

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JPMorgan Chase Bank, N.A.,
Petitioner,

v.

Idetitii Limited,
Patent Owner.

Case No. IPR2024-00590
U.S. Patent No. 10,984,413

DECLARATION OF JAMES OLIVIER, Ph.D.

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I, Dr. James L. Olivier, declare under penalty of perjury as follows:

I. INTRODUCTION

1. My name is James L. Olivier, Ph.D. I have been retained on behalf of Patent Owner, Identitii Limited, as an independent expert and have been asked to provide my expert opinions regarding U.S. Patent No. 10,984,413. EX1001 (“the ’413 Patent”).

II. PROFESSIONAL BACKGROUND

2. My qualifications for forming the opinions given in this declaration are summarized here and are addressed more fully in my curriculum vitae, which is submitted as Exhibit 2002. My curriculum vitae also includes a list of my publications.

3. I am a recent Fulbright award winner in the areas of computer science and blockchain technologies, and I currently serve as a research professor at Southern Methodist University.

4. I have a Ph.D. from The Ohio State University in Electrical Engineering with minors in Discrete Mathematics, Computer Science, and Microelectronics. I have published papers in the areas of coding theory and multiprocessor networked computer systems. I received my Bachelor of Science degree from The Ohio State University in 1983.

5. As a research professor at the Hunt Institute for Engineering and Humanity, which is part of the Lyle School of Engineering at Southern Methodist University in Dallas, Texas, I am responsible for the Hunt Institute's Blockchain Hub. This Blockchain Hub was created to foster the application of blockchain and other transformational technologies for a more sustainable and inclusive economy. My job is to promote an understanding of blockchain technology and its potential applications, related challenges, and opportunities, circulate the experiences of operating blockchain models and serve as a hub for developing and implementing blockchain for economically viable solutions.

6. In my roles at the Hunt Institute, I have spoken at Dallas Startup week, Blockchain conferences and given lectures at SMU on Blockchain technologies.

7. I am currently investigating Blockchain applications, including a Novel Blockchain Protocol for Crowd Sourcing of Proposal Evaluation and an Artisanal Blockchain. The Novel Blockchain Protocol for Crowd Sourcing of Proposal Evaluation is directed to addressing some of the difficulties associated with the widespread adoption of microlending. The Artisanal Blockchain developed out of my work at the Hunt Institute's Engineering and Humanity Academy and provides a mechanism to assert the provenance of native arts and crafts.

8. In addition to my work at SMU's Hunt Institute, I have been an adjunct professor in SMU's Network Engineering Graduate Program for over seven years. Here I teach Service Provider Networks, Data Center Design and Network Protocols. My research interests include MPLS, SDNs, SD-WANs, Blockchain, IoT, and In-Networking Processing. I have also been the Chairman of the Dallas IEEE Blockchain group for the past six years.

9. Overall, I have over 20 years of experience in advanced network engineering and server product development. I have developed and designed server equipment for networks since I first joined AT&T Bell Laboratories in 1990. There I participated in the design and development of AT&T's Network Control Points, 'NCPs' which were massive network databases containing subscription information for customers.

10. I worked for Marconi Communications from 1999 to 2002, where I was responsible for the servers for the Network Management System for the North American Access product division, which provide service provisioning for DSL customers.

11. In 2002 I joined Navini Networks as a Senior Manager where I developed network-based servers and databases for network authentication, network services, service provisioning and subscriber management for the Navini's Worldwide Interoperability for Microwave Access 'WiMAX' Network. As part of

my work at Navini, I developed a subscriber database for authenticating and verifying subscribers before allowing them to access the WiMAX network.

12. I have been the owner of Olivier Consulting since 2003 and have provided consulting services to various companies to develop networking systems and on intellectual property matters, including many such matters relating to networking technologies.

13. Because of my background, training, and experience, I am qualified as an expert to explain the background of the technology encompassed by the '413 Patent as well as to offer opinions related to the validity of the claims of the '413 Patent in view of the prior art references discussed herein.

14. If called upon to do so, I could and would testify truthfully regarding the points stated below in this declaration.

III. COMPENSATION

15. I am being compensated for my independent analysis as an expert with respect to this *inter partes* review proceeding. My work on this matter is being billed at my customary rate of \$675.00 per hour. Also, I am being reimbursed for reasonable expenses I incur in relation to my services. My compensation is not contingent in any way on the content of my analysis, the opinions that I offer, or the outcome of this proceeding. I have no financial interest

in Petitioner (JPMorgan Chase Bank) or Patent Owner (Identitii), and I have no financial interest in the '413 Patent.

IV. OVERVIEW OF TASK & BASIS FOR OPINIONS

16. I have been asked to review the '413 Patent in light of the materials cited and discussed herein and my knowledge and experience in this field during the relevant time frame, which I understand to be the mid-2010s. I have been asked to provide opinions related to certain issues from the perspective of a person of ordinary skill, having knowledge of the relevant art, as of 2015 and—except where otherwise noted—the opinions stated in this declaration are from that perspective. I describe the qualifications and abilities of such a person in Section “Level of Ordinary Skill in the Art” below. I have also been asked to consider whether certain combinations of references have rendered obvious the inventions described in the claims of the '413 Patent.

17. My findings, as explained below, are based on my study, education, training, and experience as well as items that I reviewed to prepare my opinions, including the documents listed in the Exhibit List included with the Petition and any other items I reference in my below analysis.

18. I understand that other issues may arise that require further explanation, and I will provide that explanation if appropriate. As a result, I

respectfully reserve the right to update and supplement this declaration and the information and opinions provided herein.

V. MATERIALS CONSIDERED

19. In preparing this declaration and forming my opinions, I have considered: the claims, specification, and prosecution history of the '413 Patent; the Petition and declaration by Dr. Shen (including all materials cited in each); and all materials cited and discussed in this declaration. As part of my analysis, I have also considered my own knowledge and experience, including my work and experience in the field.

VI. LEGAL CONSIDERATIONS

20. I am not an attorney. My understanding of the law is based on information provided by counsel for Patent Owner.

21. It is my understanding that assessing the validity / patentability of a U.S. patent claim based on a prior art analysis requires two essential steps. First, one must analyze the terms of the patent claims to understand what meaning one of ordinary skill in the art would give the terms. Second, one may then assess validity by comparing a patent claim to the “prior art.” I understand that the teaching of the prior art is viewed through the eyes of a person of ordinary skill in the art at the time the invention was made. My opinion as to what constitutes a relevant person of ordinary skill in the art is set forth below.

22. I understand that a claim is invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter of the claim as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. I have been informed that the following factors are used to determine whether or not the claimed subject matter would have been obvious: (i) the scope and content of the prior art; (ii) the differences between the prior art and the claimed invention; (iii) the level of ordinary skill in the field of the invention; and (iv) any relevant objective considerations of non-obviousness.

23. I also understand that a party asserting obviousness based on a combination of prior art references must demonstrate that one of ordinary skill in the art would have been motivated to combine the teachings of those references to achieve the claimed invention and that the skilled artisan would have had a reasonable expectation of success in doing so. It is my understanding that it is not enough to show that one skilled in the art could combine elements of multiple references, but instead there must be some reason that would have prompted a person of ordinary skill in the art to combine the elements in the way the claimed invention does. I understand that there must be some reasoned explanation as to why one of ordinary skill in the art would combine the references.

24. I understand that a combination of references would not have been obvious if the alleged modification(s) to be made to the reference(s) would have been inconsistent with the reference's stated goals or would have rendered the combination inoperable for its intended purpose. I further understand that for something to have been obvious, the party asserting obviousness must explain why a POSITA would have selected components for combination in the manner claimed.

25. I have been informed that a prior art reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention.

26. It is my further understanding that obviousness cannot be based on a hindsight combination of components selected from prior art references. I also understand that an invention would not have been obvious simply because all of the elements of the invention may have been known separately in the prior art.

27. My opinions address what would have been logical to, and within the skill level of, a person of ordinary skill in the art ("POSITA") at the time of the invention, given the state of the relevant art, the knowledge and skill that a POSITA would have, the teachings of the references discussed below, and how a POSITA would have understood those teachings. My opinions also address whether a POSITA would have had a reasonable expectation of the modified

systems discussed below successfully yielding the results discussed below. I understand that a POSITA is a hypothetical person. I understand that a POSITA thinks along the lines of conventional wisdom. I understand that a POSITA is also a person of ordinary creativity, not an automaton (see Section “Level of Ordinary Skill in the Art,” below, for qualifications of a POSITA).

