults with both checking and savings accounts at the same financial institution have never considered keeping their savings and checking accounts in two separate institutions -- 61 percent of adults with a savings account have not set up a savings plan that automatically transfers a certain percentage of their earnings to their savings account on a regular basis -- 71 percent of adults with both a checking and savings account have their primary savings and checking account with the same financial institution ... According to Habis, there are three key tips consumers should keep in mind to optimize interest earnings for their savings: Tip #1: "SEPARATE" Separate your primary savings and checking accounts; house them at different financial institutions. Consumers should consider keeping their primary savings and checking accounts with different financial institutions in order to get the best rates. Shop around to identify institutions that offer the best possible terms. It is possible that the ... for providing market-leading savings rates. And by keeping accounts separate, consumers are less likely to dip into the savings account to deal with short term cash shortages. Tip #2: "AUTOMATE" Automatically transfer a set amount into savings. Remember to pay yourself first and set up an automatic savings plan so a certain percentage of your income, or a set dollar amount, is automatically transferred to your savings account on a regular basis. Start out by trying to allocate a small percentage, perhaps even $20 per week to start, towards a high-yielding account. Tip #3 "SEEK THE BEST RATE" Research rates at different financial institutions. Take a close look at the Annual Percentage Yield (APY) on savings accounts, money market accounts or certificates of deposit. Avoid leaving money ...

Dynamic Portfolio Strategy Using Clustering Approach

Author: Ren, Fei 1 ; Lu, Ya Nan 2 ; Li, Sai Ping 3 ; Jiang, Xiong Fei 4 ; Zhong, Li Xin 5 ; Qiu, Tian 6 1 East China University of Science & Technology, Sch Business, Shanghai 200237, Peoples R China, East China University of Science & Technology, Res Ctr Econophys, Shanghai 200237, Peoples R China, Peoples R China fren@ecust.edu.cn 2 East China University of Science & Technology, Sch Business, Shanghai 200237, Peoples R China, Peoples R China 3 Academia Sinica - Taiwan, Inst Phys, Taipei 115, Taiwan, Taiwan 4 Ningbo University of Finance & Economics, Coll Informat Engn, Ningbo 315175, Zhejiang, Peoples R China, Peoples R China 5 Zhejiang University of Finance & Economics, Sch Finance, Hangzhou 310018, Zhejiang, Peoples R China, Peoples R China 6 Nanchang Hangkong University, Sch Informat Engn, Nanchang 330063, Jiangxi, Peoples R China, Peoples R China

Publication info: PLOS ONE 12.1 PUBLIC LIBRARY SCIENCE. (Jan 27, 2017)

ProQuest document link

Abstract (summary): The problem of portfolio optimization is one of the most important issues in asset management. We here propose a new dynamic portfolio strategy based on the time-varying structures of MST networks in Chinese stock markets, where the market condition is further considered when using the optimal portfolios for investment. A portfolio strategy comprises two stages: First, select the portfolios by choosing central and peripheral stocks in the selection horizon using five topological parameters, namely degree, betweenness centrality, distance on degree criterion, distance

on correlation criterion and distance on distance criterion. Second, use the portfolios for investment in the investment horizon. The optimal portfolio is chosen by comparing central and peripheral portfolios under different combinations of market conditions in the selection and investment horizons. Market conditions in our paper are identified by the ratios of the number of trading days with rising index to the total number of trading days, or the sum of the amplitudes of the trading days with rising index to the sum of the amplitudes of the total trading days. We find that central portfolios outperform peripheral portfolios when the market is under a drawup condition, or when the market is stable or drawup in the selection horizon and is under a stable condition in the investment horizon. We also find that peripheral portfolios gain more than central portfolios when the market is stable in the selection horizon and is drawdown in the investment horizon. Empirical tests are carried out based on the optimal portfolio strategy. Among all possible optimal portfolio strategies based on different parameters to select portfolios and different criteria to identify market conditions, 65% of our optimal portfolio strategies outperform the random strategy for the Shanghai A-Share market while the proportion is 70% for the Shenzhen AShare market.

Links: Check USPTO-STIC for Availability

Collaborator: Xiongfei, Jiang

Language: English

Language of abstract: English

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Number of references: 66

Document type: Article

Accession number: 000396211400070

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First available: 2017-03-26

Updates: 2017-03-262017-04-032017-04-102017-07-102017-07-312017-09-052020-09-162021-04-19

Database: SciSearch®: a Cited Reference Science Database (1974 - current)

Keywords in context:

Abstract: The problem of portfolio optimization is one of the most important issues in asset management. We here propose a new dynamic portfolio strategy based on the time-varying structures of MST networks in Chinese stock markets, where the market condition is further considered when using the optimal portfolios for investment. A portfolio strategy comprises two stages: First, select the portfolios by choosing central and peripheral stocks in the selection horizon using five topological parameters, namely degree, betweenness centrality, distance on degree criterion, distance on correlation criterion and distance on distance criterion. Second, use the portfolios for investment in the investment horizon. The optimal portfolio is chosen by comparing central and peripheral portfolios under different combinations of market conditions in the selection and investment horizons. Market conditions in our paper are identified by the ratios of the number of trading days with rising index to the total number of trading days, or the sum of the amplitudes ... Empirical tests are carried out based on the optimal portfolio strategy. Among all possible optimal portfolio strategies based on different parameters to select portfolios and different criteria to identify market conditions, 65% of our optimal portfolio strategies outperform the random strategy for the Shanghai A-Share market while the proportion is 70% for the Shenzhen AShare ...

Plaid Ex1002
Page 360 of 548

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L88	53	"multi-factored authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L89	7538	"multi-factored authentication" "multi-factor authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L90	8821	"multi-factored authentication" "multi-factor authentication" "multifactor authentication" "multifactored authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L91	9652	(multifactor$2 multi-factor$2) with authenticat$3	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L92	1786	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L93	928	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$3 with account)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L94	929	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$4 with account)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L96	54	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$4 with account) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L97	3	L1 and L4 and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L98	3	L1 and L5 and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L99	0	L2 and L5 and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L100	8479	"two-factored authentication" "two-factor authentication" "two factor authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM

L101	6960	"two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L102	269	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L103	24	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L104	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L105	98	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L106	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L107	87	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L108	620	(("two-factored authentication" "two-	(US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	ON	ON	2021/05/25 07:25 AM

		factor authentication" "two factor authentication") and (account with access)).detd. and L11	IBM_TDB)				
L109	83	(("two-factored authentication" "two-factor authentication" "two factor authentication") same (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L110	18	(("two-factored authentication" "two-factor authentication" "two factor authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L111	35	(("multi-factored authentication" "multi-factor authentication" "multifactor authentication" "multifactored authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L113	308	(endpoint with account) and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L114	19	(endpoint with account).bsum. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L115	2	(endpoint with account).ab. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM
L117	24	("5223699" "5644727" "5875437" "5940811" "6105007" "7321874" "7321875" "7383223" "7505937" "7797207" "10268995" "10510082" "20070136167" "20070136168" "20070136169" "20080208737" "20100299286" "20130132305" "20150161577" "20190287169" "5546523" "5878337" "5903830" "6047270" "6149055").pn. and L81	(US-PGPUB; USPAT; USOCR; EPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM

L118	24	("7707120" "9769134" "20030200184" "20080301056" "20100063895" "20160358175" "20080262969" "8706577" "8942997" "10453063" "20040128512" "20100174620" "20100174626" "20120011065" "20120030066" "20160189119" "20170186003" "20200019965" "8280807" "20070063024" "20130191265" "20050086068" "20080165960" "20090006254" "20100332336").pn. and L81	(US-PGPUB; USPAT; USOCR; EPO; IBM_TDB)	OR	ON	ON	2021/05/25 07:25 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 08/25/2021

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3699	

NOTIFICATION DATE	DELIVERY MODE
08/25/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@wiggin.com

Applicant-Initiated Interview Summary	Application No. 16/850,150	Applicant(s) Zimmerman et al.		
	Examiner ROBERT R NIQUETTE	Art Unit 3699	AIA (First Inventor to File) Status Yes	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ROBERT R NIQUETTE	Primary Examiner	Telephonic
Mr. Gary Zimmerman	Inventor	
Atty. Jonathan Hall	Attorney	

Date of Interview: 19 August 2021

Issues Discussed:

35 U.S.C. 101

Applicants pointed out that the invention could not be performed by a human; a human could not replicate the invention. (It is worth noting that the 101 rejection was for that of a fundamental economic practice and not a mental process). The Applicants went on to state that in the 'accessing" there is a lot more going on e.g. verification. The Examiner maintained that activity such as verification is not in the claim language as the claims now stand, but should be. Applicants asked if including a verification step would be helpful in obviating the 101. Examiner replied that it could be, depending on how the claim was worded and how argued.

35 U.S.C. 112

Applicants explained that the 112 rejection should be vacated since the antecedent basis for the end point is found in provisional paragraph 86. The Examiner will review that paragraph upon receipt of Applicants' response.

35 U.S.C. 102

Applicants remarked that Counterman deals with numerous sites that have all agreed to trust one site that performs two-factor authentication. The pending case does not rely on the consent of several websites but on customer consent only. The sites, e.g. banks, aren't even aware of the activity.

Other

No agreements were reached.

/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3699	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant-Initiated Interview Summary	**Application No.** 16/850,150	**Applicant(s)** Zimmerman et al.		
	Examiner ROBERT R NIQUETTE	**Art Unit** 3699	**AIA (First Inventor to File) Status** Yes	**Page** 2 of 2

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Utility Application of:

Gary E. ZIMMERMAN et al.

Application No.: 16/850,150	Confirmation No.: 1088
Filed: April 16, 2020	Art Unit: 3699
For: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	Examiner: Niquette, Robert R.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION

Dear Sir:

In response to the Office Action dated June 11, 2021, Applicant submits this amendment and respectfully requests reconsideration of the above-identified U.S. patent application. The following are included with this paper:

Amendments to the Claims begin on page 2 of this paper.

Amendments to the Specification begin on page 3 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Attachment: Terminal Disclaimer

AMENDMENTS TO THE SPECIFICATION

Please **AMEND** the paragraph (i.e., paragraph [000122]) bridging the bottom of page 36 with the top of page 37 of the originally filed specification filed on April 16, 2020 with the following paragraph:

-- Upon subsequent log ins by the product program 110 to the American Express site when the user is not present, the product program 110 can ~~selected~~ select the additional multi-factor authentication endpoint that has been entered in accordance with the foregoing description, e.g., a phone number known to the product program 110, which the product program 110 (or third-party software service provider) can then monitor for the transmitted code. Accordingly, once the additional multi-factor authentication endpoint has been added, the product program 110 can respond directly to multi-factor authentication requests without requiring user intervention or user presence, and gain access to the user's account to perform various transactions, as discussed herein, to optimize the user's financial assets among the linked accounts. --

No new matter is added.

AMENDMENTS TO THE CLAIMS

The following **Listing of Claims** will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

storing the account holder's credentials using one or more processors, wherein the credentials are stored in a data store;

verifying the account holder's credentials by [[(1)]] accessing, via one or more processors, the online account using the account holder's credentials;

[[(2)]] receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

[[(3)]] ~~transmitting~~ prompting the ~~request to the~~ account holder for a response and receiving the response thereto from the account holder; and

[[(4)]] transmitting the account holder's response to the online account to satisfy the multi-factor authentication request.[[;]]

2. (Currently Amended) The method of [[Claim]] claim 1, further comprising the steps of:

[[(5)]] storing one or more of the account holder's endpoints for the online account in a ~~database~~ data store associated with the online account; and

[[(6)]] utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

3. (Currently Amended) The method of claim 2, wherein the endpoint includes an email address~~, a landline phone number,~~ or a ~~cellular~~ phone number.

4. (New) The method of claim 1, wherein the account holder's credentials are collected via a user interface.

5. (New) The method of claim 1, wherein the account holder's credentials are collected from a data store.

6. (New) A method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

temporarily storing the account holder's credentials using one or more processors, wherein the credentials are held in memory;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; and

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request.

7. (New) The method of claim 6, further comprising the steps of:

storing one or more of the account holder's endpoints for the online account in a

data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

8. (New) The method of claim 7 wherein the endpoint includes an email address or a phone number.

9. (New) The method of claim 6, wherein the account holder's credentials are collected via a user interface.

10. (New) The method of claim 6, wherein the account holder's credentials are collected from a data store.

REMARKS

Applicant submits this communication (the "Amendment") in response to the Office Action mailed on June 11, 2021 (the "Office Action").

I. Status of the Claims

Claims 1-3 are pending. Applicant amends claims 1-3, and adds new independent claim 6 and new dependents claims 4-5 and 7-10 herein, without prejudice or disclaimer. The originally filed specification and drawings fully support the subject matter of these amendments and additions. For example, support for the claim amendments, and the new independent claim, can be found in paragraphs [0029], [00086]-[00087], [00090], [000110]-[000117], and [000119]-[000121] of Applicant's originally filed specification. ***No new matter is added***. New independent claim 6 recites substantially the same features of amended independent claim 1 except that the account holder's credentials in new independent claim 6 are "temporarily" stored in memory. Support for "temporary" storage can be found, at least, in paragraph [00087] of Applicant's originally filed specification. Upon entry of this Amendment, claims 1-10 will be pending for examination, of which claims 1 and 6 will be independent.

The foregoing claim amendments have been made solely for the purpose of expediting prosecution of the present application and should in no way be construed as acquiescence to any of the Examiner's objections or rejections in this or any other Office Action issued in the present application. Applicant reserves the right to pursue the subject matter of the claims prior to being amended herein in this application or in another related application.

Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the response below.

II. Interview Summary

Applicant thanks Examiner Niquette for the courtesies extended to Applicant's representative, Rikesh Patel, and to Inventor Gary E. Zimmerman, during the telephonic interview dated August 19, 2021. During the call, the Examiner and Applicant's representative provided arguments to overcome the outstanding rejection to claim 1 under 35 U.S.C. § 101 for allegedly

being directed to unpatentable abstract subject matter. Examiner Niquette indicated further steps would be needed to demonstrate a verification step.

Applicant's representative also discussed the alleged rejection of claim 1 under 35 U.S.C. § 102 over the cited reference Counterman, and proposed arguments in support of patentability over Counterman for claim 1. Applicant's representative indicated that the Counterman describes a process where the various websites must all agree to trust one site that performs two-factor authentication. Specifically, Applicant's representative stated that "OpenID" as described in Counterman is a completely different process than the one delineated by Applicant's independent claim 1. For example, in Counterman, the various websites must first subscribe to Counterman's "OpenID"; however, Applicant's method has no relationship with these various websites. In Applicant's method, these various websites are likely **unaware** of the third-party's involvement in this activity, and Applicant's method does not require the consent of the various websites, but Counterman requires it.

Lastly, Applicant's representative also disused the alleged rejection under 35 U.S.C. § 112(a). Specifically, the Applicant's representative suggested that support for the description of "multi-factor authentication or endpoints" is found in paragraph [0086] of Applicant's originally filed provisional application 61/932,495, filed January 28, 2014. Applicant's representative agreed it would provide a block quote of said paragraph for Examiner's reference in this formal response (see section 112 response for language).

No other agreements were reached. Because the substantive discussion of the interview is reflected in this response, the response also constitutes the required statement under 37 C.F.R. § 1.133(b).

III. Double Patenting Rejection

In the Office Action, claims 1-3 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 10,657,504 (assigned to Six Trees Capital LLC). Office Action, at p. 15. Although Applicant does not necessarily agree with this double patenting rejection, to obviate this rejection and to expedite prosecution and allowance of this application, Applicant files herewith a Terminal Disclaimer. The

Terminal Disclaimer will be filed concurrently with the filing of this Amendment. The filing of the Terminal Disclaimer in no way manifests an admission by Applicant as to the propriety of the double patenting rejection. See M.P.E.P. § 804.02 citing Quad Environmental Technologies Corp. v. Union Sanitary District, 946 F.2d 870 (Fed. Cir. 1991) ("In legal principle, the filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting, and raises neither presumption nor estoppel on the merits of the rejection."). Should the need arise at a later date, Applicant reserves the right to present arguments regarding the merits of the double patenting rejections and the alleged obviousness of Applicant's present claims in view of the claims of U.S. Patent No. 10,657,504. Accordingly, Applicant requests approval of the Terminal Disclaimer and the withdrawal of the double patenting rejection.

IV. Objection to the Specification

In the Office Action, the specification was objected to for allegedly containing a minor informality. Office Action, at p. 3. Particularly, the Examiner indicated that paragraph [0122] recites "the product program 110 can selected the additional multi-factor authentication...." In the Office Action, the Examiner states that Applicant intended "can select." *Id.* While Applicant does not necessarily agree with the Examiner's objection to the specification, Applicant amends the specification to address this discrepancy. ***No new matter is added.***

Applicant respectfully requests reconsideration and withdrawal of the objection to the specification.

V. Claim Objections

In the Office Action, claim 1 was objected to for minor informalities. Office Action at p. 3. These informalities have been addressed as provided in the claim listing above. Based on this, Applicant requests that the claim objections be withdrawn.

VI. Claim Rejections Under 35 U.S.C. § 112(a)

Claims 1-3 were rejected under 35 U.S.C. § 112(a) for allegedly failing to comply with the written description requirement. Office Action, at p. 4. Specifically, the Office Action alleges that

the "claim(s) [contain] subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor … had possession of the claimed invention." *Id.* Specifically, the Office Action alleges that the Applicant's claims ultimately claim priority to the originally filed provisional application serial no. 61/932,495, filed January 28, 2014, yet that this provisional application "contains no description of multi-factor authentication or endpoints." *See id.* However, the Applicant disagrees with the Examiner's assessment regarding this written description. As indicated in the interview with the Examiner on August 19, 2021, paragraph [0086] of the provisional application (reproduced below for reference) explicitly provides support for both multi-factor authentication and endpoints. Paragraph [0086] recites:

> **[0086]** In embodiments, instructions provided to savings accounts 400a, 400b, 400c may require the program product 110 to retrieve credentials from credential data store 120 to access savings accounts 400a, 400b, 400c. In embodiments, checking account 300 may also be accessed in a similar manner. In embodiments, one or more of accounts 300, 400a, 400b, 400c ***may involve more than one level or layer of credential input on the part of product program 110, e.g., multi-level or multi-factor authentication***. For example, a financial institution that manages one or more of accounts 300, 400a, 400b, 400c may detect access to an account by a new origination point along data network 1100, e.g. a point other than client device 200, and ***may require a response, answer, and/or code to be input in response to an inquiry***. Typically, such a response, answer, and/or code is provided by a user through client device 200 or another device connected to the relevant account. However, in such a case, product program 110 may be configured to communicate directly with one or more of accounts 300, 400a, 400b, 400c as proxy for the user, for example, ***to receive and/or interpret (directly or via a third-party software service provider) unique authentication codes, which may include alphanumeric characters and/or verbal responses and provide responses to questions or requested authentication codes which may include alphanumeric characters and/or verbal responses***. Such communication between product program 110 and one or more of accounts 300, 400a, 400b, 400c ***may occur over one or more data and/or voice networks or services, for example, e-mail, mobile, satellite, or land-lined telephone, and/or SMS, to name a few.*** Accordingly, program product 110 may be authorized, e.g., designated as a point of contact, to communicate directly with one or more of accounts 300, 400a 400b, 400c on behalf of the account holder.

(***emphasis added***).

Based on the at least foregoing, Applicant believes Applicant's claims should be afforded a priority date of January 28, 2014, which corresponds with the filing date of the original provisional application in chain of priority.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 112(a).

VII. Claim Rejections Under 35 U.S.C. § 112(b)

Claim 1 was rejected under 35 U.S.C. § 112(b), second paragraph, for allegedly being indefinite. Office Action, at p. 5.

Specifically, the Office Action alleges that "[i]t is unclear who or what is performing [the] steps [of claim 1]." *Id.* at 3. Applicant does not agree with this rejection. The preamble of independent claim 1 clearly recites that the method is for "permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol." The preamble is clear in that the third-party entity is performing the steps of claim 1. *No new matter is added.*

Applicant submits that claim 1 is now clear and definite. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 112(b).

VIII. Claim Rejections Under 35 U.S.C. § 101

Claims 1-3 were rejected under 35 U.S.C. § 101 for allegedly being directed to unpatentable abstract subject matter. Office Action, at p. 5 and 9. Specifically, the Office Action alleges that "[t]he claims are directed to a certain method of organizing human activity." *Id.* at 11. Applicant respectfully traverses the 35 U.S.C. § 101 rejection of claim 1, from which claims 2-3 depend, as set forth below.

The Examiner relies upon a 101 analysis that follows the 2014 Interim Guidance on Patent Subject Matter Eligibility and the subsequent updates and memoranda, including the 2019 Revised Patent Subject Matter Eligibility Guidance (2019 PEG) and the October 2019 Update.

The Revised Guidance replaces the previous analysis under Step 2A with a newly presented "two-pronged" analysis. Under the first prong, Examiners must determine if a claim falls within three enumerated groupings of abstract ideas found in previous guidelines: "mathematical concepts," "certain methods of organizing human activity," and "mental processes." To support a finding that the claim "falls within" one of these categories, Examiners must identify "specific limitations" in the claim (both individually and in combination) and determine whether the limitations fall within any of the three enumerated categories. These three categories are narrowly defined and recite specific types of claims (e.g., those directed to "mathematical formulas," "economic" or "commercial" interactions or "concepts performed in the human mind"). If the claim does not recite a judicial exception, it is not directed to a judicial exception and is eligible.

If the claim does recite a judicial exception, then it requires further analysis in Prong Two of Revised Step 2A in order to evaluate whether the claim integrates the abstract idea into a practical application. A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception. When the exception is so integrated, then the claim is not directed to a judicial exception and is eligible.

Examiners evaluate integration into a practical application by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application. Revised Step 2A specifically excludes consideration of whether the additional elements represent well-understood, routine, conventional activity. An additional element (or elements) in the claim can integrate a recited judicial exception(s) into a practical application even if the additional element is well-understood, routine, conventional activity. Accordingly, in revised Step 2A Examiners should ensure that they give weight to all additional elements, whether or not they are conventional, when evaluating whether a judicial exception has been integrated into a practical application.