28. I understand that a claim term is given the meaning that the term would have to a POSITA at the time of the invention, which generally is the ordinary and customary meaning of the term. I further understand that the ordinary and customary meaning of a term may be evidenced by a variety of sources, including the words of the claims themselves, the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I also understand that a patentee can act as a lexicographer by clearly expressing an intent to define a claim term.

VII. LEVEL OF ORDINARY SKILL IN THE ART

29. Counsel for Patent Owner has informed me that a person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention.

30. For the purpose of this Declaration, and based on my opinions herein, the time of invention for the '413 Patent is August 2015. However, I understand

that the conception dates of the inventions may have been earlier than that date. I have also been informed that Petitioner alleges that the conception date is in 2016. Any earlier or later conception date in the mid-2010s would not alter my opinions herein.

31. Dr. Shen opined that a POSITA “would have at least a bachelor’s degree in computer science, computer engineering, applied mathematics, or equivalent and at least 2 years of experience researching, implementing, programming, or designing computer networks, distributed systems, blockchain technology, applied cryptography, or security. Additional education can supplement practical experience, and vice-versa.” EX1003, ¶ 46. For purposes of this declaration, I apply this definition. I note that my opinions expressed in this declaration would not be altered under any reasonable definition of a POSITA.

32. Based on my educational and employment background, I am qualified to provide opinions concerning what a POSITA would have known and understood in the mid-2010s. Indeed, as reflected in my qualifications above, I am more than qualified as a person of ordinary skill in the art as of the relevant date of the ’413 Patent.

VIII. THE ’413 PATENT

33. At the time the ’413 Patent was invented, the primary network for financial transactions, was the Society for Worldwide Interbank Financial

Telecommunications (SWIFT) network. Some necessary characteristics of SWIFT or any communication network between financial institutions are security and standardized messaging.

34. The '413 Patent is titled "Computer implemented method for processing a financial transaction and a system therefor" and describes systems and methods for processing financial transactions. The '413 Patent derived from a PCT application filed on August 12, 2016. The patent has 20 claims of which three are independent (claims 1, 15, and 16). The '413 Patent relates to financial transactions using, in part, messaging of traditional payment rails, such as SWIFT messaging. *See* EX1001, 1:44-47 ("Many settlement systems are characterised by effective one - way transmission of the plurality of data in any given financial transaction (for example systems based on SWIFT messaging").

35. Some necessary characteristics of the SWIFT communication network or a traditional communication network between financial institutions is the use of conventional or standardized messages. *See* EX1001, 24:36-42 ("Conventional transmission includes transmission of conventional messages utilising the SWIFT protocol.") The '413 Patent teaches how financial intermediaries, such as banks, can communicate additional data beyond the standard messages. *Id.*, 24:47-52 ("The tokenised message may transmit data which includes some of the data normally included in the conventional message. In alternative forms it may include

additional data. In yet alternative forms it may include data not transferred at all in the data normally included in the conventional message.”).

36. The ’413 Patent describes an enriched data record that can include data from one or more documents, including additional data beyond traditional messaging. This enriched data record can be recorded on a blockchain.

A. Prosecution of ’413 Patent

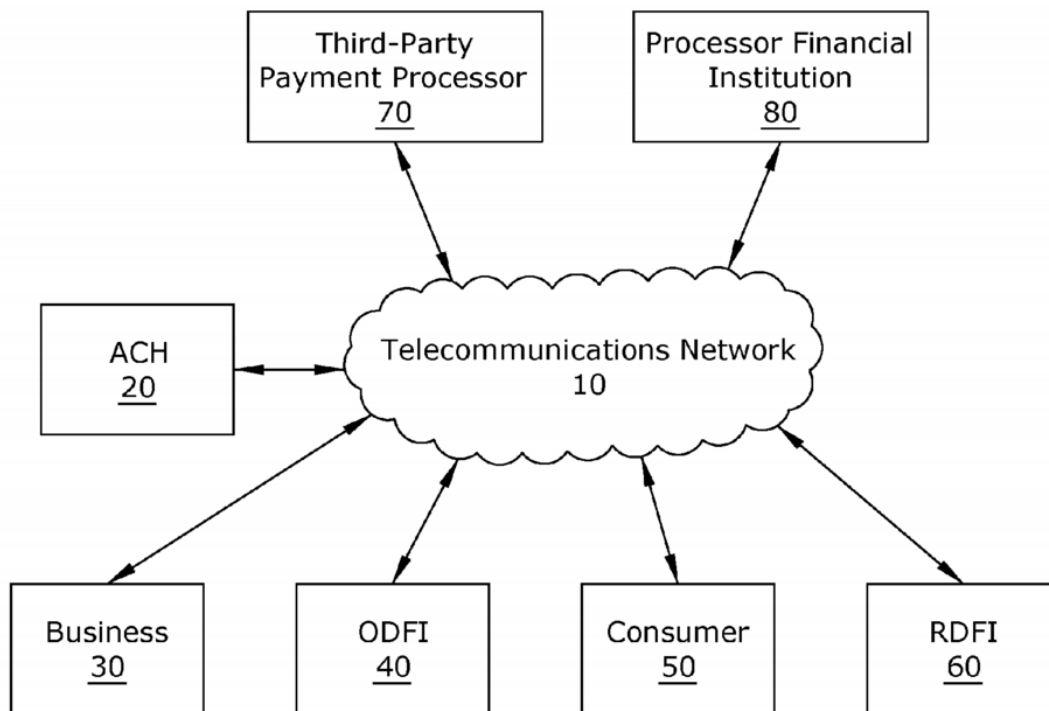
37. The ’413 Patent was filed as a PCT Application on August 12, 2016. In a first office action dated October 21, 2019, claims 59, 60, 62-66, 69 and 73 – 78 were rejected for being purportedly obvious by Davis in view of Morgan. The Applicants overcame all objections, and the ’413 Patent was issued on April 20, 2021. EX1002.

IX. OVERVIEW OF PRIOR ART REFERENCES

A. U.S. Patent Application 2015/0081553 (“Smith”)

38. Smith relates to an “electronic funds transfer consumer authorization verification system.” Smith includes a “business,” such as a vendor or retailer, that requests that a “third-party payment processor” initiate an ACH transaction. Smith describes that a business 30 may be comprised of numerous transacting entities. EX1004, ¶ 35 (“business 30 may be comprised of various entities including, but not limited to, merchants, online retailers, financial institutions, banks, credit unions or payday lenders”). Smith discloses that, “[c]onsumers who choose ACH

payment must first authorize the business to debit or credit their financial account for a financial amount.” EX1004, ¶ 11. “The consumer authorization must conform to the requirements of the ACH Operating Rules . . . and must be either written and signed, or electronically displayed.” *Id.* A third-party processor “receives the ACH payment information from the business and then submits the ACH payment information to an originating depository financial institution (ODFI).” Smith’s system is shown below:



EX1004, Fig. 1

39. In Smith’s system, the business enters into a transaction with a consumer. EX1004, ¶ 12. The “third-party payment processor” receives information from the “business” and confirms the information before initiating an

ACH transaction. Specifically, Smith discloses that the third-party payment processor determines that a consumer authorized the ACH transaction with the business and that the business is licensed to do business in the state. *Id.*, ¶¶ 11, 33, 34.

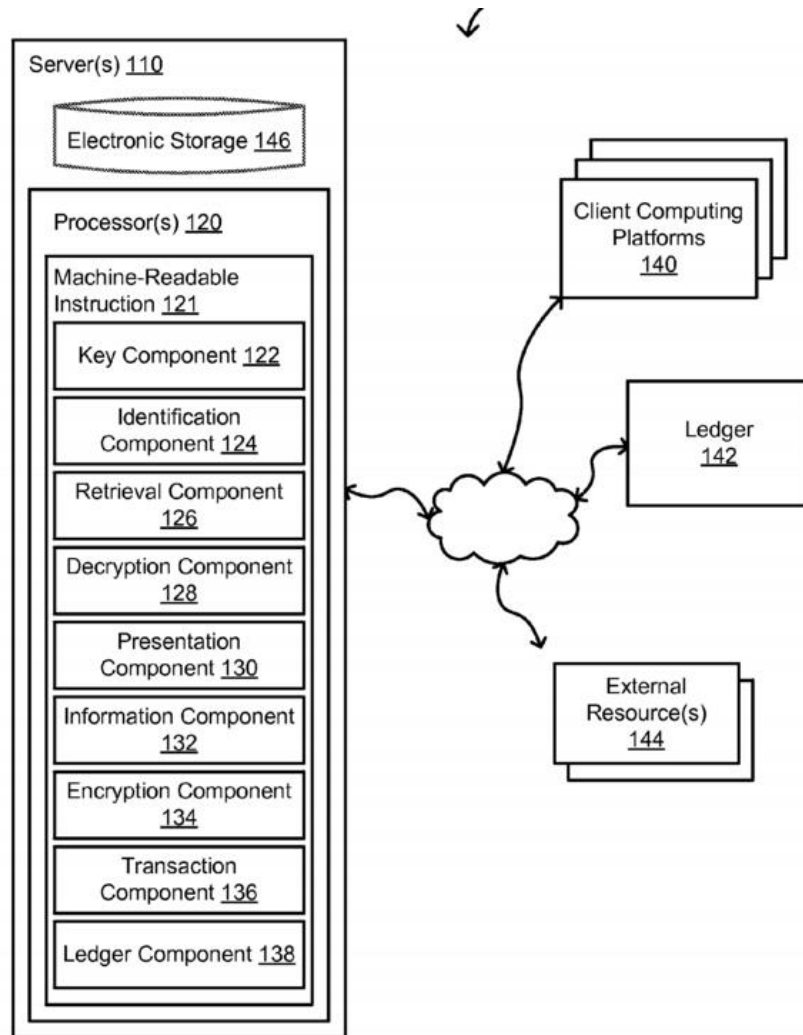
40. The third-party payment processor stores the information from the business (and from other entities such as state agencies) in its own internal database. *Id.*, ¶ 53. The database also includes a “transaction key” for identifying the information, as shown below.

Transaction Key	ACH Transaction Detail Record	Transaction Data File(s)
ABCD1	Detail Record #1	-ACH Authorization File
ABCD2	Detail Record #2	-ACH Authorization File -Drivers License File -Social Security Card File
ABCD3	Detail Record #3	-ACH Authorization File -Business State Licenses File
ABCD4	Detail Record #4	-ACH Authorization File

EX1004, Fig. 5

B. U.S. Patent 9,397,985 (“Seger”)

41. Seger generally relates to a cryptographic platform for exchanging information. EX1005, 1:25-35. As Seger discusses, traditional “[e]ncrypted messages are usually transmitted from one party to another via email, short messaging.” *Id.*, 1:12-22. However, “the transmission of an encrypted communication is generally private and not recorded in a log that can be audited after the fact by a third party.” *Id.* Seger therefore teaches storing “information transactions” within a distributed ledger. The information may be encrypted using a public key so that only the owner of the private key could decrypt this information. *Id.*, Abstract. Seger’s system is shown below:



EX1005, Fig. 1

42. As shown, Seger teaches storing information transactions on a “Ledger 142.” Seger discloses that the ledger “may include a distributed ledger.” *Id.*, 4:31-43. In such instances a server 110 includes a “ledger component 138” for accessing and storing information on the distributed ledger. *Id.*, 9:43-54.

43. Seger teaches that the distributed ledger could be a public blockchain, which can be accessed by anyone anywhere. EX2012 (“Cryptocurrency operates

on a system of trust, and to the pioneers of blockchain, trust equates to transparency. In order to gain trust, the founders argue, there should be reliable, non-monopolized **public ledger**. These **ledgers provide public access to all transactions that were ever made on the blockchain.**”). As such, Seger teaches to encrypt the communications using a public key. *Id.* 6:15-16. (“The first information payload may include **first encrypted information.**”) Thus, only those with the private key can decrypt and access the information to verify it.

X. DR. SHEN FAILS TO DEMONSTRATE THAT ANY CLAIM OF THE ’413 PATENT WOULD HAVE BEEN OBVIOUS.

44. In my opinion, Dr. Shen fails to demonstrate that any challenged claim would have been obvious. As I discuss below, it is my opinion that Dr. Shen’s declaration includes numerous, distinct failures. It is therefore my opinion that Dr. Shen fails to demonstrate any reasonable likelihood of success that any challenged claim would have been obvious.

A. A POSITA WOULD NOT COMBINE SMITH AND SEGER AS DESCRIBED BY DR. SHEN.

45. For each independent claim, Dr. Shen proposes to combine Smith and Seger. However, Dr. Shen never directly discusses how the two could be combined or what the actual combination is. Instead, he sprinkles his analysis when discussing certain claim limitations, for example in his analysis of Claim Elements 2 and 3. In my opinion, when looking at the references and the combination as a

whole, there are numerous reasons why a POSITA would not have been motivated to combine Smith and Seger as Dr. Shen has opined.

46. First, Smith and Seger are directed to two different types of systems in two different fields. As described above, Smith is a system dealing with financial transactions. EX1003, ¶ 48 (Dr. Shen stating that “**Smith teaches** a ‘system for efficiently proving that a consumer authorized a **financial transaction** via an ACH network.’”).¹ Seger, on the other hand, teaches using a cryptographic platform to store information transactions. *Id.*, ¶ 53 (“**Seger provides** ‘a **cryptographic platform** for exchanging information’ that ‘enables confidential, verifiable, and immutable recording and/or reporting **of information transactions.**’”) As such, these two pieces of art are in two different fields. This distinction can be seen in their United States Patent Classification designations. Seger was designated as USPC 713 ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT subclass 153 “Particular node (e.g., gateway, bridge, router, etc.) for directing data and **applying cryptography**,” while Smith was designated 705 “DATA PROCESSING: FINANCIAL, BUSINESS PRACTICE, MANAGEMENT, OR COST/PRICE DETERMINATION” Subclass 44 “Subject matter in which an **approval is required prior** to effecting a **funds transfer**

¹ I add all emphasis unless otherwise noted.

between accounts.” Smith was designated relating to financial transactions while Seger was designated to applied cryptography. Smith does not include any disclosure that would lead a POSITA to look to disclosures in a different field such a Seger’s. Indeed, as I discuss below, Smith teaches away from a combination with Seger.

1. Dr. Shen’s proposed combination

47. Dr. Shen proposes to “apply Seger’s blockchain ledger into Smith’s system.” EX1003, ¶ 83. However, Dr. Shen never opines how or where Seger’s ledger would be added to the system; he does not opine how Smith would be modified or what the full combination of Smith and Seger would actually look like. Instead, in his claim analysis, he appears to simply pull in some aspects of Seger when he believes they are necessary to satisfy claim elements. In parsing Dr. Shen’s analysis, he opines that a POSITA would add portions of Seger to, not one, but many entities of Smith. Dr. Shen opines that Smith’s business computer, the alleged intermediary server, would have Seger’s ledger component. EX1003, ¶ 87.²

² I also note that in Dr. Shen’s Declaration submitted in the co-pending IPR2024-00593 Petition, he opined that “[t]he Challenged Claims require two separate

48. A POSITA would recognize that Smith's system would have multiple "business computers" for each business in the system. As Smith describes, the system would include a large number of business computers associated with numerous merchants, online retailers, and other transacting businesses. EX1004, ¶ 35 ("The business 30 may be **comprised of various entities**"). Smith describes that these different entities are attached to network 10. *Id.*, ¶ 31 ("The present invention may communicate via a single telecommunication network 10 or multiple telecommunication networks 10 concurrently. In particular, the devices for **each entity such** as a computer for the business 30 ..."). Thus, a POSITA would understand that in Figure 1 of Smith, the "business computer 30" comprises a vast number of individual computers each attached to the network as I show below in a modified version of Smith's Figure 1:

servers (the 'first intermediary server' and 'token server') to add two different things ... to the 'blockchain.'" IPR2024-00593, EX1026, ¶ 60.