If the additional elements do not integrate the exception into a practical application, then the claim is directed to the judicial exception, and requires further analysis under Step 2B (where it may

still be eligible if it amounts to an inventive concept). It is possible that a claim that does not "integrate" a recited judicial exception is nonetheless patent eligible. For example, the claim may recite additional elements that render the claim patent eligible, even though a judicial exception is recited in a separate claim element.

If a claim has been determined to be directed to a judicial exception under revised Step 2A, Examiners should then evaluate the additional elements individually and in combination under Step 2B to determine whether they provide an inventive concept (*i.e.,* whether the additional elements amount to significantly more than the exception itself). If the Examiner determines that the element (or combination of elements) amounts to significantly more than the exception itself, the claim is eligible, thereby concluding the eligibility analysis. If such reevaluation indicates that the element is unconventional or otherwise more than what is well-understood, routine, conventional activity in the field, this finding may indicate that an inventive concept is present and that the claim is thus eligible. Examples of limitations recited in a claim that may be sufficient to qualify the claim, as a whole, as "significantly more" than the judicial exception itself include:

a) Improvements to another technology or technical field;

b) Improvements to the functioning of the computer itself;

c) Applying the judicial exception with, or by use of, a particular machine;

d) Effecting a transformation or reduction of a particular article to a different state or thing;

e) Adding a specific limitation other than what is well-understood, routine and conventional in the field, or adding unconventional steps that confine the claim to a particular useful application; or

f) Other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

Claim 1 Satisfies Step 2A Because Claim 1 Is Not Directed to A Judicial Exception

Under the first prong, Examiners must determine if a claim falls within three "enumerated groupings of abstract ideas" found in previous guidelines: "mathematical concepts," "certain methods of organizing human activity," and "mental processes." If the claim does not recite a judicial exception, it is not directed to a judicial exception and is eligible.

The Office Action contends on page 5 that the claims are not directed toward a statutory category, but rather, to a "certain method of organizing human activity." *Id.* at 11. Applicant disagrees that the subject matter of Applicant's amended independent claim 1 is directed toward a method of organizing human activity. As an initial mater, claim 1 is not directed to a mathematical concept, a method of organizing human activity, or a mere mental process.

The Office Action alleges that "the practice of online financial account access and security is a fundamental economic practice, well-known, and extensively used for many years, without the involvement of technological means." Applicant disagrees that the features of amended independent clam 1 are tied to a "fundamental economic practice" that a human can perform; rather, the invention described by amended independent claim 1 is a complex and unique method to permit a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol," as recited in the preamble of claim 1. A human being cannot replicate this method through any means of his own, and certainly not without technological means, which are also required by amended independent claim 1.

However, even assuming *arguendo* that the claims are incorrectly found to recite a judicial exception, then further analysis under Prong Two of Revised Step 2A is required in order to evaluate whether the claim integrates the abstract idea into a practical application. Under the second prong of the revised guidance, the Examiner must evaluate whether the claim recites additional elements that integrate the identified judicial exception into a practical application. As explained below, the Applicant respectfully submits that, even assuming the Examiner finds that claim 1 recites a judicial exception, pending claim 1 integrates an abstract idea into a practical application.

Independent claim 1 describes a method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol, wherein the accessing of the online account is done using one or more processors to access the account holder's credentials. Furthermore, the steps recited in amended claim 1 of "collecting the account holder's credentials . . . storing the account holder's credentials using one or more processors, wherein the credentials are stored in a data store . . . ***verifying the account holder's credentials by accessing, via one or more processors, the online account using the account***

holder's credentials . . . receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted . . . prompting the account holder for a response and receiving the response thereto from the account holder . . . [and] transmitting the account holder's response to the online account to satisfy the multi-factor authentication request," integrates the alleged judicial exception of claim 1 into a practical application. At least these steps of amended claim 1 integrate any alleged judicial exception, such as a "fundamental economic practice" or a "certain method of organizing human activity," into a **practical application**.

Amended independent claim 1 of the present application presents a practical application that solves problems with multi-factor authentication, including by overcoming multi-factor authentication without requiring any prior or existing coordination/cooperation from the institution at which the account is held. Claim 1, as amended, does not recite software per se; rather amended independent claim 1 is directed to a method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and an endpoint that is stored in a database and associated with the user's online account. Moreover, the online account is accessed using one or more processors, which is not software per se.

Accordingly, Applicant asserts that the claims in the present application do not recite a judicial exception and even if the claims were found to recite a judicial exception under the new Revised Guidance, claim 1 also recites additional elements that integrate the identified judicial exception into a practical application. Therefore, claim 1 is eligible under 35 U.S.C. §101.

Claim 1 Satisfies Step 2B Because Claim 1 As A Whole Amounts to Significantly More Than Any Of The Judicial Exceptions

If the additional elements are construed as failing to integrate the exception into a practical application, then the claims are directed to a judicial exception, and require further analysis under Step 2B (where it may still be eligible if it amounts to an inventive concept). Examiners should evaluate the additional elements individually and in combination under Step 2B to determine whether they provide an inventive concept (*i.e.*, whether the additional elements amount to

significantly more than the exception itself). If the Examiner determines that the element (or combination of elements) amounts to significantly more than the exception itself, the claim is eligible.

With respect to pending independent claim 1, assuming *arguendo* that the Examiner finds that the claim is directed to a judicial exception, the combination of elements recited in the claims are performed in an unconventional way and therefore include an "inventive concept," rendering the claim eligible as patentable subject matter under 35 U.S.C. § 101. Amended independent claim 1 includes specific limitations that are other than what is well-understood, routine and conventional in the field and include unconventional steps that confine the claims to a particular useful application. The claimed subject matter provides a sufficiently concrete transformation of a system itself (*e.g.*, method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and the steps of "***verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials . . .*** [and] ***receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted***," so as to ground the invention to a particular inventive implementation.

Ex Parte Ginder concerned a payment reminder application embedded in a vehicle-based computing system of a vehicle. The PTAB noted that "[a]lthough sending and receiving payment reminders may well be a fundamental practice . . . the independent claims are directed to more than . . .sending and receiving[] payment reminders." Rather, the independent claims were directed to delivering a payment reminder after determining if a mobile device of a responsible party is present within a vehicle. The PTAB then looked to the specification as confirming that embodiments of the invention were directed to a vehicle-based computing system. The PTAB determined based on these materials that it had not been established that the claims were directed to a fundamental economic practice, as set forth in the Office Action on appeal.

Here, amended independent claim 1 recites more than a fundamental economic or business practice, and more than the mere accessing of an online account. Particularly, amended claim 1 recites a method for permitting a third-party entity to gain access to an online account held by an

account holder that is ***secured by a multi-factor authentication protocol using one or more processors*** and ***verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials . . .*** [and] ***receiving a multi-factor authentication request from the online account , the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted*** (*emphasis added*). This process is detailed in at least ¶ [0086] of Applicant's originally filed specification from the provisional patent application, from which this application claims priority.

Thus, similar to the claims at issue in *Ex Parte Ginder*, the presently claimed method is not merely representing a fundamental economic or business practice, but, rather, the presently claimed method is a non-abstract specific process performed according to specific steps.

The PTAB in *Ex Parte Ginder* further agreed with the Applicant that the claims required more than a generic computer to implement, and that therefore even if the claims were demonstrated to be directed to an abstract idea, that the claims nonetheless required "significantly more" than an abstract idea under the *Alice* inquiry. The PTAB specifically noted the use of specific technology, such as BLUETOOTH and that the use of this technology was integral to what the claims were directed to, and that the use of this technology required more than a mere generic computer because not every computer is inherently capable of utilizing the technology without special programming.

As with BLUETOOTH in *Ex Parte Ginder*, independent claim 1 of the present application requires the use of a multi-factor authentication protocol using an assigned endpoint that is stored in a data store and associated with the online account, and the operation of which requires more than generic computers. Thus, even to the extent the presently pending claims are abstract, they nonetheless provide the "something more" necessary for satisfying the *Alice* inquiry.

Therefore, Applicant respectfully submits that the claimed subject matter recited in amended claim 1 is novel, transformative, and improves the functioning of the system, and satisfies Step 2B of the Revised Guidelines.

Claim 1 Recites Patent-Eligible Subject Matter

For at least the foregoing reasons, Applicant respectfully submits that claim 1 does not recite a judicial exception, and is not, software per se, but assuming *arguendo* that it does, claim 1

integrates the judicial exception into a practical application, and/or amounts to significantly more than the judicial exception, and therefore, claim 1 recites eligible subject matter. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 101.

Claims 2 and 3 are patentable over 35 U.S.C. § 101 for the same reasons as applied to claim 1 above mutatis mutandis.

IX. Claim Rejections Under 35 U.S.C. § 102

Claims 1-3 were rejected under 35 U.S.C. § 102(a)(1) and 102(a)(2) as allegedly being anticipated by U.S. Patent No. 8,495,720 to Counterman ("Counterman"). Office Action, p. 16. Applicant respectfully traverses this rejection as explained below.

Applicant respectfully traverses this rejection for the reasons explained below.

A proper anticipation rejection requires each and every element set forth in the claim to be found in a single prior art reference. MPEP § 2131. Applicant respectfully submits that Counterman does not anticipate amended claim 1, at least, because Counterman does not disclose each and every element of amended claim 1.

Amended claim 1 recites, at least, "[a] method for permitting a third-party entity to gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity . . . ***collecting the account holder's credentials . . . storing the account holder's credentials using one or more processors, wherein the credentials are stored in a data store . . . verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials .*** . . . receiving a multi-factor authentication request from the online account , ***the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted . . . prompting the account holder for a response and receiving the response thereto from the account holder***; and transmitting the account holder's response to the online account to satisfy the multi-factor

authentication request." Counterman does not teach or describe the aforementioned features of Applicant's claim 1, as amended.

Counterman, as explained earlier in this response in the interview summary section, avoids the need for multi-factor authentication by creating a single trust that is trusted by the various websites. These various websites (e.g., different banking online accounts at different banking websites) all have to subscribe to the "OpenID" of Counterman. *See* Counterman, at col. 6, lines 1-26. Thus, in Counterman, there is a clear relationship between Counterman's "OpenID" and the various websites. In Applicant's claimed invention, however, there is **no relationship** between the third-party accessing the account holder's online account and the various websites from different accounts in the account holder's possession (e.g., Bank of America, American Express, etc.). In other words, in the Applicant's claimed method, the various websites (e.g., different banks), need not cooperate with the third-party and are likely **unaware** of the existence of the third-party's involvement in the authentication of the user's account.

The system disclosed in Counterman does not teach how to overcome multi-factor authentication, but, rather, Counterman teaches how to avoid multi-factor authentication in the first place by assembling a network of websites that trust Counterman's system to verify that the customer is actually the customer, and, by doing so, suppressing their own multi-factor authentication. The problem with the Counterman approach is that it relies on initial cooperation from the other websites; by contrast, here, in Applicant's claimed features, Applicant's system overcomes multi-factor authentication without any coordination/cooperation from the websites, as explained above.

For the at least foregoing reasons, Counterman does not anticipate Applicant's amended claim 1. Dependent claims 2-3 are allowable over Counterman for at least being dependent on the allowable base claim 1.

Accordingly, reconsideration and withdrawal of these Section 102 rejections is respectfully requested.

X. New Independent Claims 4-10

New independent claim 6, and new dependent claims 4-5 and 7-10 are allowable over Counterman for at least the same reasons, mutatis mutandis, as provided for amended independent claim 1 above, and for additional reasons. Accordingly, Applicant respectfully requests the consideration and allowance of these new claims 4-10.

Furthermore, Applicant believes new independent claim 6 is patent eligible under 35 § U.S.C. 101 for the same reasons, mutatis mutandis, as described above with respect to amended independent claim 1. Dependent claims 4-5 and 7-10 are also patent eligible for at least the same reasons.

XI. CONCLUSION

The Office Action contains characterization of the claims and the related art with which the Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.

In discussing the specification, claims, and drawings in this Amendment, it is to be understood that Applicant is in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings. Rather, Applicant is entitled to have the claims interpreted broadly to the maximum extent permitted by statute, regulation, and applicable case law.

In view of the foregoing remarks, Applicant submits that the aforementioned claims are neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore respectfully requests the reconsideration and reexamination of the application, and the timely allowance of the pending claims.

If the Examiner believes a telephone conversation might advance prosecution, the Examiner is invited to call Applicant's undersigned representative at 212-551-2604.

Please grant any extensions of time required to enter this response and charge the required fees to Deposit Account No. 23-1665.

Dated: **September 10, 2021**

Respectfully submitted,
Six Trees Capital LLC

/Rikesh P. Patel/
Rikesh P. Patel
Registration No.: 67,578
Wiggin and Dana LLP
One Century Tower
New Haven, Connecticut 06508-1832
(212) 551-2604
(203) 782-2889 (Fax)
Attorney For Applicant

Electronic Acknowledgement Receipt

EFS ID:	43738087
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Customer Number:	27267
Filer:	Rikesh Pradip Patel
Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	10-SEP-2021
Filing Date:	16-APR-2020
Time Stamp:	16:47:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		103771_500_Amendment_Non Final_OA.pdf	245566 5b98718ddd29a123f689fdec56265739a04ea50a	yes	21

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Claims	3	6
	Applicant Arguments/Remarks Made in an Amendment	7	21
Warnings:			
Information:			
	Total Files Size (in bytes):	245566	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/80 (07-12)
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I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[■] Practitioners associated with Customer Number: 27267

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[✓] The address associated with Customer Number: 27267

OR

[ ]	Firm or Individual Name		
	Address		
	City	State	Zip
	Country		
	Telephone	Email	

Assignee Name and Address: Six Trees Capital LLC
445 Park Avenue
9th Floor
New York, NY 10022

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	[signature]	Date	5/18/2015
Name	GARY E. ZIMMERMAN	Telephone	917-224-1714
Title	CHIEF EXECUTIVE OFFICER		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	10-SEP-2021
Filing Date:	16-APR-2020
Time Stamp:	17:21:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	16850150_3p73C_Statement_Flat.pdf	75566 a3931a7e8056eb9eae9f86948e79aec6bcf303d7	no	3

Warnings:

Information:					
2	Power of Attorney	POA_flat.pdf	132130 1e7ea3ada8d5c12d2718e90fa0d4999dcd60469f	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	207696	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: SIX TREES CAPITAL LLC

Application No./Patent No.: 16/850,150 Filed/Issue Date: April 16, 2020

Titled: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

SIX TREES CAPITAL LLC, a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 052418, Frame 0861, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. **From:** _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. **From:** _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Brian A. Pattengale/	9/10/2021
Signature	Date
Brian A. Pattengale	79,614
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/26 (04-14)
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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 103771-500

In re Application of: ZIMMERMAN, Gary E.

Application No.: 16/850,150

Filed: April 16, 2020

For: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

The applicant, SIX TREES CAPITAL LLC, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 10,657,504 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 67,578

/Rikesh P. Patel/ — **Signature**
September 10, 2021 — **Date**

Rikesh P. Patel. — **Typed or printed name**

Attorney — **Title**
212-551-2604 — **Telephone Number**

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	16850150
Filing Date:	16-Apr-2020
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Filer:	Brian Armen Pattengale
Attorney Docket Number:	103771-500

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	170	170
		Total in USD ($)		**170**

Electronic Acknowledgement Receipt

EFS ID:	43739256
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Customer Number:	27267
Filer:	Brian Armen Pattengale
Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	10-SEP-2021
Filing Date:	16-APR-2020
Time Stamp:	17:59:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$170
RAM confirmation Number	E202190H59183781
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer Filed	103771-500_Terminal_Disclaimer_flat.pdf	1116562 47f0e0067eef77319ce4ecb9467174ec12cbbdaf	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37709 e71641c066bec77ef2425cde8e52552c973ddd8c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1154271		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/850,150	Filing Date 04/16/2020	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	09/10/2021	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 10	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/VENICE M WILLIAMS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
* 16/850,150 *	16/850,150	Zimmerman et al.	
	Examiner	**Art Unit**	
	NIQUETTE, ROBERT R	3699	

Document Code - DISQ	**Internal Document - DO NOT MAIL**

TERMINAL DISCLAIMER	☑ APPROVED	☐ DISAPPROVED
Date Filed: **10 September 2021**	**This patent is subject to a Terminal Disclaimer**	

Approved/Disapproved by:

/PAMELA A YOUNG/

Technology Center: OPLC

Telephone: (571)272-3622

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500

CONFIRMATION NO. 1088

POA ACCEPTANCE LETTER

27267
WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

OC000000128383187

Date Mailed: 09/15/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/10/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mteklemichael/

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 09/29/2021

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3699	

NOTIFICATION DATE	DELIVERY MODE
09/29/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@wiggin.com

Office Action Summary	Application No. 16/850,150	Applicant(s) Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3699	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 10 September 2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-10 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-10 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Status of Claims

This action is in reply to the response filed on 9-10-2021. Claims 1-10 are currently pending and have been examined. Claims 1-3 have been amended. Claims 4-10 are new.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. E.g., *Alice*, 573 U.S. at 216. In determining whether a claim falls within an excluded category, we are guided by the Court's two-part framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." See *Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); see *also Bilski v.*

Kappos, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk."). According to the Court, concepts determined to be abstract ideas and, thus, patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

In Diamond v. Diehr, the claim at issue recited a mathematical formula, but the Court held that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diamond v. Diehr*, 450 U.S. 175, 187 (1981). Having said that, the Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* at 191 (citing *Benson* and *Flook*). Nevertheless, the Court noted that "[i]t is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 187; see *also BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1352 (Fed. Cir. 2016) (Even if the individual components were known, "an inventive concept can be found in the ordered combination of claim limitations that transform the abstract idea of filtering content into a particular, practical application of that abstract idea" (emphasis added).).

If the claim is "directed to" an abstract idea, we next "must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

B. Office Patent Eligibility Guidance

In an effort to achieve clarity and consistency in how the Office applies the Court's two part test, the Office published revised guidance on the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019).[1] In Step One of our analysis, we look to see whether the claims, as written, fall within one of the four statutory categories identified in § 101. *Id.* at 53 ("Examiners should determine whether a claim satisfies the criteria for subject matter eligibility by evaluating the claim in accordance with the criteria discussed in MPEP[2] 2106, i.e., whether the claim is to a statutory category (Step 1) and the *Alice/Mayo* test for judicial exceptions (Steps 2A and 2B)").

Under the guidance, we then look to whether the claim recites:

[1] "All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance." *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. at 51.
[2] All Manual of Patent Examining Procedure ("MPEP") citations herein are to MPEP, Rev. 08.2017, January 2018.

(1) Step 2A – Prong One: any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity, such as a fundamental economic practice, or mental processes);

and (2) Step 2A – Prong Two: additional elements that integrate the judicial exception into a practical application (see MPEP § 2106.05(a)–(c), (e)–(h)).

See 2019 *Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. at 54–55 ("Revised Step 2A").

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (see MPEP § 2106.05(d));

or (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. *See id.* at 56 ("Step 2B: *If the Claim Is Directed to a Judicial Exception, Evaluate Whether the Claim Provides an Inventive Concept.")*.

STEP 1

Is the claim(s) directed to a process, machine, manufacture or composition of matter?

Claims 1-10 are all directed to a statutory category (e.g., a process, machine, manufacture, or composition of matter). The answer is YES.

STEP 2

The Supreme Court

> set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, . . . determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, "[w]hat else is there in the claims before us? To answer that question, . . . consider the elements of each claim both individually and "as an ordered combination" to determine whether the additional elements "transform the nature of the claim" into a patent-eligible application. [The Court] described step two of this analysis as a search for an "'inventive concept'"—i.e., an element or combination of elements that is "sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself."

Alice Corp., Pty. Ltd. v CLS Bank Intl, 573 U.S. 208, 217–18 (2014) (citations omitted) (citing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012)). To perform this test, we must first determine what the claims are directed to. This begins by determining whether the claims recite one of the judicial exceptions (a law of nature, a natural phenomenon, or an abstract idea). Then, if claims recite a judicial exception, determining whether the claims at issue are directed to the recited judicial exception, or whether the recited judicial exception is integrated into a practical application of that exception, i.e., that the claims "apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." Revised Guidance at 54. If the claims are directed to a judicial exception, then finally determining whether the claims provide an inventive concept because the additional elements recited in the claims provide significantly more than the recited judicial exception.

STEP 2A, Prong 1

Claims 1-10 recite a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network (100) that monitors changed conditions pertaining to accounts (300,400a-400c). The information is utilized in a credential data store to permit the financial management system (1000) to access multiple accounts over a data network (1100) and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

The practice of online financial account access and security is a fundamental economic practice, well-known, and extensively used for many years. Thus, the invention is an example of a conceptual idea subject to the Supreme Court's "concern that patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity." See *Alice*, 573 U.S. at 216 (citations omitted). Thus the claims are directed to a fundamental economic practice.

Moreover, the instant claims are abstract because they are similar in essence to the claims in *ex parte Powell*, appeal number 2018-006222. "(Our reviewing court has found claims to be directed to abstract ideas when they recited similar subject matter. *Alice*, 573 U.S. at 221 (intermediated settlement); *Bilski*, 561 U.S. at 611---6112 (risk hedging)."[3] The claims in *Powell* disclose a computer-implemented method for authenticating a mobile device i.e. mobile phone (claimed), and a user e.g. physician and nurse, of the mobile device to receive patient data from a clinical information system of a medical facility. The method involves accessing a validation database based on a technical factor e.g. unique device identification, at a data management system (60). Credentials e.g. password, are validated to ensure that a user is authorized to access patient data provided by a clinical information system based on determining that the user is authorized to access patient data. A session is established to communicate patient data between a mobile device (12) and the clinical information system, where the data management system processes the patient data communicated during the session. Therefore, the claims in *Powell* appear to be similar in concept and commensurate in scope with those of the instant case and therefore abstract.

STEP 2A, Prong 2

The next issue is whether the claims not only recite, but are more precisely directed to this concept itself or whether they are instead directed to some technological implementation or application of, or improvement to, this concept i.e. integrated into a practical application.[4]

[3] *Ex parte Benoit et al*, PTAB Appeal 2017-005911 at 8.
[4] See, e.g., *Alice*, 573 U.S. at 223, discussing *Diamond v. Diehr*, 450 U.S. 175 (1981).

"[T]he relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea [ ] on a generic computer." *Alice*, 573 U.S. at 225. They do not.