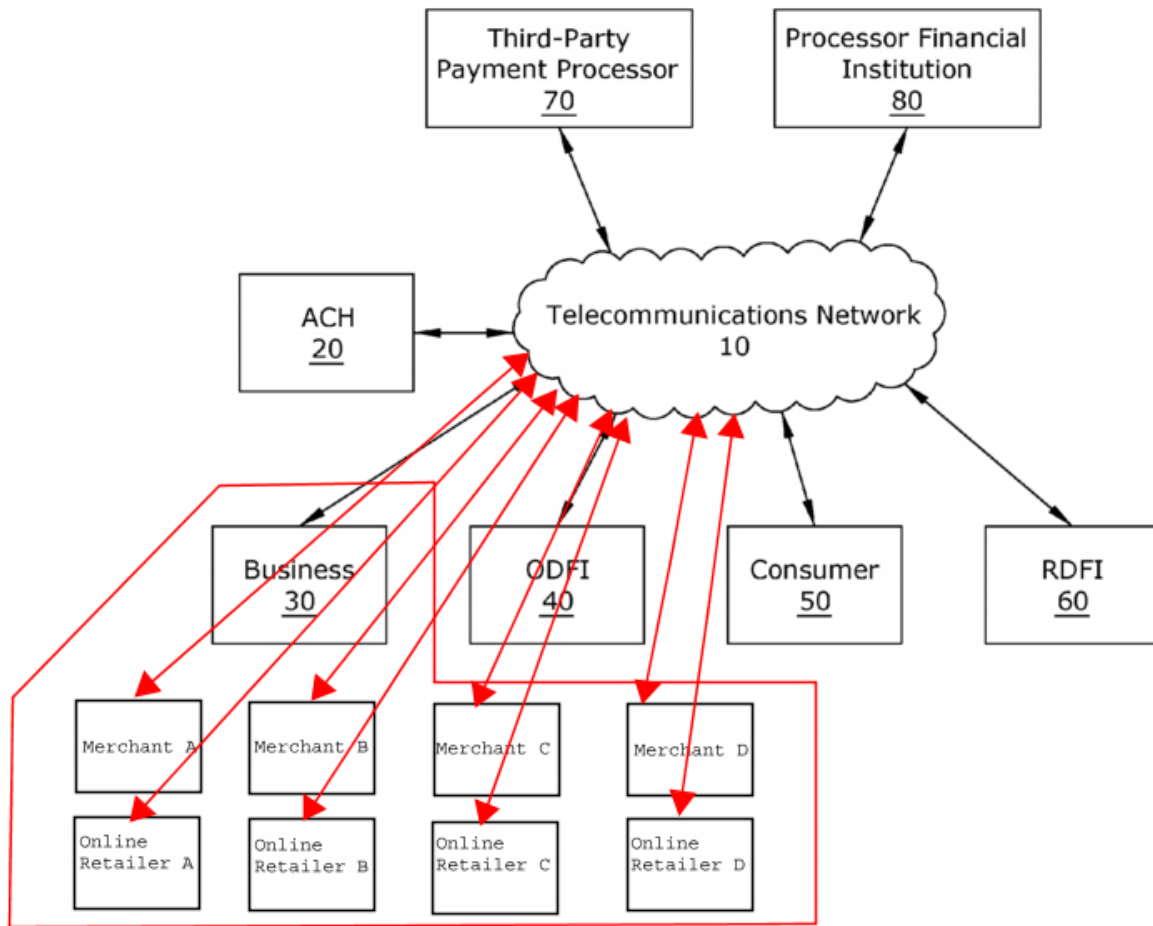


FIG. 1

EX1004, Fig. 1 (as modified)

49. Thus when Dr. Shen describes that **Smith's business computer 30** adds the enriched data record into a blockchain being a distributed ledger, he is in fact opining that each of the business computers in Smith ("merchants, online retailers, financial institutions, banks, credit unions or payday lenders") should be adding information to the distributed ledger, as shown below.

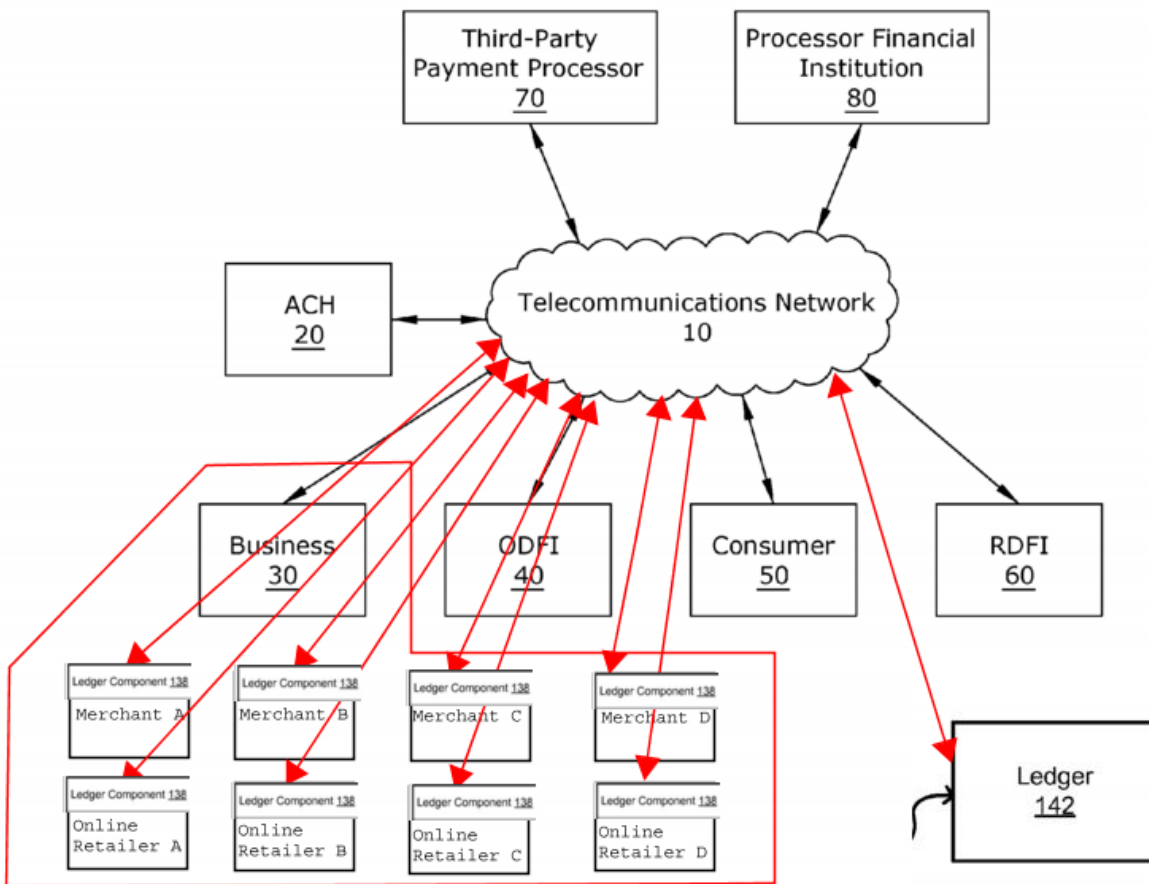


FIG. 1

50. A POSITA would recognize that it would not make sense to have such a system with only one “business computer,” as an independent “third-party payment processor” would be involved in processing payments for numerous businesses.

51. Dr. Shen’s combination is impractical for numerous reasons, as I discuss below. A POSITA would not be motivated to combine the references to even create such a system.

2. The proposed combination is less secure.

52. As I explain below, it is my opinion that a POSITA would recognize that modifying Smith in view of Seger results in a system that is less secure with no tangible additional advantages. In my opinion a POSITA would not be motivated to make such a less secure system by connecting each and every business (or even one business) in Smith to a blockchain. Indeed, Smith teaches away from such a system. Smith recognizes that the information stored by the third-party payment processor is “sensitive information [that] is to be stored in a Payment Card Industry (aka PCI) level 1 environment. This environment maintains the highest level of compliance and encryption within the Payment Card Industry.” EX1004, ¶ 59. As such, Smith’s third-party processor maintains the sensitive data in its own database, a database that the third-party payment processor controls. Smith discloses only the third-party payment processor adding to or modifying information in the database. See EX1004, ¶ 68, 71. Moreover, the third-party payment processor controls access to the information in the database. See *id.*, ¶ 56. In Smith, the TPPP unilaterally controls what sensitive information is stored on the database; how, when, and if that information may be updated; and who can access that information.