Viewed as a whole, Applicants' claims simply recite accessing an account, receiving and sending data as performed by generic hardware. The claims do not, for example, purport to improve the functioning of the computer itself. Nor do they effect an improvement in any other technology or technical field. They do not describe any particular improvement in the manner a computer functions. Instead, the claims at issue amount to nothing significantly more than an instruction to apply the abstract idea. Under precedent, that is not enough to transform an abstract idea into a patent-eligible invention. See *Alice*, 573 U.S. at 225-26.

The examiner therefore concludes that the claims are directed to a certain method of organizing human activity as distinguished from a technological improvement for achieving or applying that result. The claim does not integrate the judicial exception into a practical application.

Step 2B

The next issue is whether the claims provide an inventive concept because the additional elements recited in the claims provide significantly more than the recited judicial exception. Taking the claim elements separately, the function performed by the computer at each step of the process is purely conventional. Receiving and transmitting data are

generic, routine, conventional computer activities that are performed only for their conventional uses.[5]

None of these activities are used in some unconventional manner nor do any produce some unexpected result. In short, each step does no more than require a generic computer to perform generic computer functions. As to the data operated upon, "even if a process of collecting and analyzing information is 'limited to particular content' or a particular 'source,' that limitation does not make the collection and analysis other than abstract." *SAP America, Inc. v. InvestPic LLC*, 898 F.3d 1161 ,1 168 (Fed. Cir. 2018).

Considered as an ordered combination, the computer components of Applicants' claims add nothing that is not already present when the steps are considered separately. That paragraphs 64, 79, 82 96 and 113, and Figures 4A-7 of the Specification indicates that standard, off-the-shelf computer technology is usable to implement the claimed invention only bolsters the notion that the claimed invention does not focus on an improvement in computers as tools, but rather certain independently abstract ideas that use computers as

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[5] MPEP 2106.05(d)(II) The courts have recognized the following computer functions as well-understood, routine, and conventional functions when they are claimed in a merely generic manner (*e.g.,* at a high level of generality) or as insignificant extra-solution activity.

- i. Receiving or transmitting data over a network, *e.g.,* using the Internet to gather data, *Symantec,* 838 F.3d at 1321, 120 USPQ2d at 1362 (utilizing an intermediary computer to forward information); *TLI Communications LLC v. AV Auto. LLC,* 823 F.3d 607, 610, 118 USPQ2d 1744, 1745 (Fed. Cir. 2016) (using a telephone for image transmission); *OIP Techs., Inc., v. Amazon.com, Inc.,* 788 F.3d 1359, 1363, 115 USPQ2d 1090, 1093 (Fed. Cir. 2015) (sending messages over a network); *buySAFE, Inc. v. Google, Inc.,* 765 F.3d 1350, 1355, 112 USPQ2d 1093, 1096 (Fed. Cir. 2014) (computer receives and sends information over a network); but see *DDR Holdings, LLC v. Hotels.com, L.P.,* 773 F.3d 1245, 1258, 113 USPQ2d 1097, 1106 (Fed. Cir. 2014) ("Unlike the claims in *Ultramercial,* the claims at issue here specify ***how*** interactions with the Internet are manipulated to yield a desired result--a result that overrides the routine and conventional sequence of events ordinarily triggered by the click of a hyperlink." (emphasis added));

  iv. Storing and retrieving information in memory, *Versata Dev. Group, Inc. v. SAP Am., Inc.,* 793 F.3d 1306, 1334, 115 USPQ2d 1681, 1701 (Fed. Cir. 2015); *OIP Techs.,* 788 F.3d at 1363, 115 USPQ2d at 1092-93.

tools. (*Elec. Power*, 830 F.3d at 1354). Accordingly, Applicants' Specification itself describes the additional elements as being well-understood, routine, and conventional. Such conventional computer processes operating on conventional hardware "do not alone transform an otherwise abstract idea into patent-eligible subject matter." *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1096 (Fed. Cir. 2016) (citing *DDR Holdings,* 773 F.3d at 1256).

Dependent claims 2 and 7 recite storing and utilizing which is This is insignificant extra-solution activity. See 2019 Revised Guidance, 55 n.31; see also MPEP § 2106.05(g), and a mental process. Guidance, 84 Fed. Reg. at 52.

Dependent claims 3 and 8 describes what the endpoints include. This is nonfunctional descriptive material. See MPEP §2011.05(II).

Dependent claims 4, 5, 9 and 10 describe how the account holder's credentials are collected. This is This is insignificant extra-solution activity. See 2019 Revised Guidance, 55 n.31; see also MPEP § 2106.05(g).

Conclusion of Law

The examiner concludes that the claims do not provide an inventive concept because the additional elements recited in the claims do not provide significantly more than the recited judicial exception. From these determinations the examiner further notes that the claims do not recite an improvement to the functioning of the computer itself or to any

other technology or technical field, a particular machine, a particular transformation, or other meaningful limitations. From this the examiner finds the claims are directed to a certain method of organizing human activity without significantly more.

Nonstatutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities

undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/forms/. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to:

http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-10 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 10657504. Although the claims at issue are not identical, they are not patentably distinct from each other because both cases deal with multifactor authentication in optimizing financial assets.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter with substantially similar claim language.

Response to Arguments and Amendments

Applicants draw a parallel between the pending claims and those is *ex parte Ginder*, appeal 2016-000337, but this reliance on *Ginder* is flawed. In *Ginder*, the claims were directed to sending a payment reminder to a user. The Examiner rejected the case as being a fundamental economic practice which clearly it was not, and so the PTAB reversed the Examiner[6]. Furthermore, *Ginder* required specialized hardware and programming.[7] In this case, Applicants have not shown in the claims or Specification that the instant case requires any dedicated type of hardware or specialized programming.

Accordingly, for reasons of record and as set forth above, the examiner maintains the rejection of the claims as being directed to a judicial exception without significantly more, and thereby being directed to non-statutory subject matter under 35 USC §101.

This action is made final. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date

[6] *Ginder* at 5.
[7] *Id.*

of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert R. Niquette whose telephone number is 571-270-3613. The examiner can normally be reached on Monday through Friday, 5:30 AM to 2:00 PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Namrata Boveja, can be reached at 571-272-8105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3699

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3699

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	05/25/2021	09/13/2021							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4		✓							
	5		✓							
	6		✓							
	7		✓							
	8		✓							
	9		✓							
	10		✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3699

CPC - Searched*		
Symbol	Date	Examiner
G06Q 20/10	09/14/2021	RRN
G06Q 20/22	09/14/2021	RRN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
705	All	09/14/2021	RRN

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2E search	09/14/2021	RRN
PLUS search	05/25/2021	RRN
WIPO database search	05/25/2021	RRN
Inventor search	05/25/2021	RRN
NPL search	09/20/2021	STIC Staff

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L120	54	"multi-factored authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L121	8044	"multi-factored authentication" "multi-factor authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L122	9431	"multi-factored authentication" "multi-factor authentication" "multifactor authentication" "multifactored authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L123	10305	(multifactor$2 multi-factor$2) with authenticat$3	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L124	1939	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L125	1010	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$3 with account)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L126	1012	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$4 with account)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L127	227898	(@ad|@rlad)<"20140128" and ("705".clas. or g06q$7.cpog.)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L128	55	((multifactor$2 multi-factor$2) with authenticat$3) and endpoint and (access$4 with account) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L129	8997	"two-factored authentication" "two-factor authentication" "two factor authentication"	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L130	7388	"two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM

L131	271	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L132	24	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L133	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L134	99	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L135	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L136	88	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L137	622	(("two-factored authentication" "two-factor authentication" "two factor authentication") and (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L138	84	(("two-factored authentication" "two-	(US-PGPUB; USPAT; USOCR; EPO; JPO;	OR	ON	ON	2021/09/14 06:44 AM

		factor authentication" "two factor authentication") same (account with access)).detd. and L11	IBM_TDB)				
L139	18	(("two-factored authentication" "two-factor authentication" "two factor authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L140	36	(("multi-factored authentication" "multi-factor authentication" "multifactor authentication" "multifactored authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L141	360857	(@ad|@rlad)<"20140128" and ("705".clas. or g06q$7.cpci.)	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L142	312	(endpoint with account) and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L143	19	(endpoint with account).bsum. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM
L144	2	(endpoint with account).ab. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2021/09/14 06:44 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Examiner	NIQUETTE, ROBERT
Art Unit	3699
Serial #	16850150
Date Completed	09/20/2021
Assigned EIC	3600
Searcher	Haoyi Chen
Tracking #	642508

This document includes the following content:

Search Histories
Complete lists of all files searched within each database collection, along with all keyword/synonym strings and any applicable chemical structure or biosequence queries used by the Searcher in completing the prior art search are included in this report.

Search Results
Results related to your search request are included. While not all references may be useful for a rejection or other office action, they are included for the Examiner's review.

For 1600 Examiners
Your search results will be available in PE2E on the next business day at approximately noon. For detailed instructions on how to access your search results in PE2E, please see this guide.

If you have any questions about this search, or about how to interpret this search report, or if you need assistance retrieving the full text of any of the references contained in this report, please do not hesitate to contact your assigned EIC:

EIC	Phone	Email
1600	571-272-0473	STIC-EIC1600/2900@uspto.gov
1700	571-272-2530	STIC-EIC1700@uspto.gov
2100	571-272-4225	STIC-EIC2100@uspto.gov
2400	571-272-4225	see EIC 2100
2600	571-272-4235	STIC-EIC2600@uspto.gov
2800	571-272-2540	STIC-EIC2800@uspto.gov
2900	571-272-4240	see EIC 3700
3600	571-272-3488	STIC-EIC3600@uspto.gov
3700	571-272-4240	STIC-EIC3700@uspto.gov

Thank you for using the EIC, and we look forward to your next search!

Search Request

Effective Filing Date:
8-16-2017.

Description
Just take Tracking #631984 and run an update. Thanks.

Description of 631984:
This is a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network (100) that monitors changed conditions pertaining to accounts (300,400a-400c). The information is utilized in a credential data store to permit the financial management system (1000) to access multiple accounts over a data network (1100) and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

Examiner Correspondence

From: Niquette, Robert R.
Sent: Monday, September 20, 2021 1:49 PM
To: Chen, Haoyi (CPA Global) <Haoyi.Chen@uspto.gov>
Subject: RE: Request ID: 642508-16850150

Yes just use the previous search.. Thanks.

From: Chen, Haoyi (CPA Global) <Haoyi.Chen@uspto.gov>
Sent: Monday, September 20, 2021 1:43 PM
To: Niquette, Robert R. <Robert.Niquette@USPTO.GOV>
Subject: Request ID: 642508-16850150

Hi Examiner Niquette,

This is Haoyi with STIC. I've received your request and just reaching out to let you know that I will run a update search on 631984. If you wanted me to focus on anything in particular. If not, I will use the previous search report as a guide. Thanks for your time!

Feel free to reach out before or after the search is submitted if you have questions or comments.

Best Regards,
Haoyi

Patent Search Results

US10268995 System and method for automated optimization of financial assets

PUBLICATION NUMBER: US 10268995 B1 PUBLICATION DATE: 23-Apr-2019
APPLICATION NUMBER: US 14/606,931 FILING DATE: 27-Jan-2015
SIMPLE FAMILY: 66174828 (size 2) EARLIEST PRIORITY DATE: 28-Jan-2014

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

Inventors:

Zimmerman, Gary E. (New York, NY, US) • Wu, Richard D. (Chicago, IL, US) • Gironda, Gabriel Jorge (Austin, TX, US)

Applicants:

Six Trees Capital LLC (New York, NY, US)

In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account 400a is instructed to initiate a transfer of financial assets M1, into checking account 300 (through a debiting action). In a separate, second step, savings account 400c is instructed to initiate a transfer of financial assets M1 into savings account 400c from the checking account 300 (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

US20150161577 Funds transfer method and apparatus

PUBLICATION NUMBER: US 2015/0161577 A1 PUBLICATION DATE: 11-Jun-2015
APPLICATION NUMBER: US 14/626,643 FILING DATE: 19-Feb-2015
SIMPLE FAMILY: 24672096 (size 24) EARLIEST PRIORITY DATE: 20-Sep-2000

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):

A withdrawal of assets is initiated from a first account at a first financial institution. A deposit of the assets withdrawn from the first account is initiated to a second account at a second financial institution. The first account and the second account have a common account holder. The withdrawal and deposit of assets may be initiated after analyzing multiple accounts of the account holder and determining whether an adjustment of funds among the multiple accounts would benefit the account holder. A debit instruction is used to initiate the withdrawal of assets and a credit instruction is used to initiate the deposit of the withdrawn assets. The withdrawal and deposit of assets can be implemented using one or more payment networks, debit networks, or a wire transfer between the two financial institutions.

Inventors:
Dilip, Venkatachari (Cupertino, CA, US) • Dheer, Sanjeev (Scarsdale, NY, US)
Applicants:
CashEdge, Inc. (New York, NY, US)

[0037] Each of the financial institution servers **102**, **104**, and **106** are typically associated with a particular financial institution and store data for that financial institution, such as customer account data. The market information service server **110** may represent one or more services that collect and report information regarding current financial market conditions. For example, a particular market information service may collect information from many financial institutions to generate a report identifying the average interest rates for savings, checking, or other accounts. The report may also identify the highest rates for each type of account and the financial institution offering those rates. Multiple market information service servers **110** may be coupled to network **108**, each server providing a different type of market data.

[0050] The financial management system 220 stores customer data 224, such as customer account information, online banking login name and password, and user preferences. Financial management system 220 also stores financial institution data 226 and market information 228. Financial institution data 226 includes, for example, transaction routing data, account offerings, account interest rates, and minimum account balances. Market information 228 includes data such as average interest rates for different types of accounts (both asset accounts and debt accounts), the best available interest rates for each type of account, and the financial institutions offering the best available interest rates.

[0058] The particular logic rules selected for each user may be different based on the sets of logic rules chosen by the user. Additionally, the logic rules selected for a particular user may change over time as the financial management system learns more about the user's payment or spending habits. For example, if the user regularly makes a $1000 payment from a particular checking account on the 15th of each month, a rule may be created by the financial management system to ensure that the checking account has at least a $1000 balance on the 14th of each month. If the checking account does not have a sufficient balance, then the financial management system may recommend a fund transfer to raise the balance of the checking account to cover the anticipated $1000 payment on the 15th. This type of user-specific logic rule may be stored with the other user data in the financial management system.

[0059] Asset analysis and recommendation engine **254** analyzes the user's asset account information by applying the various asset analysis logic rules to the asset account information. The asset analysis and recommendation engine **254** also considers market data collected by collection module **256** when analyzing the user's asset accounts. After analyzing the user's asset accounts, the asset analysis and recommendation engine **254** generates one or more recommendations to adjust the fund allocation among the asset accounts. The recommendation may also include opening a new asset account (e.g., an account that pays a higher interest rate) and/or closing an existing asset account (e.g., an account that pays a low interest rate). The recommendations and analysis results are output on communication link **264** for use by other modules or components in the financial management system.

[0108] For example, in the environment of FIG. 16, the financial management system **582** receives user account information during a user registration process. Next, the financial management system **582** analyzes the user's accounts and determines whether funds should be transferred from the user's checking account at financial institution **574** to the user's savings account at financial institution **576**. To initiate this fund transfer, financial management system **582** generates a debit instruction to withdraw the appropriate funds from the user's checking account at financial institution **574**. Additionally, financial management system **582** generates a credit instruction to deposit the appropriate funds (equal to the funds withdrawn by the debit instruction) into the user's savings account at financial institution **576**. The instructions are then communicated via payment processor **580** and financial institution **578** onto the payment network **572**.

US20150379488 Automated proactive electronic resource allocation processing system

PUBLICATION NUMBER: US 2015/0379488 A1 PUBLICATION DATE: 31-Dec-2015
APPLICATION NUMBER: US 14/749,369 FILING DATE: 24-Jun-2015
SIMPLE FAMILY: 54930972 (size 1) EARLIEST PRIORITY DATE: 27-Jun-2014

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):
An automated proactive electronic resource allocation processing system can allocate resources based at least in part on configuration information. In one embodiment, a processing system can determine a strategic configuration of user accounts ("Accounts") based on information collected about a user. One or more computing resources can communicate, such as over a network, to configure a plurality of Account features, attributes, identities, permissions, controls, and/or restrictions for each Account in order to accomplish objectives related to the resources. One or more computing resources can be configured to proactively and automatically allocate resources to one or more user Accounts. A computing resource associated with a user Account can be configured to complete a plurality of desired or necessary transactions, including receiving, holding, and reporting current balance information, and/or transferring portions of the financial resources to other user Accounts or other non-user accounts.

Inventors:
Ruff, Lawrence H. (Springville, UT, US) • Ruff, Ryan L. (Springville, UT, US) • Hammond, Ronald B. (American Fork, UT, US) • Glenn, Jaron S. (Provo, UT, US)
Applicants:
CLEAR PATH FINANCIAL (Springville, UT, US)

Systems and methods for implementing intelligent banking account system

Publication info: Medina, III, Reynaldo (Inventor). United States Automobile Association (USAA); United Services Automobile Association (USAA) (Assignees). US 7865435 B1 . (Published 04 Jan 2011).
ProQuest document link

Abstract (summary): A person stores funds in a lower interest checking account and a higher interest savings account of a banking institution. For each of a plurality of cycles, funds are received at the beginning of the cycle from an amount of income ('INC') of the person. An amount at least equal to a total amount of regularly recurring bills of the person that have a generally fixed amount ('FIX') is deposited into a bills account of the person, and at least a portion of a remainder of INC is deposited into the checking account. During the cycle, the person pays the regularly recurring bills from the bills account and other bills from the checking account. At the end of the cycle, a final amount left in the checking account above a floor value ('FLO') is transferred to the savings account. Thus, excess funds are not allowed to accumulate in the checking account.

Application number: US 200837175 (26 February 2008)

Keywords in context:

Specification: ... 12/037,164; and

U.S. patent application Ser. No. 12/037,170.

FIELD

The present disclosure is directed to systems and methods that assist with implementing an intelligent banking account system for a person or other entity (hereinafter, 'person') with banking accounts at a banking institution or the like. More particularly, the present disclosure is directed to such systems and methods that automatically move funds between checking and savings accounts of the person in an effort to minimize the time funds reside in the checking

account and correspondingly maximize the ... rendered, funds earned from a trust, annuity, franchise agreement, pension, or the like, dividends and/or interest earned on securities, and the like.

Also presumably, the checking account 14c is employed by the person 10 to store funds that are to be drawn to pay corresponding checks or other outlays such as electronic funds transfers, wire transfers, automated clearing house (ACH) payments, and the like, while the savings account 14s is employed by the person 10 to store funds that are not presently needed but that are to be put aside, perhaps for later ...

Fund transfer processing system for use in financial enterpriser group, calculates interest rate for adjusting with respect target balance corresponding to low-order account based on conditions set for prioritized high-order account

Publication info: Fukuda, K; Hirasawa, Y; Mizuno, T (Inventors). MIZUHO INFORMATION & RES INST INC (Assignee). JP 4625105 B2 . (Published 02 Feb 2011). 200963 (First update). 201110 (Last update). Drawing available.
ProQuest document link

Alerting

Novelty
The fund transfer processing system has memory that stores information to identify each account in account group, balance information of each account exchange rate and interest rate conditions. The stored information is related with target balance. The account with maximum gain based on interest rate condition, is selected by using stored information. The account with maximum gain, is prioritized as high-order account. The interest rate for adjusting with respect to target balance corresponding to low-order account is calculated based on stored information.

Description
INDEPENDENT CLAIMS are included for the following:

1. fund transfer processing method; and

2. fund transfer processing program.

Use
Fund transfer processing system for use in financial enterprise group.

Advantage
The account with maximum gain is prioritized as high-order account in account group so that optimal interest rate conditions are set within the account group. The surplus fund is concentrated on highest account to eliminate financial deficit of low-order account by adjusting interest rate with respect to target balance.

Description of drawings
The drawing shows a flowchart explaining the flow of transfer processing performed in fund transfer processing system. (Drawing includes non-English language text)

Application number: JP 200863730 A (13 March 2008)

Priority number: JP 200863730 A (13 March 2008)

Keywords in context:

Family member abstract: ... account at least. FIG. 2This invention relates to the fund transfer processing system, fund transfer processing method, and fund transfer processing program for performing a fund transfer processing among several accounts. Specifically, Based on the interest rate conditions set for every account, it is related with the fund transfer processing system and fund transfer processing method which perform a fund transfer processing based on the optimized hierarchical structure, and a fund transfer processing program. The account group to which several accounts

to which different interest rate conditions for every account are set according to this invention belongWHEREIN:The fund transfer processing system to which the account to which the most advantageous interest rate conditions are set ... This invention relates to the fund transfer processing system, fund transfer processing method, and fund transfer processing program for performing a fund transfer process among several accounts. Specifically, Based on the interest rate conditions set for every account, it is related with the fund transfer processing system and fund transfer processing method which perform a fund transfer process based on the optimized hierarchical structure, and a fund transfer processing program. The account group to which several accounts to which different interest rate conditions for every account are set according to this invention belongWHEREIN:The fund transfer processing system to which the account to which the most advantageous interest rate conditions are set ...

MONEY FUND BANKING SYSTEM WITH MULTIPLE BANKS AND/OR RATES

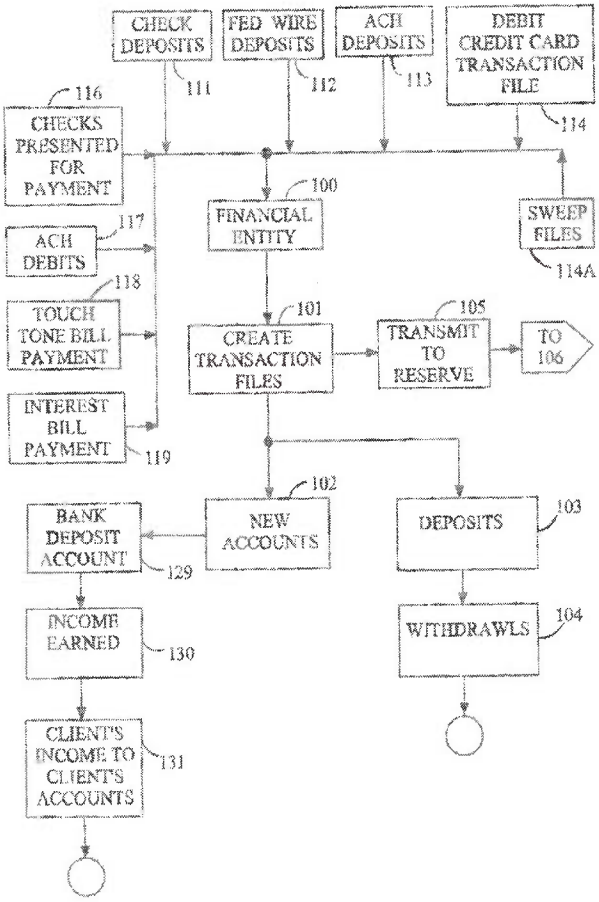
Publication info: Bent, Bruce; Bent, Bruce (Inventors). Bent, Bruce; Bent, Bruce (Assignees). US 20060212385 A2 . (Published 21 Sep 2006).

ProQuest document link

Abstract (summary): Abstract of the Disclosure

Providing interest to clients' deposited funds without limitation on the number of demand withdrawals from deposit accounts is accomplished by an administration system that keeps all of the records for the clients' deposits and withdrawals, calculates the total of the deposits and withdrawals for all clients, and uses the calculation to determine whether funds are deposited to or withdrawn from one or more deposit accounts in which all clients' deposit funds are kept. Clients can make unlimited withdrawals, such as by check, credit card, debit card, or electronic transfer, through the administrator. By placing the administrator as the holder of the deposit account(s), exemptions to the limitation on earning interest in demand accounts is facilitated; additionally, dispersing the deposit account funds among multiple banks allows the client to obtain FDIC insurance for all of the deposited funds, which may amount to insurance in excess of the statutory maximum allowed (presently $100,000.00).

Front page drawing:



Application number: US 2000677535 A (02 October 2000)

Priority number: US 2000677535 A (02 October 2000)

Keywords in context:

Specification: ... The system then determines whether each client's account contains more than a specified amount (e.g., $90,000) and distributes any amounts over the specified amount into another account at a preselected banking institution. In practice, when an investor's account balance exceeds $90,000 in any one account, the excess funds are automatically moved to a second deposit account at at another preselected bank. The client will maintain one insured deposit clearance account while the multiple deposit accounts will be transparent to the investor. All transactions to and from the accounts will post to the investor's insured deposit account, although they may be ...

Claims: 142. The system of Claim 129 , wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **143.** A method for managing a plurality of client demand accounts for one or more clients, wherein the client demand account funds are held in one or more insured money market deposit accounts, which are not NOW accounts, at one or more banking institutions, the method comprising: providing a database, maintained on one or more computers, comprising ... **172.** The method of Claim 159 wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **173.** A system for managing a plurality of client transaction accounts for one or more clients, wherein the client transaction account funds are held in one or more insured interest-bearing non-demand deposit accounts, which are not NOW accounts, at one or more banking institutions, the system comprising: ... **186.** The system of Claim 173 , wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **187.** The method of Claim 20 further comprising a step of updating said database comprising information for each client demand account

with the clients' deposits, withdrawals, and transfers, and with the amount of that client's funds held in said one or more insured and interest-bearing deposit accounts and in ...

COMPUTER METHOD AND SYSTEM FOR ADMINISTERING INVESTMENT ACCOUNT

Publication info: Herr, Daniel P; Doherty, Mark S; Genovese, Kimberly A (Inventors). LINCOLN NATIONAL LIFE INSURANCE CO. (Assignee). CA 2691173 A1 . (Published 27 Jul 2010).
ProQuest document link

Abstract (summary): A computerized method for administering an investment account having an income or withdrawal guarantee and long term care guarantee includes the steps of establishing an investment account having an account balance, allocating a first portion of the account balance to fund a periodic long term care benefit having a long term care benefit guarantee, allocating a second portion of the account to fund a periodic income or withdrawal benefit having an income or withdrawal benefit guarantee, determining an amount of a periodic long term care benefit available for payment of a long term care benefit claims under the long term care benefit guarantee, and determining an amount of a periodic income or withdrawal benefit available for distribution under the income or withdrawal benefit guarantee. The long term care benefit guarantee may include an acceleration of benefits guarantee and an extension of benefits guarantee. A computer system which includes a processor and a program for causing the processor to perform certain steps is also disclosed.

Application number: CA 2691173 (27 January 2010)

Priority number: US 61147570 (27 January 2009)

Keywords in context:

Specification: ... benefit guarantee by an adjustment factor. In such embodiments, the adjustment factor may comprise an inflation factor, a cost of living factor, a fixed percentage rate factor, or a variable percentage rate factor. Certain embodiments of the computerized method may further compñse the steps of reallocating the account balance of the investment account to decrease the first portion of the account balance and to increase the second portion of the account balance, and decreasing one or both of the amount of a periodic long term care benefit, or the total amount, available for payment of long term care benefit claims under the long term care benefit guarantee. Other embodiments may include the steps of reallocating the account balance of the investment account to increase the first portion of the account balance and to decrease the second portion of ...

Financial account system for unbanked or underbanked users, comprises transferring funds between first financial account accessible via stored value card and second financial account

Publication info: Harper, K D (Inventor). BLACKHAWK NETWORK INC (Assignee). US 20200349553 A1 . (Published 05 Nov 2020). 2020091 (First update). 2020091 (Last update). Drawing available.
ProQuest document link

Alerting

Novelty
A financial account system comprises a stored-value card (100,101), e.g., a gift card, a first financial account, i.e., primary account, directly accessible via the stored-value card, and a second financial account, i.e., savings account, associated with the first financial account. Funds may be transferred between the first financial account and the second financial account.

Use

Financial account system providing additional transaction and savings capabilities for unbanked or underbanked users or households.

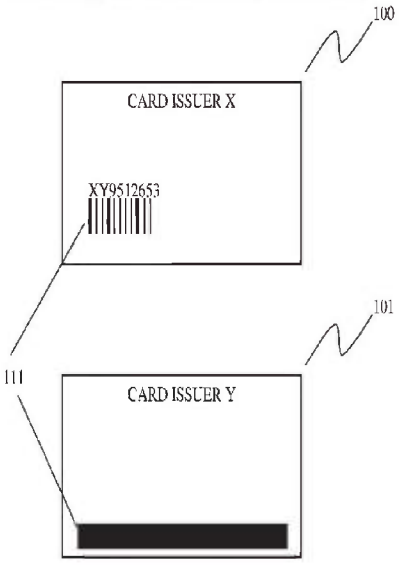
Advantage
The stored-value card with a savings feature allows the cardholders to easily move funds from their primary account to their savings account and vice versa. Provides the consumer with the flexibility to update, edit, or otherwise change the automatic funding option at any time. Real time or near real-time processing allows transactions to be trickle fed to the settlement service, which leverages the data grid to store and/or process transaction information. Each entity associated with stored-value cards can adapt to changing conditions much faster using real time or near real-time settlement by responding to and adjusting various metrics, such that large-scale failure is highly unlikely, and small failures only affect a minimal number of transactions before they are addressed.

Description of drawings
The drawing shows the physical view of stored-value cards.

100,101 Stored-value card

111 Stored value card identifier

Drawing or chemical structure



Application number: US 2020930921 A (16 July 2020)

Priority number: US 2020930921 A (16 July 2020)US 2013819469 A (01 July 2013)WO 2011US49338 A (26 August 2011)US 61377800 P (27 August 2010)

Keywords in context:

Abstract: ... and a second financial account, i.e., savings account, associated with the first financial account. Funds may be transferred between the first financial account and the second financial account. UseFinancial account system providing additional transaction and savings capabilities for unbanked or underbanked users or households. AdvantageThe stored-value card with a savings feature allows the cardholders to easily move funds from their primary account to their savings account and vice versa. Provides the consumer with the flexibility to update, edit, or otherwise change the automatic funding option at any time. Real time or near real-time processing allows transactions to be trickle fed to the settlement service, which leverages the data grid to store and/or process transaction information. Each entity associated with stored-value cards can adapt to changing conditions much faster using real time or near real-time settlement by responding to and adjusting various metrics, such that large-scale failure is highly unlikely, and small ...

NPL Search Results

A Review of Basic Cash Management Services

Author: Ruggeri, Paul J

Publication info: Journal of Cash Management 12.2: 31. Association for Financial Professionals. (Mar/Apr 1992)
ProQuest document link

Abstract (summary): Basic services available to cash managers for collection, concentration and disbursements are reviewed. Efficient cash management requires systems to collect funds from a company's customers. The objective of this system is to accelerate the use of the funds in the form of available balances. Under collection, lockboxes, wholesale lockboxes, and the Automated Clearing House (ACH) are available. The cash manager may need to move funds from remote depository locations to a central bank account from which disbursements are made. Two of the most commonly used methods for transferring funds are the wire transfer and the electronic depository transfer check (EDTC), an ACH transaction. The company will also need to design a system to efficiently disburse cash at the lowest possible cost. The 2 products that are most commonly use by cash managers are zero balance accounts (ZBA), payable through drafts (PTD) and controlled disbursement.

Links: Check USPTO-STIC for Availability

Location: United States--US

Language: English

Publication title: Journal of Cash Management

Volume: 12

Issue: 2

Pagination: 31

Publisher location: Bethesda

Document type: PERIODICAL

Accession number: 00605930, 00347191, 00033348

Document URL: https://dialog.proquest.com/professional/docview/225981399?accountid=131444

Copyright: Copyright Treasury Management Association Mar/Apr 1992

First available: 2010-06-10

Updates: 2014-05-24

Database: ABI/INFORM® Professional Advanced (1971 - current)

Keywords in context:

Abstract: ... objective of this system is to accelerate the use of the funds in the form of available balances. Under collection, lockboxes, wholesale lockboxes, and the Automated Clearing House (ACH) are available. The cash manager may need to move funds from remote depository locations to a central bank account from which disbursements are made. Two of the most commonly used methods for transferring funds are the wire transfer and the electronic depository transfer check (EDTC), an ACH transaction. The company ...

Full text: ... can also be used to concentrate funds through an electronic depository transfer. The local office or store would authorize the headquarters office to initiate an ACH debit to its account at the local bank, transferring the funds to the concentration account. These ACH transactions settle in one day and are likely to give faster availability than the use of the paper DTC. They are also less costly than the ...

International portfolio optimisation under uncertainty

Author: Chatsanga, Nonthachote

Publication info: The University of Nottingham (United Kingdom). ProQuest Dissertations Publishing, 2017. 10768498.
ProQuest document link

Abstract (summary): Portfolio optimisation problems are generally concerned with allocating funds to investments. The goal is to find an allocation that minimises risk subject to some certain constraints. To attain robust solutions from the optimisation, it is vital to ensure that the model is able to properly represent the underlying uncertainty in portfolio management. The main source of uncertainty in managing portfolios is from asset returns fluctuation. Typically, it is depicted through scenarios or return distributions which are commonly assumed to be normal. Such assumption, however, does not illustrate the true characteristics of financial asset returns and thus distorts the representation of returns, risks and interrelationship of assets in a portfolio. This thesis presents novel approaches to represent the uncertainty in international portfolio management in order to mitigate risks associated. Three main issues are covered in our studies. The first issue deals with an approach to hedge risk from exchange rates of a multi-currency portfolio. A hedging mechanism is incorporated into a portfolio optimisation model to produce a portfolio that is optimal in terms of asset and currency exposure. Costs associated to exchange rate hedging are also included into the model to improve accuracy in calculating risk and return of the portfolio. The second issue is about representing the uncertainty of multiple assets in a portfolio through scenarios. Under the assumption of normality, some risk and return characteristics of assets are omitted from standard scenario generation method. We present a novel approach to extract more accurate information from assets to generate realistic scenarios. A two-stage stochastic international portfolio optimisation model is formulated accordingly to create portfolios that are expected to be more efficient than portfolios optimised with scenarios generated from the standard approach. The last issue is associated with an approach to keep portfolio's efficiency over its investment horizon through continual reallocation, known as portfolio rebalancing. Since the uncertainty regarding changes in financial market conditions diminishes the efficiency of conventional rebalancing strategies, we propose a new rebalancing method and formulate it as a stochastic optimisation problem. The proposed rebalancing strategy aims to reallocate the portfolio to attain a high probability of positive returns and low probability of negative returns under second-order stochastic dominance criteria. A portfolio implementing the new rebalancing strategy is expected to outperform a portfolio that follows traditional rebalancing methods in terms of portfolio returns. Overall, the thesis aims to create a richer portfolio optimisation model as well as to extract the correct information from financial markets to better cope with the underlying uncertainty in portfolio management.

Links: Check USPTO-STIC for Availability

Identifier / keyword: http://eprints.nottingham.ac.uk/42729/, (UMI)AAI10768498, Social sciences

Number of pages: 0

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Database: ProQuest Dissertations and Theses Professional

New approaches to risk management and scenario approximation in financial optimization

Author: Bychkov, Maksym

Publication info: The University of Tennessee. ProQuest Dissertations Publishing, 2005. 3197598.
ProQuest document link

Abstract (summary): The first part of the thesis addresses the problem of risk management in financial optimization modeling. Motivation for constructing a new concept of risk measurement is given through the history of development: utility theory, risk/return trade off, and coherent risk measures. The process of describing investor's preferences is presented through the proposed collection of Rational Level Sets (RLS). Based on RLS, a new concept termed Rational Risk Measures (RRM) for financial optimization models is defined. The advantages of RRM over coherent risk measures are discussed.

Approximation of a given set of scenarios using tail information is addressed in the second part of the thesis. Motivation for the scenario approximation problem, as a way of reducing computation time and preserving solution accuracy, is given through examples of financial optimization and asset allocation models. Using the basic ideas of Conditional Value at Risk (CVaR), this thesis develops a new methodology for scenario approximation for stochastic portfolio optimization. First, the concepts termed Scenarios-at-Risk (SaR) and Scenarios-at-Gain (SaG) are proposed as for the purpose of partitioning the underlying multivariate domain for a fixed investment portfolio and a fixed probability level of CVaR. Then, under a given set of CVaR values, a two-stage method is developed for determining a smaller, and discrete, set of scenarios over which CVaR risk control is satisfied for all portfolios of interest. Convergence of the method is shown and numerical results are presented to validate the proposed technique.

Links: Check USPTO-STIC for Availability

Subject: Operations research;Optimization;Studies;Return on investment;Management;Risk management;Portfolio investments;Banking;Approximation

Classification: 0796: Operations research0770: Banking0454: Management54161: Management Consulting Services

Identifier / keyword: Social sciences, Applied sciences, Financial optimization, Portfolio optimization, Risk management, Scenario approximation

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Advisor: Edirisinghe, Chanaka

University/institution: The University of Tennessee

University location: United States -- Tennessee

Degree: Ph.D.

Source type: Dissertations & Theses

Language: English

Document type: Dissertation/Thesis

Dissertation/thesis number: 3197598

ProQuest document ID: 305381059

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First available: 2010-06-17

Updates: 2014-01-232015-08-262016-06-232020-08-172020-08-272020-10-07

Database: ProQuest Dissertations and Theses Professional

Dialog – Patent Search History

Databases: Argentina Patents Fulltext, Australia Patents Fulltext, Austria Patents Fulltext, Belgium Patents Fulltext, Brazil Patents Fulltext, Canada Patents Fulltext, China Patents Fulltext, Denmark Patents Fulltext, Derwent Chemistry Resource, Derwent Patents Citation Index®, Derwent World Patents Index®, Eurasia Patents Fulltext, European Patents Fulltext, Finland Patents Fulltext, France Patents Fulltext, Germany Patents Fulltext, Global Patents Bibliographic, Great Britain Patents Fulltext, IFI CLAIMS® US Patents and Legal Status, IMS Patent Focus, India Patents Fulltext™, INPADOC/ Family and Legal Status, Ireland Patents Fulltext, Italy Patents Fulltext, Japan Patents Fulltext, JAPIO - Patent Abstracts of Japan, Korea Patents Fulltext, LitAlert®, Luxembourg Patents Fulltext, Mexico Patents Fulltext, Monaco Patents Fulltext, Netherlands Patents Fulltext, Norway Patents Fulltext, Portugal Patents Fulltext, Russia Patents Fulltext, Spain Patents Fulltext, Sweden Patents Fulltext, Switzerland Patents Fulltext, United States Patents Fulltext, WIPO PCT Patents Fulltext

Set#	Searched for	Results
S1	(auto* or dynamic* or preprogram* or program* or robot* or unman* or comput* or machin* or optimi* or (self n/1 (regulat* or direct* or execut* or control* or manag*)))	139204751
S2	(((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or reassign* or reallocat* or swap* or relocat*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi* or mov$3) n/5 (asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*)	995649
S3	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines or union*)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook* or bank$1 or broker*)	12227972
S4	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend* or optimi*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1 or situation*)	157554760
S5	(multi* or plural* or second* or several* or two or three or third* or couple or another or other* or add$3 or additional*) n/5 (step$1 or stage$1 or transfer* or transaction*)	42520705

S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*))	486495
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	1486516
S8	ACH OR clearinghous* OR (clearing OR store OR storage OR storing OR retriev$3 OR transmi$ OR collect$3 OR preserv$3) p/0 (system OR systems OR house OR houses OR center OR centers OR centre OR centres OR repositor$3)	3266684
S9	S1 n/30 S2	262866
S10	S9 n/30 S3	7436
S11	S10 n/50 S4	753
S12	S11 n/50 S5	68
S13	S8 n/30 S7	16670
S14	S13 n/30 S6	3427
S15	S14 and S10	273
S16	CPC(G06Q20/10 or G06Q20/227 or G06Q40/08)	158453
S17	S15 and S16	110
S18	S12 and apda(<20170816)	62
S19	S17 and apda(<20170816)	110
S20	S19 not S18	103

Dialog – NPL Search History

Databases: ABI/INFORM® Professional Advanced, Abstracts in New Technology & Engineering, Abstracts in New Technology & Engineering, British Library Inside Conferences, Business & Industry, Computer and Information Systems Abstracts, Computer and Information Systems Abstracts, Current Contents® Search, EconLit, Ei Compendex®, Electronics & Communications Abstracts, Electronics & Communications Abstracts, Gale Group Computer Database™, Gale Group New Product Announcements / Plus®, Gale Group Newsletter Database™, Gale Group PROMT®, Gale Group Trade & Industry Database™, Inspec®, Mechanical & Transportation Engineering Abstracts, Mechanical & Transportation Engineering Abstracts, NTIS: National Technical Information Service, ProQuest Dissertations and Theses Professional, ProQuest Newsstand Professional, SciSearch®: a Cited Reference Science Database, UBM Computer Full Text

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S2	(((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or reassign* or reallocat* or swap* or relocat*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi* or mov$3) n/5 (asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*)	17870093*
S3	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines or union*)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook* or bank$1 or broker*)	37198545*
S4	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend* or optimi*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1 or situation*)	57690839*
S5	(multi* or plural* or second* or several* or two or three or third* or couple or another or other* or add$3 or additional*) n/5 (step$1 or stage$1 or transfer* or transaction*)	19113074*

S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*))	10403900*
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	11694388*
S8	ACH OR clearinghous* OR (clearing OR store OR storage OR storing OR retriev$3 OR transmi$ OR collect$3 OR preserv$3) p/0 (system OR systems OR house OR houses OR center OR centers OR centre OR centres OR repositor$3)	2696627*
S9	S1 n/30 S2	1941595*
S10	S9 n/30 S3	32988*
S11	S10 n/50 S4	2853°
S12	S11 n/50 S5	81°
S13	S12 and pd(<20170816)	56°
S14	S8 n/30 S7	18736*
S15	S14 n/30 S6	5264*
S16	S15 and S10	13°
S17	S15 n/200 S9	58°
S18	(S16 or S17) and pd(<20170816)	54°

IP.com / InnovationQ- Patent Search History

US Patents, US Designs, US Applications, EPO Patents, EPO Applications, China Patents, China Applications, Japan Patents, Japan Applications, Korea Patents, Korea Applications, WIPO Applications, Argentina Patents, Argentina Applications, Brazil Patents, Brazil Applications, Canada Patents, Canada Applications, Chile Patents, Chile Applications, Colombia Applications, Costa Rica Applications, Cuba Patents, Cuba Applications, Dominican Republic Applications, Ecuador Patents, Ecuador Applications, El Salvador Applications, Guatemala Applications, Honduras Applications, Mexico Patents, Mexico Applications, Nicaragua Patents, Panama Applications, Peru Applications, Trinidad & Tobago Patents, Uruguay Applications, Austria Patents, Austria Applications, Belarus Patents, Belgium Patents, Belgium Applications, Bosnia & Herzegovina Patents, Bosnia & Herzegovina Applications, Bulgaria Patents, Bulgaria Applications, Croatia Patents, Croatia Applications, Czech Republic Patents, Czech Republic Applications, Czechoslovakia Patents, Czechoslovakia Applications, Denmark Patents, Denmark Applications, Estonia Patents, Estonia Applications, EUIPO Patents, Finland Patents, Finland Applications, France Patents, France Applications, Germany Patents, Germany Applications, Great Britain Patents, Great Britain Applications, Greece Patents, Greece Applications, Hungary Patents, Hungary Applications, Iceland Patents, Iceland Applications, Ireland Patents, Ireland Applications, Italy Patents, Italy Applications, Latvia Patents, Latvia Applications, Lithuania Patents, Lithuania Applications, Luxembourg Patents, Malta Patents, Monaco Patents, Montenegro Patents, Montenegro Applications, Netherlands Patents, Netherlands Applications, Norway Patents, Norway Applications, Poland Patents, Poland Applications, Portugal Patents, Portugal Applications, Republic of Moldova Patents, Republic of Moldova Applications, Romania Patents, Romania Applications, San Marino Patents, San Marino Applications, Serbia Patents, Serbia Applications, Slovakia Patents, Slovakia Applications, Slovenia Patents, Spain Patents, Spain Applications, Sweden Patents, Sweden Applications, Switzerland Patents, Switzerland Applications, Ukraine Patents, Yugoslavia/Serbia and Montenegro Patents, Yugoslavia/Serbia and Montenegro Applications, Armenia Patents, Australia Patents, Australia Applications, Cyprus Patents, Gulf Cooperation Council Patents, Hong Kong Patents, India Patents, India Applications, Indonesia Patents, Indonesia Applications, Israel Applications, Jordan Patents, Kyrgyzstan Patents, Macao Applications, Malaysia Patents, Mongolia Patents, New Zealand Patents, Philippines Patents, Philippines Applications, Saudi Arabia Patents, Singapore Patents, Singapore Applications, Taiwan Patents, Taiwan Applications, Tajikistan Patents, Tajikistan Applications, Thailand Applications, Uzbekistan Patents, Vietnam Patents, Algeria Patents, ARIPO Patents, ARIPO Applications, Egypt Patents, Kenya Patents, Malawi Patents, Morocco Patents, Morocco Applications, OAPI Patents, South Africa Patents, Tunisia Applications, Zambia Patents, Zimbabwe Patents, EAPO Patents, EAPO Applications, Georgia Patents, Georgia Applications, Kazakhstan Patents, Kazakhstan Applications, Russia Patents, Russia Applications, Turkey Patents, Turkey Applications

	Concept Searched for:
L1	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L2	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Concept Modifiers (1) ==========

	1. More Like Text: two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L3	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Concept Modifiers (1) ========== 1. More Like Text: two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (2) ========== Earliest Priority Date: To 2017-08-16 IPC Codes limited to: G06Q40/*; G06Q20/*

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 11/26/2021

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3691	

NOTIFICATION DATE	DELIVERY MODE
11/26/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@wiggin.com

Applicant-Initiated Interview Summary	Application No. 16/850,150	Applicant(s) Zimmerman et al.		
	Examiner ROBERT R NIQUETTE	Art Unit 3691	AIA (First Inventor to File) Status Yes	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ROBERT R NIQUETTE	Primary Examiner	Telephonic
Rikesh Patel	Attorney of Record	
Mr. Gary Zimmerman	Inventor	

Date of Interview: 19 November 2021

Issues Discussed:

35 U.S.C. 101

The Examiner stated that the claim steps as they stand now do not overcome 101 i.e. collecting, storing, verifying, receiving and transmitting. The Examiner further explained that verifying is a mental process.