53. A POSITA would recognize that modifying Smith to include the information on Seger’s “distributed” ledger, allows multiple parties other than the

third-party payment processor to store, update, and access the information. Seger itself recognizes that the distributed ledger, itself, is not secure. As Seger's distributed ledger can be accessed by various parties, with no oversight or control of a single entity, Seger discloses encrypting using public/private keys, and Seger explicitly recognizes the security concerns of communicating the private keys to the proper entities. EX1005, 1:22. Smith, on the other hand, is much more secure in that the TPPP controls adding, modifying, or accessing the database. Smith further does not require transferring private keys, which are known security risks.

54. Moreover, as I discussed above, a POSITA would recognize that the Smith system includes multiple "business computers," each of which would need to be modified to contain the ledger component taught by Seger. The result of this modification would mean that another attack vector would be available to hackers wishing to get access to the businesses computers. In addition, as the information on a public ledger is publicly assessable, the confidential information for each and every transaction would be accessible to everyone. A POSITA would not make this combination as the POSITA recognizes it would expose not only confidential information for each customer, but also confidential information for each business. Thus if the information on the ledger of Seger was not encrypted, then anyone could access this information. But Smith teaches that the information stored in the documents is highly confidential, such as credit limits, checking account numbers

and social security numbers. EX1004, ¶ 34 (“legal name of the consumer 50, State of residency, residential address, amount of the credit or debit, a maximum amount for the credit or debit, a routing number for the financial institution for the consumer 50, a checking/savings account number at the financial institution for the consumer 50 where funds are to be credited or debited, copy of driver's license, copy of Social Security card, picture taken of the consumer 50 by the business 30 and the like.”). A POSITA would not place this kind of private information in a publicly available ledger, exposing it to numerous, unaffiliated businesses.

55. If on the other hand, the information placed on the Seger ledger was encrypted using a public key, as is taught in Seger, then the information on the ledger cannot be verified by anyone without a private key. Therefore, no one outside of an entity having the private key would be able to perform any verification on this information. As Dr. Shen proposes to combine the references for verification, the combination would defeat the very purpose Dr. Shen proposes that a POSITA would use the teachings of Seger to improve Smith. If the information stored on the blockchain is encrypted and cannot be verified, then the proposed motivation for the POSITA to add Seger to Smith would not exist.

56. Dr. Shen opines that the TPPP would add data to the blockchain to ensure accuracy and integrity of the key. EX1003, ¶ 104 (“For Smith’s transaction key, the POSITA would have recognized that having the TPPP (which generated

the key) add the key to the blockchain would help ensure the accuracy and integrity of the **transaction key**.”). But this key is either publicly available on the ledger and as such a security risk or encrypted and therefore not available to ensure accuracy or integrity.

57. A POSITA would also recognize that the Smith/Seeger combination would have multiple distinct databases containing copies of the documents, some in the business computer, some in the TPPP, and some in the distributed ledger. The combination Dr. Shen is proposing would therefore have multiple separate databases containing different documents and tokens, different documents stored on different business computers, a set of documents stored in the TPPP database and yet another copy different sets of documents on the distributed ledger. As Smith already contains multiple copies of the documents and token, a POSITA would not be motivated to add yet another database for documents and token on a distributed ledger.

58. In addition, Dr. Shen proposes that all of Smith’s business computers and the TPPP store information on Seeger’s distributed ledger. But a POSITA would not be motivated to make this change to both components in Smith, instead of just modifying the TPPP. The TPPP is the only entity in the system required to have a complete copy of all of the data for purposes of Smith. A POSITA would not add the complexity to every business computer in the network, when just

modifying to TPPP would allow the system of Smith to have the purported benefits Dr. Shen proposes.

59. As I discussed, the proposed combination is less secure. Moreover, I disagree with Dr. Shen's specific analysis that Seger would add security. Smith already teaches a way of securing and verifying the data stored in the TPPP. Smith teaches that the information in the TPPP is confidential information. EX1004, ¶ 56 ("In addition, the transaction key and a **password** may be provided to the RDFI 60 or the ACH to **log into a web page for the third-party payment processor** 70 to access the transaction data files associated with the transaction key (and the corresponding ACH transaction). The **ACH transaction can then be verified** (or not verified) based upon the transaction data files without the business 30.") In addition, the Smith network is secure and the link between the business and the TPPP is also secure. As such, it would make little sense to a POSITA to combine the teachings of Seger to store this information in distributed ledger database, encrypted by a public key, as this would dramatically increase the complexity of the system for no added benefit.

60. Overall, a POSITA would **not** be motivated to modify Smith as proposed. In my opinion, a POSITA would recognize the combination results in a less secure system that Smith teaches away from. And as I discuss below, there would nevertheless be no reason to do so because a POSITA would recognize that

Dr. Shen's cursory advantages of adding a blockchain to Smith are inapplicable to the purpose and goals of Smith.

3. Modifying in view of Seger would not improve “verification”; it would instead frustrate a key purpose of Smith.

61. Dr. Shen opines that the motivation for modifying Smith in view of Seger is that the combination would make the Smith system more “verifiable.” EX1003, ¶ 85. In my opinion, Dr. Shen is incorrect. As an initial matter, as I described above, the copy of the documents and token stored on the distributed ledger would either be (1) exposed, which a POSITA would recognize is not acceptable or (2) encrypted and could not be used for verification purposes.

62. In addition, a POSITA would not be motivated to add more “verification” to Smith, as Smith already describes a system for verification of financial transactions. The Field of the Invention describes the present invention as a verification system for financial transactions. EX1004, ¶ 4 (“The present invention relates generally to an electronic funds transfer authentication system and more specifically it relates to an electronic funds transfer consumer authorization **verification system** for efficiently proving that a consumer authorized a **financial transaction** via an ACH network.”). Indeed, the title of Smith is “Electronic Funds Transfer Consumer Authorization Verification System.” Smith already provides a system for verifying information in the TPPP

through the use of a secure network and password protection. *See, e.g.*, EX1004, ¶ 56. (“In addition, the transaction key and a **password may be provided to the RDFI 60 or the ACH to log into a web page for the third-party payment processor 70** to access the transaction data files associated with the transaction key (and the corresponding ACH transaction). **The ACH transaction can then be verified (or not verified) based upon the transaction data files** without the business 30 (or the third-party payment processor 70) having to gather and fax the transaction data files.”). Dr. Shen presents no sufficient reason for a POSITA to use Smith if not for its intended purpose, a verification system for financial transactions.

63. In fact, a POSITA would recognize that while Smith and Seger both use the term “verification,” they are discussing two different types of verification. As such, it is my opinion that modifying Smith would not improve Smith’s contemplated “verification.” Indeed, it is my opinion that modifying Smith as Dr. Shen proposes would frustrate a key purpose of Smith by removing Smith’s “verification” functionality.

64. Smith discloses sending an ACH format file and images (transaction data files) to a third-party payment processor, who could store both “in a database on a computer for the third-party payment processor.” *Id.*, ¶ 41. The third-party payment processor in Smith uses the transaction data to independently verify the

accuracy of received data. For example, the third-party payment processor uses a business received business license to confirm with a state agency that the business is licensed. EX1004, ¶ 5. Upon verification of the accuracy of the data, the third-party payment processor modifies the database to include the verification data. *Id.* A POSITA would thus recognize that a key purpose of Smith is having an independent, third-party payment processor that verifies data and maintains and modifies information in its secure database.

65. Seger, on the other hand, proposes that the parties record communications by placing information on a distributed ledger because it is immutable (the information cannot be changed after the fact). EX1005, 5:7-14, 10:19-23. Because the ledger is immutable, it “may provide a verifiable record of all the information exchanges.” *Id.* Thus, the “verification” in Seger is not that the information is *accurate* (a party could communicate a phony business license); it is that the communications were not altered.