Applicants rebutted and pointed out that the verifying step was a complex process and that "there's a lot going on here." In support of that Applicants referred to Example 35 as an analogous case.

The Examiner remarked that the parent patents were allowed because they were integrated into a practical application and/or significantly more. The Examiner also suggested that Applicants argue how the invention prevents fraud/enhances security as in Specification paragraphs 114 and 123 as this could prove helpful.

No agreements were reached.

/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general

indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/850,150	Filing Date 04/16/2020	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	11/29/2021	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 10	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/SHARAIN E MORELAND/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
103771-500	16/850,150	April 16, 2020
First Named Inventor:	**Title:**	
Gary E. Zimmerman	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
   - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
   - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
     - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
     - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
       - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
       - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
/Rikesh P. Patel/	November 29, 2021
Name (Print/Typed)	**Practitioner Registration No.**
Rikesh P. Patel	67,578

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

[✔] * Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Utility Application of:

Gary E. ZIMMERMAN et al.

Application No.: 16/850,150	Confirmation No.: 1088
Filed: April 16, 2020	Art Unit: 3699
For: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS	Examiner: Niquette, Robert R.

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116 WITH ACCOMPANYING REQUEST FOR AFTER FINAL CONSIDERATION

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Final Office Action dated September 29, 2021, Applicant submits this amendment and respectfully requests reconsideration of the above-identified U.S. patent application.

Applicant respectfully requests consideration of the above-identified application under the After Final Consideration Pilot Program 2.0, for which a Certification and Request is submitted herewith. Applicant is willing and able to participate in any interview requested by the Examiner concerning the present Response.

The following are included with this paper:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

The following **Listing of Claims** will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

encrypting the account holder's credentials using one or more processors;

storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; and

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request.

2. (Previously Presented) The method of claim 1, further comprising the steps of:

storing one or more of the account holder's endpoints for the online account in a data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

3. (Previously Presented) The method of claim 2, wherein the endpoint includes an email address or a phone number.

4. (Previously Presented) The method of claim 1, wherein the account holder's credentials are collected via a user interface.

5. (Previously Presented) The method of claim 1, wherein the account holder's credentials are collected from a data store.

6. (Currently Amended) A method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

encrypting the account holder's credentials using one or more processors;

temporarily storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are held in memory;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; and

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request.

7. (Previously Presented) The method of claim 6, further comprising the steps of:

storing one or more of the account holder's endpoints for the online account in a data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

8. (Previously Presented) The method of claim 7 wherein the endpoint includes an email address or a phone number.

9. (Previously Presented) The method of claim 6, wherein the account holder's credentials are collected via a user interface.

10. (Previously Presented) The method of claim 6, wherein the account holder's credentials are collected from a data store.

REMARKS

Applicant submits this communication (the "Amendment") in response to the Final Office Action mailed on September 29, 2021 (the "Office Action").

I. Status of the Claims

Claims 1-10 are pending. Applicant amends claims 1 and 6 herein, without prejudice or disclaimer. The originally filed specification and drawings fully support the subject matter of these amendments and additions. For example, support for the claim amendments can be found in paragraphs [000114] and [000123] of Applicant's originally filed specification. ***No new matter is added***. Upon entry of this Amendment, claims 1-10 will be pending for examination, of which claims 1 and 6 will be independent.

The foregoing claim amendments have been made solely for the purpose of expediting prosecution of the present application and should in no way be construed as acquiescence to any of the Examiner's objections or rejections in this or any other Office Action issued in the present application. Applicant reserves the right to pursue the subject matter of the claims prior to being amended herein in this application or in another related application.

Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the response below.

II. Interview Summary

Applicant thanks Examiner Niquette for the courtesies extended to Applicant's representative, Rikesh Patel, and to Inventor Gary E. Zimmerman, during the telephonic interview dated November 19, 2021. During the call, the Examiner and Applicant's representative provided arguments to overcome the outstanding rejection to claim 1 under 35 U.S.C. § 101 for allegedly being directed to unpatentable abstract subject matter. During the call, Examiner Niquette suggested that arguments in favor overcoming fraud and/or enhancing security, as it relates to Applicant's claimed method, may be helpful in overcome the outstanding rejection under 35 U.S.C. § 101.

No other agreements were reached. Because the substantive discussion of the interview is reflected in this response, the response also constitutes the required statement under 37 C.F.R. § 1.133(b).

III. Double Patenting Rejection

In the Office Action, claims 1-10 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 10,657,504 (assigned to Six Trees Capital LLC). Office Action, at p. 14.

Applicant respectfully directs the Office's attention to the Terminal Disclaimer filed previously on September 10, 2021. The Terminal Disclaimer was filed concurrently with the filing of the Amendment also filed on September 10, 2021. Moreover, the Terminal Disclaimer was approved by the Office (Technology Center: OPLC) on September 13, 2021.

Accordingly, Applicant respectfully requests the withdrawal of the double patenting rejection.

IV. Claim Rejections Under 35 U.S.C. § 101

Claims 1-10 were rejected under 35 U.S.C. § 101 for allegedly being directed to unpatentable abstract subject matter. Office Action, at p. 3 and 8. Specifically, the Office Action alleges that "[t]he claims are directed to a certain method of organizing human activity without significantly more." *Id.* at 13. Applicant respectfully traverses the 35 U.S.C. § 101 rejection of claim 1, from which claims 2-5 depend, and claim 6, from which claims 7-10 depend, as set forth below. The arguments provided below for independent claim 1 apply mutatis mutandis to independent claim 6, which has its own scope.

The Examiner relies upon a 101 analysis that follows the 2014 Interim Guidance on Patent Subject Matter Eligibility and the subsequent updates and memoranda, including the 2019 Revised Patent Subject Matter Eligibility Guidance (2019 PEG) and the October 2019 Update.

The Revised Guidance replaces the previous analysis under Step 2A with a newly presented "two-pronged" analysis. Under the first prong, Examiners must determine if a claim falls within three enumerated groupings of abstract ideas found in previous guidelines: "mathematical

concepts," "certain methods of organizing human activity," and "mental processes." To support a finding that the claim "falls within" one of these categories, Examiners must identify "specific limitations" in the claim (both individually and in combination) and determine whether the limitations fall within any of the three enumerated categories. These three categories are narrowly defined and recite specific types of claims (e.g., those directed to "mathematical formulas," "economic" or "commercial" interactions or "concepts performed in the human mind"). If the claim does not recite a judicial exception, it is not directed to a judicial exception and is eligible.

If the claim does recite a judicial exception, then it requires further analysis in Prong Two of Revised Step 2A in order to evaluate whether the claim integrates the abstract idea into a practical application. A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception. When the exception is so integrated, then the claim is not directed to a judicial exception and is eligible.

Examiners evaluate integration into a practical application by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application. Revised Step 2A specifically excludes consideration of whether the additional elements represent well-understood, routine, conventional activity. An additional element (or elements) in the claim can integrate a recited judicial exception(s) into a practical application even if the additional element is well-understood, routine, conventional activity. Accordingly, in revised Step 2A Examiners should ensure that they give weight to all additional elements, whether or not they are conventional, when evaluating whether a judicial exception has been integrated into a practical application.

If the additional elements do not integrate the exception into a practical application, then the claim is directed to the judicial exception, and requires further analysis under Step 2B (where it may still be eligible if it amounts to an inventive concept). It is possible that a claim that does not "integrate" a recited judicial exception is nonetheless patent eligible. For example, the claim may

recite additional elements that render the claim patent eligible, even though a judicial exception is recited in a separate claim element.

If a claim has been determined to be directed to a judicial exception under revised Step 2A, Examiners should then evaluate the additional elements individually and in combination under Step 2B to determine whether they provide an inventive concept (*i.e.*, whether the additional elements amount to significantly more than the exception itself). If the Examiner determines that the element (or combination of elements) amounts to significantly more than the exception itself, the claim is eligible, thereby concluding the eligibility analysis. If such reevaluation indicates that the element is unconventional or otherwise more than what is well-understood, routine, conventional activity in the field, this finding may indicate that an inventive concept is present and that the claim is thus eligible. Examples of limitations recited in a claim that may be sufficient to qualify the claim, as a whole, as "significantly more" than the judicial exception itself include:

a) Improvements to another technology or technical field;

b) Improvements to the functioning of the computer itself;

c) Applying the judicial exception with, or by use of, a particular machine;

d) Effecting a transformation or reduction of a particular article to a different state or thing;

e) Adding a specific limitation other than what is well-understood, routine and conventional in the field, or adding unconventional steps that confine the claim to a particular useful application; or

f) Other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

Claim 1 Satisfies Step 2A Because Claim 1 Is Not Directed to A Judicial Exception

Under the first prong, Examiners must determine if a claim falls within three "enumerated groupings of abstract ideas" found in previous guidelines: "mathematical concepts," "certain methods of organizing human activity," and "mental processes." If the claim does not recite a judicial exception, it is not directed to a judicial exception and is eligible.

The Office Action contends on page 8 that the claims are not directed toward a statutory category, but rather, to a "fundamental economic practice." *Id.* Applicant disagrees that the subject

matter of Applicant's amended independent claim 1 is directed toward a fundamental economic practice. As an initial mater, claim 1 is not directed to a mathematical concept, a method of organizing human activity, a fundamental economic practice, or a mere mental process.

The Office Action alleges that "the practice of online financial account access and security is a fundamental economic practice, well-known, and extensively used for many years." *Id.* at 8. Applicant disagrees that the features of amended independent clam 1 are tied to a "fundamental economic practice" that a human can perform; rather, the invention described by amended independent claim 1 is a complex and unique method to permit a third-party entity to gain access, **in a secure manner**, to an online account held by an account holder that is secured by a multi-factor authentication protocol," as recited in the preamble of amended independent claim 1. A human being cannot replicate this method through any means of his own, and certainly not without technological means, which are also required by amended independent claim 1.

Furthermore, amended independent claim 1 is directed to a complex and unique method that prevents fraud and/or enhances security by, at least, utilizing encryption. Encryption cannot be achieved by a human in this manner and is not tantamount, in any way, to a "fundamental economic practice." For example, amended independent claim 1 recites, in part, "[a] method for permitting a third-party entity to gain access, **in a secure manner**, to an online account held by an account holder that is secured by a multi-factor authentication protocol . . . comprising the following steps performed by the third-party entity . . . collecting the account holder's credentials; **encrypting the account holder's credentials using one or more processors**; [and] **storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store**." Support for these features is provided in the Applicant's originally filed specification. *See, e.g.,* para. [000114] and [000123]. Paragraph [000123] of Applicant's originally filed specification, for example, indicates that, in some embodiments, data is encrypted before it is passed to the credential store 120 . . . [and that] the data [can be] further encrypted in a credential data store 120 before being stored." These features of amended independent claim 1 are not, by any measure, directed to a mathematical concept, a method of organizing human activity, a fundamental economic practice, or a mere mental process.

However, even assuming *arguendo* that the claims are incorrectly found to recite a judicial exception, then further analysis under Prong Two of Revised Step 2A is required in order to evaluate whether the claim integrates the abstract idea into a practical application. Under the second prong of the revised guidance, the Examiner must evaluate whether the claim recites additional elements that integrate the identified judicial exception into a practical application. As explained below, the Applicant respectfully submits that, even assuming the Examiner finds that claim 1 recites a judicial exception, pending claim 1 integrates an abstract idea into a practical application.

Independent claim 1 describes a method for permitting a third-party entity to gain access, **in a secure manner**, to an online account held by an account holder that is secured by a multi-factor authentication protocol, wherein the accessing of the online account is done using one or more processors to access the account holder's credentials. Furthermore, the steps recited in amended claim 1 of "collecting the account holder's credentials . . . ***encrypting the account holder's credentials using one or more processors*** . . . ***storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store*** . . . verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials . . . receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted . . . prompting the account holder for a response and receiving the response thereto from the account holder . . . [and] transmitting the account holder's response to the online account to satisfy the multi-factor authentication request," integrates the alleged judicial exception of claim 1 into a practical application. At least these steps of amended claim 1 integrate any alleged judicial exception, such as a "fundamental economic practice" or a "certain method of organizing human activity," into a **practical application**.

In *CosmoKey Solutions GMBH & Co. KG v. Duo Security LLC*, No. 2020-2043 (Fed. Cir. Oct. 4, 2021), the Federal Circuit reversed a finding of ineligibility for claims directed to a computer authentication method. The plaintiff CosmoKey's patent was directed to an authentication method which required a user to activate a timed authentication function on a mobile device to log into a

computer. *See id.* The District Court of Delaware originally found the claims ineligible under § 101, specifically finding that the claims were directed to the abstract idea of "authentication" at step one of Alice, and that the remaining elements were generic computer functionality at step two. *See id.* However, on October 4, 2021, the Federal Circuit reversed the Delaware District Court's finding of ineligibility of CosmoKey's patent. *See id.* The Federal Circuit found that the claims and specification of CosmoKey's patent-at-issue "recite[d] a specific improvement to authentication that increases security, prevents unauthorized access by a third party, [and that] is easily implemented." *See id.*, at 11. The Federal Circuit, thus, found CosmoKey's claims eligible. *Id.*

The grounds for eligibility of the claims under the 35 U.S.C. § 101 in *CosmoKey* can similarly be applied here to support the eligibility of Applicant's pending claims. Amended independent claim 1 of the present application presents a practical application that solves problems with multi-factor authentication, including by overcoming multi-factor authentication without requiring any prior or existing coordination/cooperation from the institution at which the account is held. Claim 1, as amended, does not recite software per se; rather amended independent claim 1 is directed to a method for permitting a third-party entity to, **in a secure manner**, gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and an endpoint that is stored in a database and associated with the user's online account. The online account is accessed using one or more processors, which is not software per se. Lastly, like the claims in *CosmoKey*, Applicant's pending claims are tied to a specific improvement to authentication that increases security and that prevents unauthorized access by a third party by utilizing encryption.

Accordingly, Applicant asserts that the claims in the present application do not recite a judicial exception and even if the claims were found to recite a judicial exception under the new Revised Guidance, claim 1 also recites additional elements that integrate the identified judicial exception into a practical application. Therefore, claim 1 is eligible under 35 U.S.C. §101.

Claim 1 Satisfies Step 2B Because Claim 1 As A Whole Amounts to Significantly More Than Any Of The Judicial Exceptions

If the additional elements are construed as failing to integrate the exception into a practical application, then the claims are directed to a judicial exception, and require further analysis under Step 2B (where it may still be eligible if it amounts to an inventive concept). Examiners should evaluate the additional elements individually and in combination under Step 2B to determine whether they provide an inventive concept (*i.e.,* whether the additional elements amount to significantly more than the exception itself). If the Examiner determines that the element (or combination of elements) amounts to significantly more than the exception itself, the claim is eligible.

With respect to pending independent claim 1, assuming *arguendo* that the Examiner finds that the claim is directed to a judicial exception, the combination of elements recited in the claims are performed in an unconventional way and therefore include an "inventive concept," rendering the claim eligible as patentable subject matter under 35 U.S.C. § 101. Amended independent claim 1 includes specific limitations that are other than what is well-understood, routine and conventional in the field and include unconventional steps that confine the claims to a particular useful application. The claimed subject matter provides a sufficiently concrete transformation of a system itself (*e.g.*, method for permitting a third-party entity to, ***in a secure manner***, gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and the steps of "collecting the account holder's credentials . . . ***encrypting the account holder's credentials using one or more processors*** . . . ***storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store*** . . . verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials . . . receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted . . . prompting the account holder for a response and receiving the response thereto from the account holder . . . [and] transmitting the account holder's response to the online account to satisfy the multi-factor authentication request," so as to ground the invention to a particular inventive implementation. (***emphasis added***). Again, analogizing to the patent eligible claims in *CosmoKey*,

here, the Applicant's claimed method steps are directed to a specific improvement to authentication that increases security and that prevents unauthorized access by a third party by using encryption.

Here, amended independent claim 1 recites more than a fundamental economic or business practice, and more than the mere accessing of an online account. Particularly, amended claim 1 recites a method for permitting a third-party entity to, ***in a secure manner***, gain access gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and the steps of "collecting the account holder's credentials . . . ***encrypting the account holder's credentials using one or more processors*** . . . ***storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store*** . . . verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials . . . receiving a multi-factor authentication request from the online account , the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted . . . prompting the account holder for a response and receiving the response thereto from the account holder . . . [and] transmitting the account holder's response to the online account to satisfy the multi-factor authentication request (***emphasis added***). This process is detailed in at least ¶ [0086] of Applicant's originally filed specification from the provisional patent application, from which this application claims priority, and detailed in at least ¶ ¶ [000114] and [000123] of Applicant's originally filed specification.

Thus, similar to the claims at issue in *CosmoKey*, *DDR Holdings, LLC v. Hotels.com, L.P.* 773 F.3d 1245 (Fed. Cir. 2014), and Ex *Parte Ginder*, the presently claimed method is not merely representing a fundamental economic or business practice, but, rather, the presently claimed method is a non-abstract specific process performed according to specific steps.

Therefore, Applicant respectfully submits that the claimed subject matter recited in amended claim 1 is novel, transformative, and improves the functioning of the system, and satisfies Step 2B of the Revised Guidelines.

Claim 1 Recites Patent-Eligible Subject Matter

For at least the foregoing reasons, Applicant respectfully submits that amended claim 1 does not recite a judicial exception, and is not, software per se, but assuming *arguendo* that it does,

amended claim 1 integrates the judicial exception into a practical application, and/or amounts to significantly more than the judicial exception, and therefore, amended claim 1 recites eligible subject matter.

Amended independent claim 6, having its own scope, recites similar features to amended independent claim 1, and is also patentable under 35 U.S.C. § 101 for the same reasons as applied to claim 1 above mutatis mutandis.

Dependent claims 2-5 and 7-10 are patentable under 35 U.S.C. § 101 for the same reasons as applied to their respective base claims 1 and 6 above mutatis mutandis.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-10 under 35 U.S.C. § 101.

V. CONCLUSION

The Office Action contains characterization of the claims and the related art with which the Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.

In discussing the specification, claims, and drawings in this Amendment, it is to be understood that Applicant is in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings. Rather, Applicant is entitled to have the claims interpreted broadly to the maximum extent permitted by statute, regulation, and applicable case law.

In view of the foregoing remarks, Applicant submits that the aforementioned claims are neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore respectfully requests the reconsideration and reexamination of the application, and the timely allowance of the pending claims.

If the Examiner believes a telephone conversation might advance prosecution, the Examiner is invited to call Applicant's undersigned representative at 212-551-2604.

Please grant any extensions of time required to enter this response and charge the required fees to Deposit Account No. 23-1665.

Dated: November 29, 2021

Respectfully submitted,
Six Trees Capital LLC

/Rikesh P. Patel/
Rikesh P. Patel
Registration No.: 67,578
Wiggin and Dana LLP
One Century Tower
New Haven, Connecticut 06508-1832
(212) 551-2604
(203) 782-2889 (Fax)
Attorney For Applicant

Electronic Acknowledgement Receipt

EFS ID:	44387794
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Customer Number:	27267
Filer:	Rikesh Pradip Patel
Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	29-NOV-2021
Filing Date:	16-APR-2020
Time Stamp:	22:28:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	After Final Consideration Program Request	103771_500_AFCP_RequestForm.pdf	91265 47453e107a15254771b39412c7e88dc60a8864a3	no	2

Warnings:

Information:					
2		103771_500_After_Final_Amendment.pdf	229845 95670f5afe4ac39d290450e12bf13a2292b1c1e9	yes	16

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Response After Final Action	1	1
Claims	2	5
Applicant Arguments/Remarks Made in an Amendment	6	16

Warnings:	
Information:	
Total Files Size (in bytes):	321110

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 12/09/2021

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3691	

NOTIFICATION DATE	DELIVERY MODE
12/09/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@wiggin.com

Advisory Action Before the Filing of an Appeal Brief	Application No. 16/850,150	Applicant(s) Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3691	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 29 November 2021 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☑ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☑ The period for reply expires 6 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection.The current period for reply expires ____ months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.
   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANTS FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37CFR 41.37(a).

AMENDMENTS

3. ☑ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☑ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: See note 14 below (See 37CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicants reply has overcome the following rejection(s): _____
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s):(a) ☐ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☑ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See attached PTO2323.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☑ Other: See Continuation Sheet.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed:_____.
    Claim(s) objected to:_____.
    Claim(s) rejected:1-10.
    Claim(s) withdrawn from consideration:_____.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3691

Continuation of REQUEST FOR RECONSIDERATION/OTHER 14. Other: Applicants argue variously that the pending case is patent-eligible because the claims permit a user to gain access to an online account in a secure manner. Applicants cite Cosmokey vs. Duo Security in support of that contention. Remarks at 11 et seq.

The Examiner does not agree. The Federal Circuit's opinion states,

"Here, the claim limitations are more specific and recite an improved method for overcoming hacking by ensuring that the authentication function is normally inactive, activating only for a transaction, communicating the activation within a certain time window, and thereafter ensuring that the authentication function is automatically deactivated. The specification explains that these features in combination with the other elements of the claim constitute an improvement that increases computer and network security, prevents a third party from fraudulently identifying itself as the user, and is easy to implement and can be carried out even with mobile devices of low complexity. '903 patent col. 2 ll. 15–32. We recognized in Ancora that improving computer or network security can constitute "a non-abstract computer-functionality improvement if done by a specific technique that departs from earlier approaches to solve a specific computer problem." 908 F.3d at 1349. Here, as the specification itself makes clear, the claims recite an inventive concept by requiring a specific set of ordered steps that go beyond the abstract idea identified by the district court and improve upon the prior art by providing a simple method that yields higher security." (Slip opinion at 14).

By contrast, the pending claims recite simple steps of receiving and sending information which is insignificant extra-solution activity, and encrypting and verifying received data. All of this is done with generic computer equipment. (See paragraphs 64, 79, 82 96 and 113, and Figures 4A-7 of the Specification). The Examiner therefore finds Applicants' arguments unconvincing and reliance on Cosmokey unavailing.

AFCP 2.0 Decision

Application No.	Applicant(s)	
16/850,150	Zimmerman et al.	
Examiner	**Art Unit**	**AIA (FITF) Status**
ROBERT R NIQUETTE	3691	Yes

This is in response to the After Final Consideration Pilot request filed 29 November 2021.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ The request is not the first proper AFCP 2.0 request submitted in response to the most recent final rejection.

   ☐ Other: _____

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action . See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☑ 5. Other: See Continuation Sheet

   Examiner Note: Please attach an interview summary when necessary as described above.

Continuation of Proper Request- B. 5. Other: /ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3691 See note 14 on PTO303.

Electronic Patent Application Fee Transmittal

Application Number:	16850150
Filing Date:	16-Apr-2020
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Filer:	Rikesh Pradip Patel
Attorney Docket Number:	103771-500

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
NOTICE OF APPEAL	2401	1	420	420
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	110	110
Miscellaneous:				
		Total in USD ($)		**530**

Electronic Acknowledgement Receipt

EFS ID:	44871687
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Customer Number:	27267
Filer:	Rikesh Pradip Patel
Filer Authorized By:	
Attorney Docket Number:	103771-500
Receipt Date:	30-JAN-2022
Filing Date:	16-APR-2020
Time Stamp:	16:05:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$530
RAM confirmation Number	E20221TG06044425
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	103771_500_Notice_of_Appeal.pdf	66637 47182cc3e4aec399dd597a20284393a5f3d0a043b	no	2
Warnings:					
Information:					
2	Pre-Brief Conference request	103771_500_PreAppeal_Brief_Request.pdf	62708 c42d38b28e09c47a696c9c79288b3cc97d0da937	no	2
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	103771_500_PreAppeal_Brief.pdf	158016 eb9162b47959980eea6ff98a7f1c707cccc7b3fb	no	5
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	40130 8536ff4e3afef926c97ff209c1692042e6a10471	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	327491		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/31 (03-14)
Approved for use through 01/31/2021. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional): 103771-500

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on January 30, 2022.

Signature /Rikesh P. Patel/

Typed or printed name Rikesh P. Patel

In re Application of: Gary E. Zimmerman

Application Number	Filed
16/850,150	April 16, 2020

For: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

Art Unit	Examiner
3691	Niquette, Robert R

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 840.00

☑ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ 420.00

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 23-1665.

☑ Payment made via EFS-Web.

☑ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant

☑ attorney or agent of record
Registration number 67,578

☐ attorney or agent acting under 37 CFR 1.34
Registration number _____

Signature /Rikesh P. Patel/

Typed or printed name Rikesh P. Patel

Telephone Number 212-551-2604

Date January 30, 2022

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc Code: AP.PRE.REQ

PTO/AIA/33 (03-13)
Approved for use through 01/31/2021. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 103771-500

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]
on January 30, 2022

Signature /Rikesh P. Patel/

Typed or printed name Rikesh P. Patel

Application Number	Filed
16/850,150	April 16, 2020

First Named Inventor: Gary E. Zimmerman

Art Unit	Examiner
3691	Niquette, Robert R

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 67,578.

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

/Rikesh P. Patel/
Signature

Rikesh P. Patel
Typed or printed name

212-551-2604
Telephone number

January 30, 2022
Date

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Gary E. Zimmerman	**Docket No.:**	103771-500
Application No.:	16/850,150	**Art Unit:**	3691
Filed:	April 16, 2020	**Examiner:**	Niquette, Robert R.
		Conf. No.	1088

Title: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby submits the following Arguments as an attachment to the concurrently filed Pre-Appeal Brief Request for Review Form (PTO/SB/33). A Notice of Appeal is being filed concurrently herewith.

ARGUMENTS

Applicant's claims recite a method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder, where such account is secured by a multi-factor authentication protocol. The present claims recite the use of an encrypted process that enables individual investors to manage, in a secure way, a multitude of bank accounts through a single interface. In doing so, users can obtain increased FDIC insurance coverage and earn higher returns. The present claims recite the use of an endpoint (i.e., phone number, email address) that is stored in a database and associated with the user's (e.g., account holder's) online account, wherein the endpoint is used to relay a multi-factor authentication code after the user's account login credentials have been verified. The user's credentials are encrypted using one or more processors to enhance the security protocols of the method recited in the independent claims. After the user's credentials have been verified, and at subsequent step, Applicant's claimed method then interacts with the endpoint to satisfy multi-factor authentication. In doing so, the method of the present claims can pass both prongs of a multi-factor authentication test,

convincing a bank that the computer that is scraping its website is actually the user (e.g., account holder) in question, thereby enabling the platform of the method independent claims to gain unfettered access to the user's bank account.

This solution, disclosed by Applicant's claimed methods, can only be implemented using specialized computer hardware for several reasons: 1) a human call center could not serve this function, for no savvy bank customer would ever provide their unencrypted username/password combination necessary to access their bank account to another untrusted human -- in fact, doing so would violate the agreement that exists between a bank and its customers; 2) specialized computer systems are required to implement 256-bit bank-level encryption to protect these login credentials, which is the only known safe and trusted way to transmit and store such credentials; and 3) specialized computer hardware is necessary to power the headless browsers that are able to use logic to interpret bank websites and interact with their various messages, prompts, data input boxes, and action buttons. The claims of the present application are thus novel and inventive. Indeed, there being no prior art rejections, Applicant will address the rejection of all of the claims under 35 U.S.C. § 101 as being directed to a judicial exception without significantly more.

The 2019 Revised Patent Subject Matter Eligibility Guidance (Federal Register Vol. 84, No. 4, "the PEG") was issued to reduce inconsistent outcomes in patent subject matter eligibility analysis at the USPTO. It groups the types of abstract ideas into the following categories for 35 U.S.C. § 101 analysis:

> (a) Mathematical concepts— mathematical relationships, mathematical formulas or equations, mathematical calculations;
>
> (b) Certain methods of organizing human activity—fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions); and
>
> (c) Mental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion).
>
> The PEG states:

> Claims that do not recite matter that falls within these enumerated groupings of abstract ideas should not be treated as reciting abstract ideas, except as follows: In the rare circumstance in which a USPTO employee believes a claim limitation that does not fall within the enumerated groupings of abstract ideas should nonetheless be treated as reciting an abstract idea, the procedure described in Section III.C for analyzing the claim should be followed.

The presently pending claims do not fall into any enumerated grouping. The claims are not directed to a mathematical concept, but a precise combination of events, leveraging specialized computer hardware and software, computer logic, and encryption, to overcome a method of security that was intended to be impenetrable. The claims are not directed to methods of organizing human activity as they do not recite any steps performed by a human. For example, as mentioned earlier in this brief, a human call center could not serve the function of the present claims, for no savvy bank customer would ever provide their unencrypted username/password combination necessary to access their bank account to another untrusted human, nor could a human safely manage, store, or transmit such credentials without encrypting them, and securely encrypting data is beyond the abilities of the unaided human mind. Lastly, the claims are not directed to a mental process, but a method performed using specifically identified hardware. The novel and non-obvious method of Applicant's claims are directed to a series of steps, that when taken together, implement a solution using specialized computer hardware that uses computer processing power and bandwidth to operate multiple "headless browsers" in parallel. Off-the-shelf computer hardware (e.g., desktop PCs purchased at a retailer) is not capable of executing these functions with the speed and scale necessary to operate the platform of Applicant's claims. As such, Applicant's claimed method incorporates specially programed and sophisticated cloud computing platforms that operate these machines and load balance requests across multiple "workers". Applicant's claimed method steps include programming these "workers" to navigate, or "scrape", bank websites, using logic to act on behalf of the user in accessing bank websites and conveying client information and funds transfer instructions. As the claims do not fall into one of the enumerated groups, their scrutiny under 35 U.S.C. § 101 should end.

> As to the "rare circumstance", the PEG sets forth that:
> the examiner should evaluate whether the claim as a whole integrates the recited tentative abstract idea into a practical application as explained in Section III.A.2. If the claim as a whole integrates the recited tentative abstract idea into a practical application, the claim is not directed to a judicial exception. . . . A claim that

integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception.

To the extent the claims are directed to an abstract idea, they are incorporated in the practical application of a complex and unique method that prevents fraud and/or enhances security by, at least, utilizing encryption. The claims are moreover meaningfully limited by the recitation of the use of a structured storage mechanism (e.g., the data store of the claims) and at least one processor for encrypting the account holder's credentials, all of which tie the claim to the specific functionality of the application.

The collective of the above analysis constitutes Step 2A according to the PEG. Even assuming, arguendo, that Step 2A is not satisfied, Applicant submits that the pending claims nonetheless are patent eligible as having significantly more than an abstract idea. As noted during prosecution, independent claims 1 and 6 describe a method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder that is secured by a multi-factor authentication protocol, wherein the accessing of the online account is done using one or more processors to access the account holder's credentials. Furthermore, the steps recited in amended claims 1 and 6 of "encrypting the account holder's credentials using one or more processors . . . [and] storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store," integrates the alleged judicial exception of the claims into a practical application. At least these steps of Applicant's claims integrate any alleged judicial exception, such as a "fundamental economic practice" or a "certain method of organizing human activity," into a **practical application**.

The present claims recite the use of an encrypted process that helps individual investors manage, in a secure way, a multitude of bank accounts through a single interface. In doing so, users can obtain increased FDIC insurance coverage and earn higher returns. Through Applicant's platform recited by the independent claims, clients can open new accounts, retrieve balance information, and request funds transfers among their own bank accounts or to external financial accounts.

In *CosmoKey Solutions GMBH & Co. KG v. Duo Security LLC*, No. 2020-2043 (Fed. Cir. Oct. 4, 2021), the Federal Circuit reversed a finding of ineligibility for claims directed to a computer authentication method. The plaintiff CosmoKey's patent was directed to an authentication method which required a user to activate a timed authentication function on a mobile device to log into a computer. *See id.* The District Court of Delaware originally found the claims ineligible under § 101, specifically finding that the claims were directed to the abstract

idea of "authentication" at step one of Alice, and that the remaining elements were generic computer functionality at step two. *See id.* However, on October 4, 2021, the Federal Circuit reversed the Delaware District Court's finding of ineligibility of CosmoKey's patent. *See id.* The Federal Circuit found that the claims and specification of CosmoKey's patent-at-issue "recite[d] a specific improvement to authentication that increases security, prevents unauthorized access by a third party, [and that] is easily implemented." *See id.*, at 11. The Federal Circuit, thus, found CosmoKey's claims eligible. *Id.*

The grounds for eligibility of the claims under the 35 U.S.C. § 101 in *CosmoKey* can similarly be applied here to support the eligibility of Applicant's pending claims. Amended independent claims 1 and 6 of the present application present a practical application that solves problems with multi-factor authentication, including by overcoming multi-factor authentication without requiring any prior or existing coordination/cooperation from the institution at which the account is held. Independent claims 1 and 6 do not recite software per se; rather these claims are directed to a method for permitting a third-party entity to, **in a secure manner**, gain access to an online account held by an account holder that is secured by a multi-factor authentication protocol using one or more processors and an endpoint that is stored in a database and associated with the user's online account. The online account is accessed using one or more processors, which is not software per se. Lastly, like the claims in *CosmoKey*, Applicant's pending claims are tied to a specific improvement to authentication that increases security and that prevents unauthorized access by a third party by utilizing encryption.

Accordingly, Applicant asserts that the claims in the present application do not recite a judicial exception and even if the claims were found to recite a judicial exception under the new Revised Guidance, claims 1 and 6 also recite additional elements that integrate the identified judicial exception into a practical application. Therefore, the claims at issue should be found patent eligible under 35 U.S.C. § 101.

Respectfully submitted,

Dated: January 30, 2022

/Rikesh P. Patel/
Rikesh P. Patel
Reg. No. 67,578

CONTACT INFORMATION:
WIGGIN &DANA LLP
One Century Tower
New Haven, CT 06508-1832

Telephone: (212) 551-2604
Facsimile: (203) 782-2889
Email: rpatel@wiggin.com

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

27267 7590 03/11/2022

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	
ART UNIT	PAPER NUMBER
3691	

DATE MAILED: 03/11/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

TITLE OF INVENTION: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/13/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

27267 7590 03/11/2022

WIGGIN AND DANA LLP
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ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

TITLE OF INVENTION: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/13/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
NIQUETTE, ROBERT R	3691	705-004000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 03/11/2022

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ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	
ART UNIT	**PAPER NUMBER**
3691	

DATE MAILED: 03/11/2022

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/850,150	Applicant(s) Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3691	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to communication received 1-30-2022.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1,3-6 and 8-10 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3691

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Detailed Action

Claims 1, 3-6 and 8-10 as amended below are pending. Claims 2 and 7 are cancelled via this communication.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicants, an amendment may be filed as provided by 37 CFR 1.312.

Authorization for this examiner's amendment was given in an e-mail from Applicants' representative on 2-4-2022. The application has been amended as follows:

1. (Currently Amended) A method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

encrypting the account holder's credentials using one or more processors;

storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; [[and]]

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request;

storing one or more of the account holder's endpoints for the online account in a data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

2. (Canceled)

3. (Currently Amended) The method of claim 1 [[2]], wherein the endpoint includes an email address or a phone number.

6. (Currently Amended) A method for permitting a third-party entity to gain access, in a secure manner, to an online account held by an account holder that is secured by a multi-factor authentication protocol, comprising the following steps performed by the third-party entity:

collecting the account holder's credentials;

encrypting the account holder's credentials using one or more processors;

temporarily storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are held in memory;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; [[and]]

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request;

storing one or more of the account holder's endpoints for the online account in a data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

7. (Canceled)

8. (Currently Amended) The method of claim 6, [[7]] wherein the endpoint includes an email address or a phone number.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: The instant application is directed towards a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network that monitors changed conditions pertaining to accounts. The information is utilized in a credential data store to permit the financial management system to access multiple accounts over a data network and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

A rejection under 35 USC 101 rejection was pending in the previous rejection, and the examiner finds that the instant claims qualify as patent eligible subject matter per the 2019 Revised Patent Subject Matter Eligibility Guidance. The claims, though abstract, apply or

use the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment. Accordingly, the rejection under 35 USC 101 is withdrawn via this action. Also, the art rejection was withdrawn because the prior art of record, either individually or in combination, did not teach each and every element of the claims.

Furthermore, the prior art of record (US8495720 *Counterman*) does not teach:

collecting the account holder's credentials;

encrypting the account holder's credentials using one or more processors;

storing the account holder's encrypted credentials using one or more processors, wherein the encrypted credentials are stored in a data store;

verifying the account holder's credentials by accessing, via one or more processors, the online account using the account holder's credentials;

receiving a multi-factor authentication request from the online account, the multi-factor authentication request indicating that a response is required from the account holder before further access to the online account is granted;

prompting the account holder for a response and receiving the response thereto from the account holder; [[and]]

transmitting the account holder's response to the online account to satisfy the multi-factor authentication request;

storing one or more of the account holder's endpoints for the online account in a data store associated with the online account; and

utilizing said one or more endpoints to permit the third-party to gain access to the online account, or information pertaining to the online account, without requiring a response by the account holder to any subsequent multi-factor authentication requests.

For these reasons, claims 1 and 6 are deemed to be allowable over the prior art of record and their respective dependent claims are allowed by dependency on an allowed claim, the dependent claims being further limiting to the independent claims, definite and fully enabled by the Specification.

It appears that the instant invention is beyond the skill of one of ordinary skill in the art. Accordingly the invention would NOT have been obvious because one of ordinary skill could not have been expected to achieve it, NOR would they have been able to predict the results, and as such, they would have had no capability of expecting success.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Prior art made of record that is considered pertinent to applicant's disclosure can be found on the attached PTO-892. Any inquiry concerning this communication or earlier

communications from the examiner should be directed to Robert R. Niquette whose telephone number is 571-270-3613. The examiner can normally be reached on Monday through Friday, 5:30 AM to 1:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alex Kalinowski, can be reached at 571-272-6771. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3691

Notice of References Cited	Application/Control No. 16/850,150	Applicant(s)/Patent Under Reexamination Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	Art Unit 3691	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140351146-A1	11-2014	Johnson; Bruce E.	G06Q20/12	705/71
*	B	US-20150066719-A1	03-2015	Agrawal; Prashant Kumar	G06Q40/02	705/35
*	C	US-20080319887-A1	12-2008	Pizzi; John E.	G06Q40/02	705/35
*	D	US-8495720-B2	07-2013	Counterman; Raymond	G06F21/40	455/433
*	E	US-20140337636-A1	11-2014	ADAMS; Neil Patrick	G06F21/32	713/186
*	F	US-20080249947-A1	10-2008	Potter; Eric R.	G06Q20/3674	705/67
*	G	US-10268995-B1	04-2019	Zimmerman; Gary E.	G06Q20/227	1/1
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3691

CPC - Searched*		
Symbol	Date	Examiner
G06Q 20/10	02/05/2022	RRN
G06Q 20/22	02/05/2022	RRN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
705	All	02/05/2022	RRN

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Updated PE2E search	02/05/2022	RRN
PLUS search	05/25/2021	RRN
WIPO database search	05/25/2021	RRN
Inventor search	05/25/2021	RRN
NPL search	02/16/2022	STIC Staff

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
		02/05/2022	RRN

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

CPC						
Symbol					**Type**	**Version**
G06Q	/	20	/	10	F	2013-01-01
G06Q	/	20	/	227	I	2013-01-01
G06Q	/	40	/	08	I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	8	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	03 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office

Part of Paper No.: 20220205

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06Q	/	20	/	10

NON-CLAIMED				
G06Q	/	20	/	22
G06Q	/	40	/	08

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
705	4

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					
705	35	67	71			
713	186					
726	8					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	03 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office — Part of Paper No.: 20220205

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
	2														
2	3														
3	4														
4	5														
5	6														
	7														
6	8														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	8	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	03 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Examiner	NIQUETTE, ROBERT
Art Unit	3699
Serial #	16850150
Date Completed	09/20/2021
Assigned EIC	3600
Searcher	Haoyi Chen
Tracking #	642508

This document includes the following content:

Search Histories
Complete lists of all files searched within each database collection, along with all keyword/synonym strings and any applicable chemical structure or biosequence queries used by the Searcher in completing the prior art search are included in this report.

Search Results
Results related to your search request are included. While not all references may be useful for a rejection or other office action, they are included for the Examiner's review.

For 1600 Examiners
Your search results will be available in PE2E on the next business day at approximately noon. For detailed instructions on how to access your search results in PE2E, please see this guide.

If you have any questions about this search, or about how to interpret this search report, or if you need assistance retrieving the full text of any of the references contained in this report, please do not hesitate to contact your assigned EIC:

EIC	Phone	Email
1600	571-272-0473	STIC-EIC1600/2900@uspto.gov
1700	571-272-2530	STIC-EIC1700@uspto.gov
2100	571-272-4225	STIC-EIC2100@uspto.gov
2400	571-272-4225	see EIC 2100
2600	571-272-4235	STIC-EIC2600@uspto.gov
2800	571-272-2540	STIC-EIC2800@uspto.gov
2900	571-272-4240	see EIC 3700
3600	571-272-3488	STIC-EIC3600@uspto.gov
3700	571-272-4240	STIC-EIC3700@uspto.gov

Thank you for using the EIC, and we look forward to your next search!

Search Request

Effective Filing Date:
8-16-2017.

Description
Just take Tracking #631984 and run an update. Thanks.

Description of 631984:
This is a method for automatically adjusting distribution of financial assets among multiple accounts in economies and financial institutions e.g. banks, brokerage firms and credit unions. The method involves providing a financial management network (100) that monitors changed conditions pertaining to accounts (300,400a-400c). The information is utilized in a credential data store to permit the financial management system (1000) to access multiple accounts over a data network (1100) and to facilitate a two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account.

Examiner Correspondence

From: Niquette, Robert R.
Sent: Monday, September 20, 2021 1:49 PM
To: Chen, Haoyi (CPA Global) <Haoyi.Chen@uspto.gov>
Subject: RE: Request ID: 642508-16850150

Yes just use the previous search.. Thanks.

From: Chen, Haoyi (CPA Global) <Haoyi.Chen@uspto.gov>
Sent: Monday, September 20, 2021 1:43 PM
To: Niquette, Robert R. <Robert.Niquette@USPTO.GOV>
Subject: Request ID: 642508-16850150

Hi Examiner Niquette,

This is Haoyi with STIC. I've received your request and just reaching out to let you know that I will run a update search on 631984. If you wanted me to focus on anything in particular. If not, I will use the previous search report as a guide. Thanks for your time!

Feel free to reach out before or after the search is submitted if you have questions or comments.

Best Regards,
Haoyi

Patent Search Results

US10268995 System and method for automated optimization of financial assets

PUBLICATION NUMBER: US 10268995 B1 PUBLICATION DATE: 23-Apr-2019
APPLICATION NUMBER: US 14/606,931 FILING DATE: 27-Jan-2015
SIMPLE FAMILY: 66174828 (size 2) EARLIEST PRIORITY DATE: 28-Jan-2014

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):

A financial management network is disclosed for optimizing interest return and/or deposit insurance coverage among a plurality of online accounts that may include one or more savings accounts and a checking account by automatically allocating and transferring funds among the accounts without intervention of the account holder, in accordance with constraints that may be set by the financial management network, account holder, the account holder's financial advisor, and/or imposed by the associate financial institutions holding the accounts.