66. As Smith and Seger are directed to two different types of verification, a POSITA would not have been motivated to modify Smith to include the distributed ledger of Seger. Seger describes two parties logging communications in a way to confirm that the communicated data was not altered. EX1005, 1:16-21. Smith, on the other hand, describes a trusted “third-party” payment processor whose purpose *is* to modify communicated data. Smith discloses that after the

third-party payment processor receives data it performs “a number of checks” to verify the information. EX1004, ¶ 59. As Smith explains, for example, “[t]he merchant has to be licensed in the state.” *Id.* The third-party payment processor, after receiving information from the business that it is licensed, “verifies via a state agency” that the business is licensed and then “**updates its database**” to attach “additional transaction data files ... to provide **additional evidence of the business’s verified licensing in a state.**” *Id.*, ¶ 53. Thus, Smith discloses that a trusted third-party *should* be able to update its own database to perform its verification. A POSITA would not have modified Smith’s disclosure to include a distributed ledger that could not be updated. *Id.*

67. Indeed, the combination would render Smith’s verification essentially unusable. As I just described, Smith performs its verification by adding information to its own database to indicate that the data is verified. But the proposed combination would allow the business (indeed, multiple businesses) to add information to the ledger. If the business could upload documents to the alleged ledger as it wished, the TPPP could not provide the independent verification and control of the data stored in the alleged ledger. Nor could the TPPP control access to the ledger, as the ledger would be distributed outside of the third-party processor.

4. Dr. Shen provides no plausible motivations to combine.

68. While Dr. Shen discusses benefits of blockchain generally, it is my opinion that he fails to identify any plausible reason why a POSITA would have been motivated to make the combination. Indeed, as I discuss above, a POSITA would have recognized numerous reasons to not make the proposed combination.

69. **First**, Dr. Shen opines that Smith proposes verifying transaction files, and would use Seger's "all-encompassing verification system." EX1003, ¶ 81. As I discuss above, while Smith and Seger both use the word "verification," the verification is different which, in fact, would dissuade a POSITA from making the proposed combination. Seger's distributed ledger is only "verified" in that parties can verify that the data does not change, as it is immutable. EX1005, 1:16-21, 10:19-23. Seger's distributed ledger does not verify the *accuracy* of the data. For example, a first non-trusted party in Seger could communicate fraudulent licensing information to a second party via the distributed ledger. While the ledger verifies that the information has not changed, it does not verify whether the information is fraudulent.

70. I also disagree with Dr. Shen's opinion that Smith does not "teach a mechanism for verifying and ensuring the continued accuracy of [the] ledger." EX1003, ¶ 81. As I discuss above, the independent third-party payment processor

controls the content of the database, thus ensuring its accuracy. Moreover, Smith discusses at length how the data is verified, as I discuss above.

71. **Second**, Dr. Shen opines that “both Seger and Smith provide a system for secure financial transactions.” EX1003, ¶ 84. In my opinion, this demonstrates that a POSITA would not have made the proposed combination. As I discussed, Smith’s system is already secure and it would become much less secure by modifying it as Dr. Shen proposes.

72. **Third**, Dr. Shen opines that both Seger and Smith are in the same art and “apply similar approaches.” EX1003, ¶84. This is incorrect: as I explain above, the two references are in different fields. It is also my opinion that even if two references are in a similar field, that does not provide a motivation to combine them. A POSITA would be dissuaded from combining the references as Dr. Shen proposes.

73. **Fourth**, Dr. Shen opines that Seger “offers the advantage of providing an ‘immutable’ record, ensuring the transaction data cannot be altered once written.” EX1003, ¶ 85. I disagree. As I discuss above, Smith teaches that data *should* be altered because the third-party payment processor updates the records to indicate verification. *See* EX1003, ¶ 71. Further, a POSITA would have recognized that the third-party verification entity in Smith already knows, and can independently confirm, whether the data has been altered, as it is in complete

control of the storage, maintenance, and alterations of its database, as I discuss above.

74. ***Lastly***, Petitioner argues that it would have been obvious to modify Smith because distributed ledgers and blockchain were known. EX1005, ¶ 86. While that may be, a POSITA would recognize that a blockchain being known, generally, not alone a reason to combine a blockchain with another reference. As I discussed above, a POSITA would not have been motivated to make the combination, and indeed Smith teaches away from the proposed combination.

75. It is therefore my opinion that Dr. Shen fails to articulate credible reasons why a POSITA would combine Smith and Seger as he proposes.

B. THE SMITH SEGER COMBINATION DOES NOT TEACH OR SUGGEST EACH CLAIMED FEATURE

76. In my opinion, even if Smith and Seger could be combined as proposed, the combination would nevertheless fail to teach or suggest all the elements of each challenged claim.

1. Claim 1, Element 1: Dr. Shen fails to show that the Smith and Seger combination teaches or suggests “transmitting one or more documents . . . from a *first intermediary server* in a centralised financial system to a first document store.”

77. In my opinion, Dr. Shen fails to show that his proposed combination teaches or suggests the claimed “first intermediary server.” The independent claims require the first intermediary server to perform certain functionality, and Dr. Shen

relies on Smith's "business computer" as disclosing the claimed "first intermediary server" that performs that functionality. EX1003, ¶ 63. However, a POSITA would have recognized that Smith's business computer is not an "intermediary server."

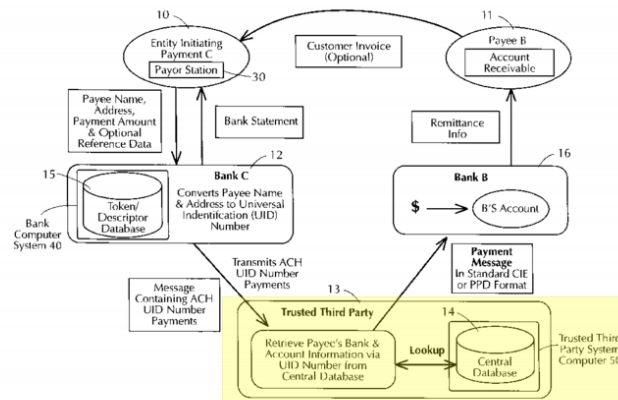
78. The patent explains the concept of an "intermediary" entity to a financial transaction, which is distinct from a "transaction" entity to the financial transaction. The '413 Patent states that a "first transacting entity" is an entity "which enters into a financial transaction with at least a second transaction entity." EX1001, 22:35-44. An "intermediary" entity is an entity that operates between the first and second transacting entities to process the financial transaction. As the '413 Patent explains, the first and second transacting entities "are associated with a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective account ... at their respective intermediary entities." *Id.* The transacting entities and intermediaries are illustrated in Figure 14 of the '413 Patent.

79. As illustrated there, the transacting entities submit an invoice, purchase order, and remittance advice (the entities 1411 and 1412 are "transacting entities" EX1001, 2:59). The intermediaries (non-transacting Bank A and Bank B in this example), then process the transaction by sending messages. Figure 14 shows using, e.g., SWIFT. This concept is also shown in Figure 8A where

“intermediaries” are between the transaction entities for purposes of processing the transaction for the transacting entities.

80. As explained above in Section THE '413 PATENT, the '413 Patent is directed to “financial transactions.” In some financial transactions there is one or more non-transacting intermediaries, which each acts as a middleman between two transacting parties.

81. Petitioner’s Exhibit 1044 supports the ordinary meaning of the term “intermediary.” Like the '413 Patent, Exhibit 1044 is directed to financial transactions. In Exhibit 1044, the Trusted Third Party, a non-transacting party that facilitates processing the transaction, is described as an “intermediary.” EX1044, 5:35-38.



"To further the above objects of the present invention, there also is provided a method for electronic bill presentment between a biller and a payor by a **trusted third party intermediary**". Col 5:35-38

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82. As the '413 Patent also makes clear, an “intermediary server” is a server for an intermediary. EX1001, 10:56-11:5.

83. The '413 Patent distinguishes between a transacting entity and an intermediary in the same manner that a POSITA would understand the terms used in the field of financial processing. EX2007 (“financial intermediary is an entity that acts as the middleman between two parties in a financial transaction, such as a commercial bank, investment bank, mutual fund, or pension fund.”); EX2008 (“An institution that acts as a middleman between two parties to facilitate a financial transaction”); 22 U.S.C. § 2214(a)(8) (“entity that acts as the intermediary between parties in a financial transaction, such as a bank, credit union . . .”).