Inventors:

Zimmerman, Gary E. (New York, NY, US) • Wu, Richard D. (Chicago, IL, US) • Gironda, Gabriel Jorge (Austin, TX, US)

Applicants:

Six Trees Capital LLC (New York, NY, US)

In an exemplary embodiment, the processor is configured to apply one or more rules stored in the at least one data store to instruct the first savings account and/or the second savings account to initiate a transfer of financial assets between the respective first savings account and/or second savings account and the checking account.

In an exemplary embodiment, the at least one data store is configured to retain credentials for accessing one or more of the checking account, first savings account, and second savings account.

In an exemplary embodiment, this transfer of financial assets occurs as a two-step process: first, savings account 400a is instructed to initiate a transfer of financial assets M1, into checking account 300 (through a debiting action). In a separate, second step, savings account 400c is instructed to initiate a transfer of financial assets M1 into savings account 400c from the checking account 300 (through a crediting action). Thus, all transfers (in both directions) are initiated by the savings accounts and do not require action on the part of the checking account. Using this particular two-step arrangement in which the checking account is passive permits savings of fees that might otherwise be incurred by transfers initiated by the checking account and avoids other potential limitations regarding the number and size of transfers that may be invoked by the banks.

US20150161577 Funds transfer method and apparatus

PUBLICATION NUMBER: US 2015/0161577 A1 PUBLICATION DATE: 11-Jun-2015
APPLICATION NUMBER: US 14/626,643 FILING DATE: 19-Feb-2015
SIMPLE FAMILY: 24672096 (size 24) EARLIEST PRIORITY DATE: 20-Sep-2000

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):

A withdrawal of assets is initiated from a first account at a first financial institution. A deposit of the assets withdrawn from the first account is initiated to a second account at a second financial institution. The first account and the second account have a common account holder. The withdrawal and deposit of assets may be initiated after analyzing multiple accounts of the account holder and determining whether an adjustment of funds among the multiple accounts would benefit the account holder. A debit instruction is used to initiate the withdrawal of assets and a credit instruction is used to initiate the deposit of the withdrawn assets. The withdrawal and deposit of assets can be implemented using one or more payment networks, debit networks, or a wire transfer between the two financial institutions.

Inventors:
Dilip, Venkatachari (Cupertino, CA, US) • Dheer, Sanjeev (Scarsdale, NY, US)
Applicants:
CashEdge, Inc. (New York, NY, US)

[0037] Each of the financial institution servers **102**, **104**, and **106** are typically associated with a particular financial institution and store data for that financial institution, such as customer account data. The market information service server **110** may represent one or more services that collect and report information regarding current financial market conditions. For example, a particular market information service may collect information from many financial institutions to generate a report identifying the average interest rates for savings, checking, or other accounts. The report may also identify the highest rates for each type of account and the financial institution offering those rates. Multiple market information service servers **110** may be coupled to network **108**, each server providing a different type of market data.

[0050] The financial management system 220 stores customer data 224, such as customer account information, online banking login name and password, and user preferences. Financial management system 220 also stores financial institution data 226 and market information 228. Financial institution data 226 includes, for example, transaction routing data, account offerings, account interest rates, and minimum account balances. Market information 228 includes data such as average interest rates for different types of accounts (both asset accounts and debt accounts), the best available interest rates for each type of account, and the financial institutions offering the best available interest rates.

[0058] The particular logic rules selected for each user may be different based on the sets of logic rules chosen by the user. Additionally, the logic rules selected for a particular user may change over time as the financial management system learns more about the user's payment or spending habits. For example, if the user regularly makes a $1000 payment from a particular checking account on the 15th of each month, a rule may be created by the financial management system to ensure that the checking account has at least a $1000 balance on the 14th of each month. If the checking account does not have a sufficient balance, then the financial management system may recommend a fund transfer to raise the balance of the checking account to cover the anticipated $1000 payment on the 15th. This type of user-specific logic rule may be stored with the other user data in the financial management system.

[0059] Asset analysis and recommendation engine **254** analyzes the user's asset account information by applying the various asset analysis logic rules to the asset account information. The asset analysis and recommendation engine **254** also considers market data collected by collection module **256** when analyzing the user's asset accounts. After analyzing the user's asset accounts, the asset analysis and recommendation engine **254** generates one or more recommendations to adjust the fund allocation among the asset accounts. The recommendation may also include opening a new asset account (e.g., an account that pays a higher interest rate) and/or closing an existing asset account (e.g., an account that pays a low interest rate). The recommendations and analysis results are output on communication link **264** for use by other modules or components in the financial management system.

[0108] For example, in the environment of FIG. 16, the financial management system **582** receives user account information during a user registration process. Next, the financial management system **582** analyzes the user's accounts and determines whether funds should be transferred from the user's checking account at financial institution **574** to the user's savings account at financial institution **576**. To initiate this fund transfer, financial management system **582** generates a debit instruction to withdraw the appropriate funds from the user's checking account at financial institution **574**. Additionally, financial management system **582** generates a credit instruction to deposit the appropriate funds (equal to the funds withdrawn by the debit instruction) into the user's savings account at financial institution **576**. The instructions are then communicated via payment processor **580** and financial institution **578** onto the payment network **572**.

US20150379488 Automated proactive electronic resource allocation processing system

PUBLICATION NUMBER: US 2015/0379488 A1 PUBLICATION DATE: 31-Dec-2015
APPLICATION NUMBER: US 14/749,369 FILING DATE: 24-Jun-2015
SIMPLE FAMILY: 54930972 (size 1) EARLIEST PRIORITY DATE: 27-Jun-2014

PRIMARY INFORMATION (SOURCE: USPTO)

Abstract (English):
An automated proactive electronic resource allocation processing system can allocate resources based at least in part on configuration information. In one embodiment, a processing system can determine a strategic configuration of user accounts ("Accounts") based on information collected about a user. One or more computing resources can communicate, such as over a network, to configure a plurality of Account features, attributes, identities, permissions, controls, and/or restrictions for each Account in order to accomplish objectives related to the resources. One or more computing resources can be configured to proactively and automatically allocate resources to one or more user Accounts. A computing resource associated with a user Account can be configured to complete a plurality of desired or necessary transactions, including receiving, holding, and reporting current balance information, and/or transferring portions of the financial resources to other user Accounts or other non-user accounts.

Inventors:
Ruff, Lawrence H. (Springville, UT, US) • Ruff, Ryan L. (Springville, UT, US) • Hammond, Ronald B. (American Fork, UT, US) • Glenn, Jaron S. (Provo, UT, US)
Applicants:
CLEAR PATH FINANCIAL (Springville, UT, US)

Systems and methods for implementing intelligent banking account system

Publication info: Medina, III, Reynaldo (Inventor). United States Automobile Association (USAA); United Services Automobile Association (USAA) (Assignees). US 7865435 B1 . (Published 04 Jan 2011).
ProQuest document link

Abstract (summary): A person stores funds in a lower interest checking account and a higher interest savings account of a banking institution. For each of a plurality of cycles, funds are received at the beginning of the cycle from an amount of income ('INC') of the person. An amount at least equal to a total amount of regularly recurring bills of the person that have a generally fixed amount ('FIX') is deposited into a bills account of the person, and at least a portion of a remainder of INC is deposited into the checking account. During the cycle, the person pays the regularly recurring bills from the bills account and other bills from the checking account. At the end of the cycle, a final amount left in the checking account above a floor value ('FLO') is transferred to the savings account. Thus, excess funds are not allowed to accumulate in the checking account.

Application number: US 200837175 (26 February 2008)

Keywords in context:

Specification: ... 12/037,164; and

U.S. patent application Ser. No. 12/037,170.

FIELD

The present disclosure is directed to systems and methods that assist with implementing an intelligent banking account system for a person or other entity (hereinafter, 'person') with banking accounts at a banking institution or the like. More particularly, the present disclosure is directed to such systems and methods that automatically move funds between checking and savings accounts of the person in an effort to minimize the time funds reside in the checking

account and correspondingly maximize the ... rendered, funds earned from a trust, annuity, franchise agreement, pension, or the like, dividends and/or interest earned on securities, and the like.

Also presumably, the checking account 14c is employed by the person 10 to store funds that are to be drawn to pay corresponding checks or other outlays such as electronic funds transfers, wire transfers, automated clearing house (ACH) payments, and the like, while the savings account 14s is employed by the person 10 to store funds that are not presently needed but that are to be put aside, perhaps for later ...

Fund transfer processing system for use in financial enterpriser group, calculates interest rate for adjusting with respect target balance corresponding to low-order account based on conditions set for prioritized high-order account

Publication info: Fukuda, K; Hirasawa, Y; Mizuno, T (Inventors). MIZUHO INFORMATION & RES INST INC (Assignee). JP 4625105 B2 . (Published 02 Feb 2011). 200963 (First update). 201110 (Last update). Drawing available.
ProQuest document link

Alerting

Novelty
The fund transfer processing system has memory that stores information to identify each account in account group, balance information of each account exchange rate and interest rate conditions. The stored information is related with target balance. The account with maximum gain based on interest rate condition, is selected by using stored information. The account with maximum gain, is prioritized as high-order account. The interest rate for adjusting with respect to target balance corresponding to low-order account is calculated based on stored information.

Description
INDEPENDENT CLAIMS are included for the following:

1. fund transfer processing method; and

2. fund transfer processing program.

Use
Fund transfer processing system for use in financial enterprise group.

Advantage
The account with maximum gain is prioritized as high-order account in account group so that optimal interest rate conditions are set within the account group. The surplus fund is concentrated on highest account to eliminate financial deficit of low-order account by adjusting interest rate with respect to target balance.

Description of drawings
The drawing shows a flowchart explaining the flow of transfer processing performed in fund transfer processing system. (Drawing includes non-English language text)

Application number: JP 200863730 A (13 March 2008)

Priority number: JP 200863730 A (13 March 2008)

Keywords in context:

Family member abstract: ... account at least. FIG. 2This invention relates to the fund transfer processing system, fund transfer processing method, and fund transfer processing program for performing a fund transfer processing among several accounts. Specifically, Based on the interest rate conditions set for every account, it is related with the fund transfer processing system and fund transfer processing method which perform a fund transfer processing based on the optimized hierarchical structure, and a fund transfer processing program. The account group to which several accounts

to which different interest rate conditions for every account are set according to this invention belongWHEREIN:The fund transfer processing system to which the account to which the most advantageous interest rate conditions are set ... This invention relates to the fund transfer processing system, fund transfer processing method, and fund transfer processing program for performing a fund transfer process among several accounts. Specifically, Based on the interest rate conditions set for every account, it is related with the fund transfer processing system and fund transfer processing method which perform a fund transfer process based on the optimized hierarchical structure, and a fund transfer processing program. The account group to which several accounts to which different interest rate conditions for every account are set according to this invention belongWHEREIN:The fund transfer processing system to which the account to which the most advantageous interest rate conditions are set ...

MONEY FUND BANKING SYSTEM WITH MULTIPLE BANKS AND/OR RATES

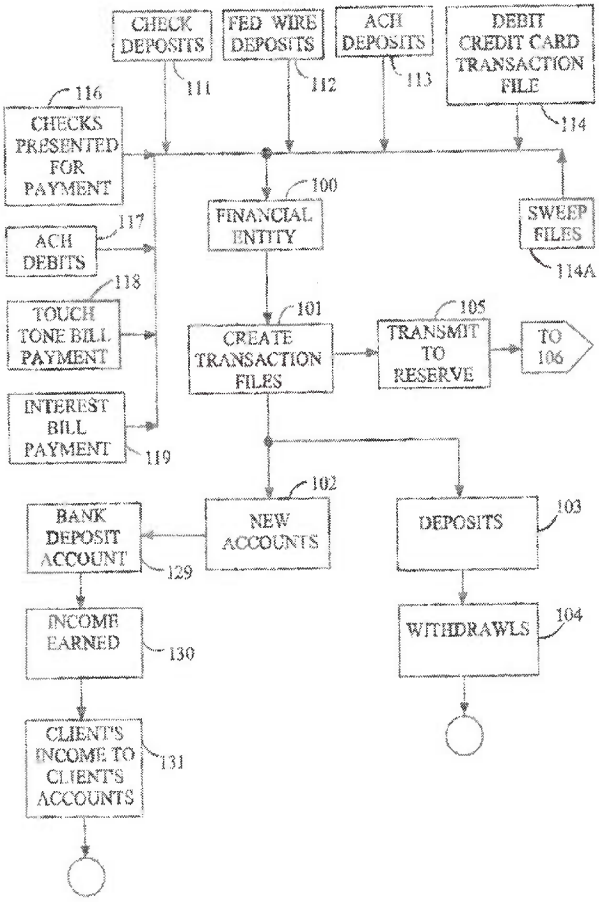
Publication info: Bent, Bruce; Bent, Bruce (Inventors). Bent, Bruce; Bent, Bruce (Assignees). US 20060212385 A2 . (Published 21 Sep 2006).

ProQuest document link

Abstract (summary): Abstract of the Disclosure

Providing interest to clients' deposited funds without limitation on the number of demand withdrawals from deposit accounts is accomplished by an administration system that keeps all of the records for the clients' deposits and withdrawals, calculates the total of the deposits and withdrawals for all clients, and uses the calculation to determine whether funds are deposited to or withdrawn from one or more deposit accounts in which all clients' deposit funds are kept. Clients can make unlimited withdrawals, such as by check, credit card, debit card, or electronic transfer, through the administrator. By placing the administrator as the holder of the deposit account(s), exemptions to the limitation on earning interest in demand accounts is facilitated; additionally, dispersing the deposit account funds among multiple banks allows the client to obtain FDIC insurance for all of the deposited funds, which may amount to insurance in excess of the statutory maximum allowed (presently $100,000.00).

Front page drawing:



Application number: US 2000677535 A (02 October 2000)

Priority number: US 2000677535 A (02 October 2000)

Keywords in context:

Specification: ... The system then determines whether each client's account contains more than a specified amount (e.g., $90,000) and distributes any amounts over the specified amount into another account at a preselected banking institution. In practice, when an investor's account balance exceeds $90,000 in any one account, the excess funds are automatically moved to a second deposit account at at another preselected bank. The client will maintain one insured deposit clearance account while the multiple deposit accounts will be transparent to the investor. All transactions to and from the accounts will post to the investor's insured deposit account, although they may be ...

Claims: 142. The system of Claim 129 , wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **143.** A method for managing a plurality of client demand accounts for one or more clients, wherein the client demand account funds are held in one or more insured money market deposit accounts, which are not NOW accounts, at one or more banking institutions, the method comprising: providing a database, maintained on one or more computers, comprising ... **172.** The method of Claim 159 wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **173.** A system for managing a plurality of client transaction accounts for one or more clients, wherein the client transaction account funds are held in one or more insured interest-bearing non-demand deposit accounts, which are not NOW accounts, at one or more banking institutions, the system comprising: ... **186.** The system of Claim 173 , wherein at least one deposit or transfer to at least one client transaction account is made by wire or electronic or ACH transfer. **187.** The method of Claim 20 further comprising a step of updating said database comprising information for each client demand account

with the clients' deposits, withdrawals, and transfers, and with the amount of that client's funds held in said one or more insured and interest-bearing deposit accounts and in ...

COMPUTER METHOD AND SYSTEM FOR ADMINISTERING INVESTMENT ACCOUNT

Publication info: Herr, Daniel P; Doherty, Mark S; Genovese, Kimberly A (Inventors). LINCOLN NATIONAL LIFE INSURANCE CO. (Assignee). CA 2691173 A1 . (Published 27 Jul 2010).
ProQuest document link

Abstract (summary): A computerized method for administering an investment account having an income or withdrawal guarantee and long term care guarantee includes the steps of establishing an investment account having an account balance, allocating a first portion of the account balance to fund a periodic long term care benefit having a long term care benefit guarantee, allocating a second portion of the account to fund a periodic income or withdrawal benefit having an income or withdrawal benefit guarantee, determining an amount of a periodic long term care benefit available for payment of a long term care benefit claims under the long term care benefit guarantee, and determining an amount of a periodic income or withdrawal benefit available for distribution under the income or withdrawal benefit guarantee. The long term care benefit guarantee may include an acceleration of benefits guarantee and an extension of benefits guarantee. A computer system which includes a processor and a program for causing the processor to perform certain steps is also disclosed.

Application number: CA 2691173 (27 January 2010)

Priority number: US 61147570 (27 January 2009)

Keywords in context:

Specification: ... benefit guarantee by an adjustment factor. In such embodiments, the adjustment factor may comprise an inflation factor, a cost of living factor, a fixed percentage rate factor, or a variable percentage rate factor. Certain embodiments of the computerized method may further compñse the steps of reallocating the account balance of the investment account to decrease the first portion of the account balance and to increase the second portion of the account balance, and decreasing one or both of the amount of a periodic long term care benefit, or the total amount, available for payment of long term care benefit claims under the long term care benefit guarantee. Other embodiments may include the steps of reallocating the account balance of the investment account to increase the first portion of the account balance and to decrease the second portion of ...

Financial account system for unbanked or underbanked users, comprises transferring funds between first financial account accessible via stored value card and second financial account

Publication info: Harper, K D (Inventor). BLACKHAWK NETWORK INC (Assignee). US 20200349553 A1 . (Published 05 Nov 2020). 2020091 (First update). 2020091 (Last update). Drawing available.
ProQuest document link

Alerting

Novelty
A financial account system comprises a stored-value card (100,101), e.g., a gift card, a first financial account, i.e., primary account, directly accessible via the stored-value card, and a second financial account, i.e., savings account, associated with the first financial account. Funds may be transferred between the first financial account and the second financial account.

Use

Financial account system providing additional transaction and savings capabilities for unbanked or underbanked users or households.

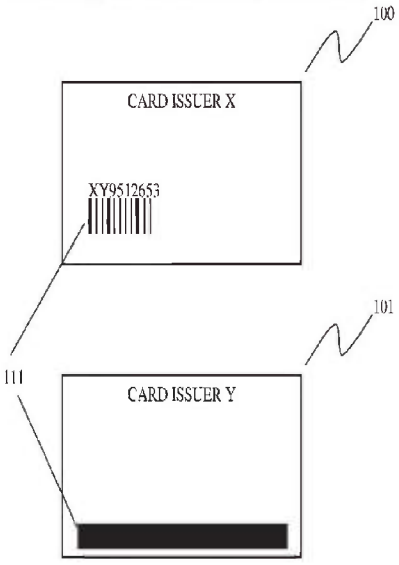
Advantage
The stored-value card with a savings feature allows the cardholders to easily move funds from their primary account to their savings account and vice versa. Provides the consumer with the flexibility to update, edit, or otherwise change the automatic funding option at any time. Real time or near real-time processing allows transactions to be trickle fed to the settlement service, which leverages the data grid to store and/or process transaction information. Each entity associated with stored-value cards can adapt to changing conditions much faster using real time or near real-time settlement by responding to and adjusting various metrics, such that large-scale failure is highly unlikely, and small failures only affect a minimal number of transactions before they are addressed.

Description of drawings
The drawing shows the physical view of stored-value cards.

100,101 Stored-value card

111 Stored value card identifier

Drawing or chemical structure



Application number: US 2020930921 A (16 July 2020)

Priority number: US 2020930921 A (16 July 2020)US 2013819469 A (01 July 2013)WO 2011US49338 A (26 August 2011)US 61377800 P (27 August 2010)

Keywords in context:

Abstract: ... and a second financial account, i.e., savings account, associated with the first financial account. Funds may be transferred between the first financial account and the second financial account. UseFinancial account system providing additional transaction and savings capabilities for unbanked or underbanked users or households. AdvantageThe stored-value card with a savings feature allows the cardholders to easily move funds from their primary account to their savings account and vice versa. Provides the consumer with the flexibility to update, edit, or otherwise change the automatic funding option at any time. Real time or near real-time processing allows transactions to be trickle fed to the settlement service, which leverages the data grid to store and/or process transaction information. Each entity associated with stored-value cards can adapt to changing conditions much faster using real time or near real-time settlement by responding to and adjusting various metrics, such that large-scale failure is highly unlikely, and small ...

NPL Search Results

A Review of Basic Cash Management Services

Author: Ruggeri, Paul J

Publication info: Journal of Cash Management 12.2: 31. Association for Financial Professionals. (Mar/Apr 1992)
ProQuest document link

Abstract (summary): Basic services available to cash managers for collection, concentration and disbursements are reviewed. Efficient cash management requires systems to collect funds from a company's customers. The objective of this system is to accelerate the use of the funds in the form of available balances. Under collection, lockboxes, wholesale lockboxes, and the Automated Clearing House (ACH) are available. The cash manager may need to move funds from remote depository locations to a central bank account from which disbursements are made. Two of the most commonly used methods for transferring funds are the wire transfer and the electronic depository transfer check (EDTC), an ACH transaction. The company will also need to design a system to efficiently disburse cash at the lowest possible cost. The 2 products that are most commonly use by cash managers are zero balance accounts (ZBA), payable through drafts (PTD) and controlled disbursement.

Links: Check USPTO-STIC for Availability

Location: United States--US

Language: English

Publication title: Journal of Cash Management

Volume: 12

Issue: 2

Pagination: 31

Publisher location: Bethesda

Document type: PERIODICAL

Accession number: 00605930, 00347191, 00033348

Document URL: https://dialog.proquest.com/professional/docview/225981399?accountid=131444

Copyright: Copyright Treasury Management Association Mar/Apr 1992

First available: 2010-06-10

Updates: 2014-05-24

Database: ABI/INFORM® Professional Advanced (1971 - current)

Keywords in context:

Abstract: ... objective of this system is to accelerate the use of the funds in the form of available balances. Under collection, lockboxes, wholesale lockboxes, and the Automated Clearing House (ACH) are available. The cash manager may need to move funds from remote depository locations to a central bank account from which disbursements are made. Two of the most commonly used methods for transferring funds are the wire transfer and the electronic depository transfer check (EDTC), an ACH transaction. The company ...

Full text: ... can also be used to concentrate funds through an electronic depository transfer. The local office or store would authorize the headquarters office to initiate an ACH debit to its account at the local bank, transferring the funds to the concentration account. These ACH transactions settle in one day and are likely to give faster availability than the use of the paper DTC. They are also less costly than the ...