84. In my opinion, Smith’s “business computer” does not teach or suggest the claimed “first intermediary server.” Smith’s “business” is not an intermediary, it is instead a transacting entity. *See, e.g.*, EX1004, ¶ 34 (“[t]he consumer 50 may be any individual or legal entity that is authorizing an ACH transaction with business 30.”). In my opinion, a POSITA would not equate the business computer of Smith with an “intermediary server.” Dr. Shen opines that “by ‘enter[ing] the information received from the consumer 50 into a database’ . . . the business computer 30 (i.e., ‘first intermediary server’) transmits the received information (i.e. ‘one or more documents’) to the database (i.e. ‘first document store’) for storage.” EX1004, ¶ 73. Smith’s business may be comprised of entities “including, but not limited to, merchants, online retailers, financial institutions, banks, credit unions or payday lenders.” *Id.*, 34. As Smith describes, all of these entities, when

performing any of this alleged functionality are a “business,” transacting entities that have entered into a transaction with a consumer. *Id.*, ¶¶ 12, 24, 44. Regardless of the type of entity represented by Smith’s business, a POSITA would understand that Smith’s “business” is a transacting entity, and that there is no teaching or suggestion of Smith’s business being a non-transacting entity. A POSITA would understand that Smith’s “business computer” is not an intermediary server, as the business is one of the parties in the financial transaction, not an intermediary.

85. I disagree with Dr. Shen’s opinion that the business computer is an “intermediary” because it is “between other devices, or a user on the business side and the authorization verification system.” EX1003, ¶ 67. Dr. Shen never identifies what “other devices” the business computer is between, or how. The business initiates the financial transaction and, as such, there are no “other devices” it is between. *See* EX1004, Fig. 4 (the business performs the first step by sending transaction files to the third-party payment processor for processing; third-party payment processor verifies and sends transactions for processing by the ACH payment network). It is also my opinion that a user using a server does not make the server an “intermediary” server. It would not change the server’s place in the network or its functionality.

86. Even if Dr. Shen were correct that the business is “between other devices” or between a “user” and “something else,” it is my opinion that this would

not satisfy the requirement of an “intermediary” server. As I discuss, the term is explained and has a common usage in the art, which is not met by Dr. Shen’s explanation, even if his explanation were correct.

87. For all the reasons above, I disagree with Dr. Shen when he states that “[a]ccordingly, it is my opinion that Smith discloses or renders obvious transmitting one or more documents pertaining to the financial transaction (financial transaction data and other information provided by the consumer to the business), **from a first intermediary server (business computer 30)** in a centralised financial system (Smith’s electronic funds transfer consumer authorization verification system) to a first document store (database in communication with business computer 30).”

88. Moreover, the combination’s failures here highlight why a POSITA would not have been motivated to combine Smith and Seger as proposed. Smith’s “business” (or “businesses,” as I discuss above), are parties to the transaction. They are not non-transacting, trusted intermediaries, which have no interest in the underlying transaction. A POSITA would not have modified Smith to allow the “businesses” to add, store, or access sensitive financial information for all the financial transactions processed via the third-party payment processor.

2. Claim 1, Element 1: Dr. Shen fails to show that the Smith and Seger combination teaches or suggests “a first intermediary server in a *centralised financial system*.”

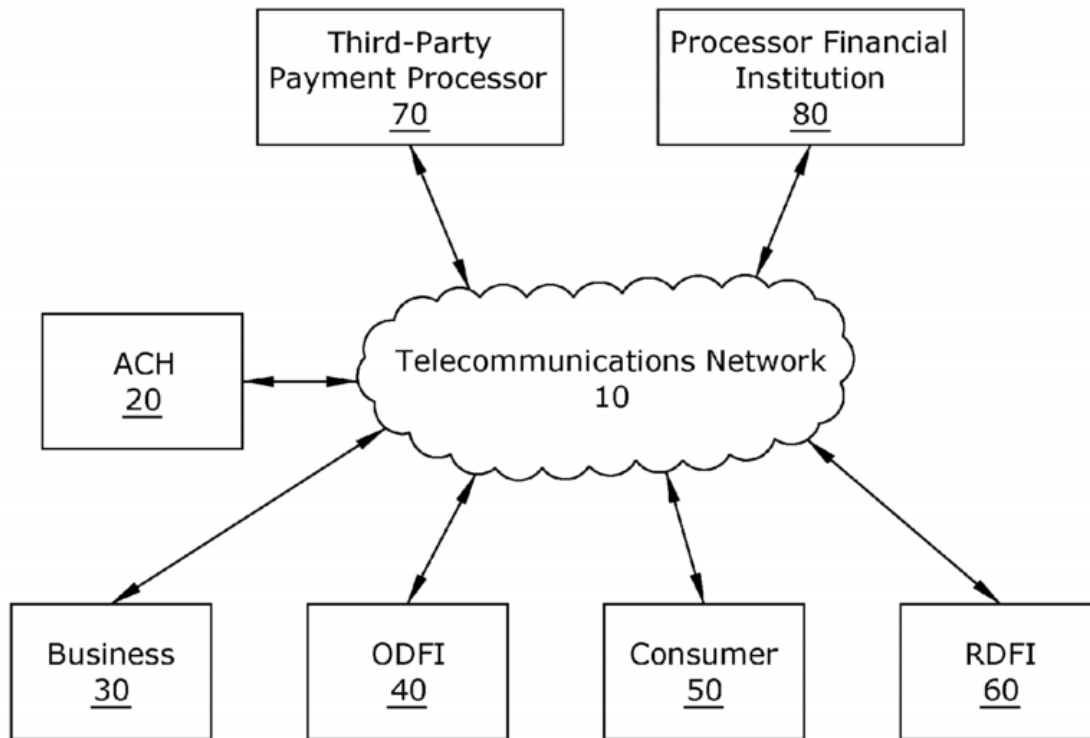
89. In my opinion, Dr. Shen fails to demonstrate that Smith’s “business computer,” in the proposed combination is in a “centralised financial system.”

Dr. Shen opines that Smith’s “electronic funds transfer consumer authorization verification system” discloses the “centralised financial system.” EX1003, ¶ 63.

However, Dr. Shen offers no reason or explanation of why a POSITA would have understood Smith’s system to be a “centralised financial system.”

90. In my opinion, a POSITA would recognize that Smith’s system is not a “centralised financial system.” As the ’413 Patent describes, such “centralised systems ... rely on a single authority.” EX1001, 25:40-42 (“Unlike centralised systems which rely on a single authority ...”).

91. Smith’s “electronic funds transfer consumer authorization verification system,” is shown below:



EX1004, Fig. 1

92. Smith's system includes, for example, a business (e.g., a merchant or online realtor). EX1004, ¶ 35. The system further includes non-affiliated third-party payment processor, such as PayPal. *Id.*, ¶ 11. The system further includes an ODFI (depository financial institution, ¶ 11), and a consumer. This is not a "centralised financial system." Smith does not disclose that each of the entities of the system, or even the "business," are under any "single authority." Dr. Shen offers no opinion to the contrary. Instead, Dr. Shen does not address this limitation and thus provides no reason why Smith's system is a "centralised" financial system.

93. As with the failure related to the “intermediary” limitation discussed above, the failure with respect to the “centralised financial system” is the result of the Smith/Seeger combination being in a different context than the ’413 Patent.

3. Claim 1, Element 2: Dr. Shen fails to show that the Smith and Seeger combination teaches or suggests “generating an enriched data record from the one or more documents.”

94. In my opinion, Dr. Shen fails to demonstrate that the Smith and Seeger combination discloses the alleged “generating an **enriched data record** from the one or more documents, at the first intermediary server.

95. As I described above in relation to Element 1, a POSITA would not understand Smith’s “business computer” to be an “intermediary server.” Even if it were, I disagree that the proposed combination would teach or suggest that the “business computer” “generates an enriched data record from the one or more documents.”

96. As explained in the ’413 Patent, the first intermediary server is “configured to generate an enriched data record from the one or more documents.” EX1001, 12:39-41. As the ’413 Patent explains, the enriched data record is not merely a received document but includes data from one or more documents that may actually be needed to process a transaction. As an example, the first intermediary server generates the enriched data record by “extract[ing] a plurality of attributes from the one or more documents” and “combin[ing] the plurality of

attributes to generate the enriched data record.” *Id.*, 12:46-53. As another example, the first intermediary server generates an enriched data record by “extract[ing] the plurality of attributes from one or more documents, de-identify[ing] the plurality of attributes to obtain a plurality of de-identified attributes and combin[ing] the plurality of de-identified attributes to generate the enriched data record.” *Id.*, 12:53-58. As provided in the “definitions” section of the ’413 Patent, the “enriched data record” includes “a plurality [of] data required to process a financial transaction,” and that “plurality of data is rendered, formatted or passed through an algorithm in a predetermined manner” to generate the enriched data record. *Id.*, 28:67-29:3. A POSITA would understand that the rendering, formatting, or passing of the plurality of data from the one or more documents that generates a data record is “enriched.” *Id.* Thus the rendering, formatting or algorithm enrich the data in some way.