International portfolio optimisation under uncertainty

Author: Chatsanga, Nonthachote

Publication info: The University of Nottingham (United Kingdom). ProQuest Dissertations Publishing, 2017. 10768498.
ProQuest document link

Abstract (summary): Portfolio optimisation problems are generally concerned with allocating funds to investments. The goal is to find an allocation that minimises risk subject to some certain constraints. To attain robust solutions from the optimisation, it is vital to ensure that the model is able to properly represent the underlying uncertainty in portfolio management. The main source of uncertainty in managing portfolios is from asset returns fluctuation. Typically, it is depicted through scenarios or return distributions which are commonly assumed to be normal. Such assumption, however, does not illustrate the true characteristics of financial asset returns and thus distorts the representation of returns, risks and interrelationship of assets in a portfolio. This thesis presents novel approaches to represent the uncertainty in international portfolio management in order to mitigate risks associated. Three main issues are covered in our studies. The first issue deals with an approach to hedge risk from exchange rates of a multi-currency portfolio. A hedging mechanism is incorporated into a portfolio optimisation model to produce a portfolio that is optimal in terms of asset and currency exposure. Costs associated to exchange rate hedging are also included into the model to improve accuracy in calculating risk and return of the portfolio. The second issue is about representing the uncertainty of multiple assets in a portfolio through scenarios. Under the assumption of normality, some risk and return characteristics of assets are omitted from standard scenario generation method. We present a novel approach to extract more accurate information from assets to generate realistic scenarios. A two-stage stochastic international portfolio optimisation model is formulated accordingly to create portfolios that are expected to be more efficient than portfolios optimised with scenarios generated from the standard approach. The last issue is associated with an approach to keep portfolio's efficiency over its investment horizon through continual reallocation, known as portfolio rebalancing. Since the uncertainty regarding changes in financial market conditions diminishes the efficiency of conventional rebalancing strategies, we propose a new rebalancing method and formulate it as a stochastic optimisation problem. The proposed rebalancing strategy aims to reallocate the portfolio to attain a high probability of positive returns and low probability of negative returns under second-order stochastic dominance criteria. A portfolio implementing the new rebalancing strategy is expected to outperform a portfolio that follows traditional rebalancing methods in terms of portfolio returns. Overall, the thesis aims to create a richer portfolio optimisation model as well as to extract the correct information from financial markets to better cope with the underlying uncertainty in portfolio management.

Links: Check USPTO-STIC for Availability

Identifier / keyword: http://eprints.nottingham.ac.uk/42729/, (UMI)AAI10768498, Social sciences

Number of pages: 0

Degree date: 2017

School code: 0616

Source: DAI-C 75/12, Dissertation Abstracts International

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University location: England

Degree: Ph.D.

Source type: Dissertations & Theses

Language: English

Document type: Dissertation/Thesis

Dissertation/thesis number: 10768498

ProQuest document ID: 2001156709

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First available: 2018-02-12

Updates: 2018-02-122019-01-072020-07-102020-08-042020-10-292020-11-252020-12-04

Database: ProQuest Dissertations and Theses Professional

New approaches to risk management and scenario approximation in financial optimization

Author: Bychkov, Maksym

Publication info: The University of Tennessee. ProQuest Dissertations Publishing, 2005. 3197598.
ProQuest document link

Abstract (summary): The first part of the thesis addresses the problem of risk management in financial optimization modeling. Motivation for constructing a new concept of risk measurement is given through the history of development: utility theory, risk/return trade off, and coherent risk measures. The process of describing investor's preferences is presented through the proposed collection of Rational Level Sets (RLS). Based on RLS, a new concept termed Rational Risk Measures (RRM) for financial optimization models is defined. The advantages of RRM over coherent risk measures are discussed.

Approximation of a given set of scenarios using tail information is addressed in the second part of the thesis. Motivation for the scenario approximation problem, as a way of reducing computation time and preserving solution accuracy, is given through examples of financial optimization and asset allocation models. Using the basic ideas of Conditional Value at Risk (CVaR), this thesis develops a new methodology for scenario approximation for stochastic portfolio optimization. First, the concepts termed Scenarios-at-Risk (SaR) and Scenarios-at-Gain (SaG) are proposed as for the purpose of partitioning the underlying multivariate domain for a fixed investment portfolio and a fixed probability level of CVaR. Then, under a given set of CVaR values, a two-stage method is developed for determining a smaller, and discrete, set of scenarios over which CVaR risk control is satisfied for all portfolios of interest. Convergence of the method is shown and numerical results are presented to validate the proposed technique.

Links: Check USPTO-STIC for Availability

Subject: Operations research;Optimization;Studies;Return on investment;Management;Risk management;Portfolio investments;Banking;Approximation

Classification: 0796: Operations research0770: Banking0454: Management54161: Management Consulting Services

Identifier / keyword: Social sciences, Applied sciences, Financial optimization, Portfolio optimization, Risk management, Scenario approximation

Number of pages: 206

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School code: 0226

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Place of publication: Ann Arbor

Country of publication: United States

ISBN: 978-0-542-41757-3

Advisor: Edirisinghe, Chanaka

University/institution: The University of Tennessee

University location: United States -- Tennessee

Degree: Ph.D.

Source type: Dissertations & Theses

Language: English

Document type: Dissertation/Thesis

Dissertation/thesis number: 3197598

ProQuest document ID: 305381059

Document URL: https://dialog.proquest.com/professional/docview/305381059?accountid=131444

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First available: 2010-06-17

Updates: 2014-01-232015-08-262016-06-232020-08-172020-08-272020-10-07

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Dialog – Patent Search History

Databases: Argentina Patents Fulltext, Australia Patents Fulltext, Austria Patents Fulltext, Belgium Patents Fulltext, Brazil Patents Fulltext, Canada Patents Fulltext, China Patents Fulltext, Denmark Patents Fulltext, Derwent Chemistry Resource, Derwent Patents Citation Index®, Derwent World Patents Index®, Eurasia Patents Fulltext, European Patents Fulltext, Finland Patents Fulltext, France Patents Fulltext, Germany Patents Fulltext, Global Patents Bibliographic, Great Britain Patents Fulltext, IFI CLAIMS® US Patents and Legal Status, IMS Patent Focus, India Patents Fulltext™, INPADOC/ Family and Legal Status, Ireland Patents Fulltext, Italy Patents Fulltext, Japan Patents Fulltext, JAPIO - Patent Abstracts of Japan, Korea Patents Fulltext, LitAlert®, Luxembourg Patents Fulltext, Mexico Patents Fulltext, Monaco Patents Fulltext, Netherlands Patents Fulltext, Norway Patents Fulltext, Portugal Patents Fulltext, Russia Patents Fulltext, Spain Patents Fulltext, Sweden Patents Fulltext, Switzerland Patents Fulltext, United States Patents Fulltext, WIPO PCT Patents Fulltext

Set#	Searched for	Results
S1	(auto* or dynamic* or preprogram* or program* or robot* or unman* or comput* or machin* or optimi* or (self n/1 (regulat* or direct* or execut* or control* or manag*)))	139204751
S2	(((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or reassign* or reallocat* or swap* or relocat*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi* or mov$3) n/5 (asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*)	995649
S3	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines or union*)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook* or bank$1 or broker*)	12227972
S4	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend* or optimi*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1 or situation*)	157554760
S5	(multi* or plural* or second* or several* or two or three or third* or couple or another or other* or add$3 or additional*) n/5 (step$1 or stage$1 or transfer* or transaction*)	42520705

S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*))	486495
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	1486516
S8	ACH OR clearinghous* OR (clearing OR store OR storage OR storing OR retriev$3 OR transmi$ OR collect$3 OR preserv$3) p/0 (system OR systems OR house OR houses OR center OR centers OR centre OR centres OR repositor$3)	3266684
S9	S1 n/30 S2	262866
S10	S9 n/30 S3	7436
S11	S10 n/50 S4	753
S12	S11 n/50 S5	68
S13	S8 n/30 S7	16670
S14	S13 n/30 S6	3427
S15	S14 and S10	273
S16	CPC(G06Q20/10 or G06Q20/227 or G06Q40/08)	158453
S17	S15 and S16	110
S18	S12 and apda(<20170816)	62
S19	S17 and apda(<20170816)	110
S20	S19 not S18	103

Dialog – NPL Search History

Databases: ABI/INFORM® Professional Advanced, Abstracts in New Technology & Engineering, Abstracts in New Technology & Engineering, British Library Inside Conferences, Business & Industry, Computer and Information Systems Abstracts, Computer and Information Systems Abstracts, Current Contents® Search, EconLit, Ei Compendex®, Electronics & Communications Abstracts, Electronics & Communications Abstracts, Gale Group Computer Database™, Gale Group New Product Announcements / Plus®, Gale Group Newsletter Database™, Gale Group PROMT®, Gale Group Trade & Industry Database™, Inspec®, Mechanical & Transportation Engineering Abstracts, Mechanical & Transportation Engineering Abstracts, NTIS: National Technical Information Service, ProQuest Dissertations and Theses Professional, ProQuest Newsstand Professional, SciSearch®: a Cited Reference Science Database, UBM Computer Full Text

Set#	Searched for	Results
S1	(auto* or dynamic* or preprogram* or program* or robot* or unman* or comput* or machin* or optimi* or (self n/1 (regulat* or direct* or execut* or control* or manag*)))	251344334*
S2	(((adjust* or manag* or modif* or alter* or regulat* or balanc* or rearrang* or chang* or transform* or allocat* or assign* or reassign* or reallocat* or swap* or relocat*) n/5 (distribution* or ratio* or amount* or share$1 or quantit* or number* or volum* or proportion* or portion* or percent*)) or redistribut* or reassign* or reallocat* or rearrang* or optimi* or mov$3) n/5 (asset* or bond* or stock* or cash* or money or fund* or investment* OR capital* OR dividend OR dividends OR earnings OR monies or coupon* or Monetar* or debit* or credit*)	17870093*
S3	(multi* or plural* or second* or several* or few or two or three or third* or pair* or couple or another or other* or differ* or group* or primary or main*) n/5 (account* OR (credit NEAR/2 (line OR lines or union*)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register* OR portfolio* OR passbook* or bank$1 or broker*)	37198545*
S4	(modif* or alter* or chang* or differ* or vary or vari* or new or updat* or revis* or amend* or optimi*) n/5 (condition* or rule$1 or rate* or factor* or term* or APR or AER or EAPR or policy or policies or status* or yield* or regulation* or act or law$1 or situation*)	57690839*
S5	(multi* or plural* or second* or several* or two or three or third* or couple or another or other* or add$3 or additional*) n/5 (step$1 or stage$1 or transfer* or transaction*)	19113074*

S6	((saving* or (High* p/0 yield*) or money or fund* or investment* OR capital* OR earnings OR monies or deposit*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*))	10403900*
S7	(transaction* or checking or chequing or current* or (demand* p/1 deposit*) or shar* or draft*) n/3 (account* OR (credit NEAR/2 (line OR lines)) OR creditline OR creditlines OR tab OR tabs OR tick OR ticks OR chargeaccount OR chargeaccounts OR book OR books OR record OR records OR register OR score OR tally OR portfolio OR passbook*)	11694388*
S8	ACH OR clearinghous* OR (clearing OR store OR storage OR storing OR retriev$3 OR transmi$ OR collect$3 OR preserv$3) p/0 (system OR systems OR house OR houses OR center OR centers OR centre OR centres OR repositor$3)	2696627*
S9	S1 n/30 S2	1941595*
S10	S9 n/30 S3	32988*
S11	S10 n/50 S4	2853°
S12	S11 n/50 S5	81°
S13	S12 and pd(<20170816)	56°
S14	S8 n/30 S7	18736*
S15	S14 n/30 S6	5264*
S16	S15 and S10	13°
S17	S15 n/200 S9	58°
S18	(S16 or S17) and pd(<20170816)	54°

IP.com / InnovationQ- Patent Search History

US Patents, US Designs, US Applications, EPO Patents, EPO Applications, China Patents, China Applications, Japan Patents, Japan Applications, Korea Patents, Korea Applications, WIPO Applications, Argentina Patents, Argentina Applications, Brazil Patents, Brazil Applications, Canada Patents, Canada Applications, Chile Patents, Chile Applications, Colombia Applications, Costa Rica Applications, Cuba Patents, Cuba Applications, Dominican Republic Applications, Ecuador Patents, Ecuador Applications, El Salvador Applications, Guatemala Applications, Honduras Applications, Mexico Patents, Mexico Applications, Nicaragua Patents, Panama Applications, Peru Applications, Trinidad & Tobago Patents, Uruguay Applications, Austria Patents, Austria Applications, Belarus Patents, Belgium Patents, Belgium Applications, Bosnia & Herzegovina Patents, Bosnia & Herzegovina Applications, Bulgaria Patents, Bulgaria Applications, Croatia Patents, Croatia Applications, Czech Republic Patents, Czech Republic Applications, Czechoslovakia Patents, Czechoslovakia Applications, Denmark Patents, Denmark Applications, Estonia Patents, Estonia Applications, EUIPO Patents, Finland Patents, Finland Applications, France Patents, France Applications, Germany Patents, Germany Applications, Great Britain Patents, Great Britain Applications, Greece Patents, Greece Applications, Hungary Patents, Hungary Applications, Iceland Patents, Iceland Applications, Ireland Patents, Ireland Applications, Italy Patents, Italy Applications, Latvia Patents, Latvia Applications, Lithuania Patents, Lithuania Applications, Luxembourg Patents, Malta Patents, Monaco Patents, Montenegro Patents, Montenegro Applications, Netherlands Patents, Netherlands Applications, Norway Patents, Norway Applications, Poland Patents, Poland Applications, Portugal Patents, Portugal Applications, Republic of Moldova Patents, Republic of Moldova Applications, Romania Patents, Romania Applications, San Marino Patents, San Marino Applications, Serbia Patents, Serbia Applications, Slovakia Patents, Slovakia Applications, Slovenia Patents, Spain Patents, Spain Applications, Sweden Patents, Sweden Applications, Switzerland Patents, Switzerland Applications, Ukraine Patents, Yugoslavia/Serbia and Montenegro Patents, Yugoslavia/Serbia and Montenegro Applications, Armenia Patents, Australia Patents, Australia Applications, Cyprus Patents, Gulf Cooperation Council Patents, Hong Kong Patents, India Patents, India Applications, Indonesia Patents, Indonesia Applications, Israel Applications, Jordan Patents, Kyrgyzstan Patents, Macao Applications, Malaysia Patents, Mongolia Patents, New Zealand Patents, Philippines Patents, Philippines Applications, Saudi Arabia Patents, Singapore Patents, Singapore Applications, Taiwan Patents, Taiwan Applications, Tajikistan Patents, Tajikistan Applications, Thailand Applications, Uzbekistan Patents, Vietnam Patents, Algeria Patents, ARIPO Patents, ARIPO Applications, Egypt Patents, Kenya Patents, Malawi Patents, Morocco Patents, Morocco Applications, OAPI Patents, South Africa Patents, Tunisia Applications, Zambia Patents, Zimbabwe Patents, EAPO Patents, EAPO Applications, Georgia Patents, Georgia Applications, Kazakhstan Patents, Kazakhstan Applications, Russia Patents, Russia Applications, Turkey Patents, Turkey Applications

	Concept Searched for:
L1	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. The two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L2	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Concept Modifiers (1) ==========

	1. More Like Text: two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (1) ========== Earliest Priority Date: To 2017-08-16
L3	Main Concept Text ========== automatically adjusting distribution of financial assets among multiple accounts with two-step redistribution of financial assets among the accounts based on the optimization rules and changed conditions. Concept Modifiers (1) ========== 1. More Like Text: two-step redistribution of financial assets are effected by communicating funds transfer instructions that result in first an automated clearing house (ACH) credit push of funds are originated through the first savings account from the first savings account into a checking account and second an ACH debit pull of funds are originated through the second savings account into the second savings account from the checking account. Filters (2) ========== Earliest Priority Date: To 2017-08-16 IPC Codes limited to: G06Q40/*; G06Q20/*

Bibliographic Data

Application No: 16/850,150

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /ROBERT R NIQUETTE/ Examiner's Signature | Initials

Title: SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/16/2020	705	3691	103771-500
RULE			

APPLICANTS

Six Trees Capital LLC, New York, NY,

INVENTORS

Gary E. Zimmerman, New York, NY, UNITED STATES

Richard D. Wu, Chicago, IL, UNITED STATES

Gabriel Jorge Gironda, Austin, TX, UNITED STATES

CONTINUING DATA

This application is a CON of 15678453 08/16/2017 PAT 10657504

15678453 is a DIV of 14606931 01/27/2015 PAT 10268995

14606931 has PRO of 61932495 01/28/2014

FOREIGN APPLICATIONS

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L153	7953	"two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L154	274	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L155	24	("two-factored authentication" "two-factor authentication" "two factor authentication" and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L156	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).ab. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L157	101	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)) and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L158	0	(("two-factored authentication" "two-factor authentication" "two factor authentication") and endpoint and (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L159	90	(("two-factored authentication" "two-factor authentication" "two factor authentication") and	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM

		endpoint and (account with access)).detd. and L11					
L160	628	(("two-factored authentication" "two-factor authentication" "two factor authentication") and (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L161	86	(("two-factored authentication" "two-factor authentication" "two factor authentication") same (account with access)).detd. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L162	18	(("two-factored authentication" "two-factor authentication" "two factor authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L163	36	(("multi-factored authentication" "multi-factor authentication" "multifactor authentication" "multifactored authentication") same (account with access)).bsum. and L11	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L164	315	(endpoint with account) and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L165	19	(endpoint with account).bsum. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM
L166	2	(endpoint with account).ab. and L39	(US-PGPUB; USPAT; USOCR; EPO; JPO; IBM_TDB)	OR	ON	ON	2022/02/05 07:16 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N64	2	(("two-factored authentication" "two-factor authentication" "two factor authentication") AND (account WITH access)).clm. AND L11	(USPAT)	OR	ON	ON	2022/02/05 07:15 AM
N65	2	(("two-factored	(USPAT)	OR	ON	ON	2022/02/05

		authentication" "two-factor authentication" "two factor authentication") AND (account WITH access)).clm. AND L11					07:16 AM

PART B – FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By fax, send to: (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Wiggin and Dana LLP
ATTENTION: PATENT DOCKETING
One Century Tower, P.O Box 1832
New Haven, CT 06508-1832

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Marie Belen Larrory	(Typed or printed name)
/Marie Belen Larrory/	(Signature)
03/24/2022	(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

TITLE OF INVENTION:

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
Nonprovisional	SMALL	$600	$0.00	$0.00	$600	06/13/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1.
2. Wiggin and Dana LLP
3. Rikesh P. Patel

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Six Trees Capital LLC

(B) RESIDENCE: (CITY and STATE or COUNTRY): New York, NY

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. Fees Submitted: ☑ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

☑ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 23-1665

5. Change of Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29. NOTE: Absent a valid Certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27. NOTE: If the application was previously under micro entity status, checking this box will be taken as a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken as a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Rikesh P. Patel/ Date 03/24/2022

Typed or printed name Rikesh P. Patel Registration No. 67,578

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	16850150
Filing Date:	16-Apr-2020
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Filer:	Rikesh Pradip Patel/Marie Larrory
Attorney Docket Number:	103771-500

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	45309353
Application Number:	16850150
International Application Number:	
Confirmation Number:	1088
Title of Invention:	SYSTEM AND METHOD FOR AUTOMATED OPTIMIZATION OF FINANCIAL ASSETS
First Named Inventor/Applicant Name:	Gary E. Zimmerman
Customer Number:	27267
Filer:	Rikesh Pradip Patel/Marie Larrory
Filer Authorized By:	Rikesh Pradip Patel
Attorney Docket Number:	103771-500
Receipt Date:	24-MAR-2022
Filing Date:	16-APR-2020
Time Stamp:	13:41:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$600
RAM confirmation Number	E20223ND42122614
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	16850150ptol85b.pdf	105107 08f0c2928d3be67ae3b6338cd299745e8fa0cfe6	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37677 4da776e424db11761c1b7bb8041ec32ebc3d221f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	142784		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/16/2020	Gary E. Zimmerman	103771-500	1088

27267 7590 03/25/2022

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
NIQUETTE, ROBERT R	

ART UNIT	PAPER NUMBER
3691	

NOTIFICATION DATE	DELIVERY MODE
03/25/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IP@wiggin.com
patent@wiggin.com

Corrected ***Notice of Allowability***	**Application No.** 16/850,150	**Applicant(s)** Zimmerman et al.	
	Examiner ROBERT R NIQUETTE	**Art Unit** 3691	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to reply recieved 1-30-2022.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-10 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ROBERT R NIQUETTE/
Primary Examiner, Art Unit 3691

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	Art Unit
	ROBERT R NIQUETTE	3691

CPC - Searched*		
Symbol	Date	Examiner
G06Q 20/10	02/05/2022	RRN
G06Q 20/22	02/05/2022	RRN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
705	All	02/05/2022	RRN

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Updated PE2E search	02/05/2022	RRN
PLUS search	05/25/2021	RRN
WIPO database search	05/25/2021	RRN
Inventor search	05/25/2021	RRN
NPL search	02/16/2022	STIC Staff

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
		02/05/2022	RRN

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

CPC								
Symbol							**Type**	**Version**
G06Q	/	20	/	10			F	2013-01-01
G06Q	/	20	/	227			I	2013-01-01
G06Q	/	40	/	08			I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	10	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	21 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office

Part of Paper No.: 20220321

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06Q	/	20	/	10

NON-CLAIMED				
G06Q	/	20	/	22
G06Q	/	40	/	08

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
705	4

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					
705	35	67	71			
713	186					
726	8					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	10	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	21 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office — Part of Paper No.: 20220321

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/850,150	Zimmerman et al.
	Examiner	**Art Unit**
	ROBERT R NIQUETTE	3691

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10												
2	2														
3	3														
4	4														
5	5														
6	6														
7	7														
8	8														
9	9														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	10	
/ROBERT R NIQUETTE/ Primary Examiner, Art Unit 3691	21 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/850,150	04/26/2022	11315090	103771-500	1088

27267 7590 04/06/2022

WIGGIN AND DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

Gary E. Zimmerman, New York, NY;
Richard D. Wu, Chicago, IL;
Gabriel Jorge Gironda, Austin, TX;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Six Trees Capital LLC, New York, NY;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.