97. In my opinion, Dr. Shen fails to demonstrate that Smith teaches or suggests generating enriched data from the alleged one or more documents. Instead, Smith discloses that “a computer for the business 30” (the alleged “first intermediary server”) passes along documents and information it receives to the third-party processing server. However, Smith does not disclose any *enriching of data*. Nor does it disclose any generation of an enriched data record *from* the alleged one or more documents.

98. Dr. Shen opines that the “generated enriched data record” is disclosed in Smith by “the ACH detail record and its corresponding transaction data file, individually and/or together.” EX1003, ¶ 79. Smith does not disclose its “business computer” “generating an enriched data record,” to arrive at either the transaction data or the ACH detail record, and especially not from the alleged “one or more documents.” Smith discloses a “transaction data file” as “image data” for “verifying a transaction.” EX1004, ¶ 50. The transaction file may be an image of a signature of a consumer, a copy of a driver’s license, a copy of a Social Security card, or a copy of a state business license. *Id.*, ¶ 51. Smith’s business does not **enrich** these image files, e.g., a copy of a consumer’s driver’s license, from the alleged one or more documents by rendering, formatting, or passing the plurality of data in any way. Instead, a POSITA would understand that the business receives a copy of the image file from, e.g., the consumer, and **merely passes** it along to the third-party payment processor (TPPP).

99. Dr. Shen opines that the alleged enriched data record is generated ... by combining a plurality of attributes of the one or more documents.” EX1004, ¶ 79. I note that in Dr. Shen’s explanation, he provides quotes to the ’413 Patent—not Smith. Dr. Shen does not provide any citation to Smith as “combining the plurality of attributes from the one or more documents.” Smith does not disclose this. A POSITA would understand that Smith’s business receives the image file,

not that it generates it by rendering, formatting, or passing the plurality of data, as required by the definition in the '413 Patent.

100. Smith also does not disclose that its business generates an enriched data record from the alleged one or more documents resulting in an “ACH detail record.” Smith provides that an “ACH detail is part of an ACH file that “is a simple ASCII-format file that adheres to the Automated Clearing House specifications.” EX1004, ¶ 43. As such, Smith’s ACH detail record is a specific standardized messaging of traditional payment rails, which is the type of message that is insufficient to efficiently process transactions and thus requires an enriched data record, as I describe above in my section, “THE '413 PATENT. Dr. Shen fails to show that Smith’s “business” enriches the ACH detail record by rendering, formatting or passing data through an algorithm in a predetermined manner. While Dr. Shen states that the ACH record is generated by combining a plurality of attributes of the one or more documents, but he provides no explanation or citation to Smith for this proposition. EX1003, ¶ 79. While he provides quotes for this proposition, the quotes are from the '413 Patent—not Smith. *See id.* Smith does not disclose combining a plurality of attributes to arrive at the ACH detail record.

101. It is also my opinion that Dr. Shen fails to demonstrate that the transaction file and the ACH detail record, together, would have taught or suggested this requirement of the claims. As Dr. Shen does not show that Smith’s

alleged intermediary server generates an enriched data record to arrive at either the ACH data record or the transaction file from the alleged one or more documents, he cannot show that the two together meet this claim requirement. Moreover, the transaction file and ACH detail record are separate. For example, Smith discloses that the transaction file and ACH record are transmitted *separately* (¶ 50) and that they are stored separately (Fig. 5). As such, there is no “record” that includes both and is transmitted by the business. *Id.*

102. While Dr. Shen opined that the business generates the transaction data file and/or ACH record **from** the one or more documents (EX1003, ¶ 87), he stated in relation to Claim 1, Element 1 that a transaction data file and/or ACH record **is** the “one or more documents. EX1003, ¶¶ 71-72 (opining that the “one or more documents” are the transaction data information “aggregated together”). The ACH record cannot simultaneously be the “one or more documents” and be a “generat[ed] **enriched** data record from the one or more documents” that has passed through some algorithm.

103. In regard to claim 5, Dr. Shen opined that the business computer “extrac[s] a plurality of attributes from the one or more documents.” EX1003, ¶ 119. Here, Dr. Shen only stated that it would have been “obvious” to “combine” the ACH detail record and transaction file—and by combine, he means send the same two in a single transmission. *Id.* ¶ 121. This is likewise not a “generation of

an enriched data record” and goes to show that Dr. Shen’s earlier opinion that the record is “generated by combining a plurality of attributes of the one or more documents” is incorrect and unsupported. Nevertheless, a POSITA would understand that sending two files together at once in a single transmission is not “generating” either of the files, nor the two together. Smith does not disclose or suggest “generating” any enriched data record.

4. Claim 1, Element 4: Dr. Shen fails to show that the Smith and Seger combination teaches or suggests the claimed “token.”

104. In my opinion, Dr. Shen fails to demonstrate that his proposed combination would have taught or suggested the claimed “token.”

105. As the ’413 Patent states, “in this specification a ‘token’ is a pointer to an enriched data record of a plurality data required to process a financial transaction and wherein the plurality of data is rendered, formatted or passed through an algorithm in a predetermined manner.” EX1001, .28:66-29:3. Dr. Shen does not attempt to show that the token is a **pointer to** data that is rendered, formatted or passed through an algorithm; he instead opines that the token **is** data that is passed through an algorithm. EX1003, ¶¶ 91-94. As Dr. Shen offers no opinion that the alleged token satisfies the claimed “token” as it is defined in the ’413 Patent, he cannot show that the Smith/Seger combination would have taught or suggested these requirements.

106. Moreover, it is my opinion that a POSITA would not have been motivated to modify Smith's transaction key as Dr. Shen opines. Dr. Shen opines that "[i]t would have been obvious to the POSITA to generate Smith's transaction key (i.e., "token") by formatting or passing transaction information through an algorithm in a predetermined manner, to effectuate Smith's goal of achieving a transaction key that is 'unique' and 'capable of identifying' the transaction.'" EX1003, ¶ 92. However, Dr. Shen provides no sufficient reason why a POSITA would have found it obvious to perform this complex and expensive modification.

107. The "transaction information" in Smith is the "ACH Transaction Detail Record" and "Transaction Data File(s)." *See, e.g.*, EX1004, Fig. 5. A POSITA would not have passed this information through an algorithm to generate a token. As I discussed above, for example, the transaction data files are image files. *See, e.g., id.*, ¶ 15. To pass all the information for image files through an algorithm would be burdensome, requiring exorbitant processing power and storage. A POSITA would not have been motivated to do this.

108. The reason Dr. Shen opines to pass "transaction data" through an algorithm is to avoid "collision"—having two identical tokens. But Smith itself already describes a simple and sufficient way to do this. As shown in Smith's Fig. 5, tokens are assigned sequentially (e.g., ABCD1, ABCD2, etc.). This method

avoids collision without the need for exorbitant computing costs or complex modifications proposed by Dr. Shen.

109. In my opinion, it is clear that Dr. Shen's reason for proposing the modification is that he believes it would satisfy missing claim elements. I understand that such an approach to the obvious analysis is insufficient and improper.

5. Claim 1, Element 3: Dr. Shen fails to show that the Smith and Seger combination teaches or suggests "requesting generation of a token corresponding to the financial transaction."

110. In my opinion, Dr. Shen fails to demonstrate that the Smith/Seger combination would have taught or suggested "requesting **generation** of a token." Dr. Shen opines that Smith's "transaction key" discloses the claimed "token." EX1003, ¶ 91. Dr. Shen further opines Smith's server "requests generation of a token" because it sends a "message" to the third-party payment processor and sometimes, at some point, may receive a "transaction key" in response. *See id.*, ¶ 96.

111. Smith discloses communicating "transaction data files" to the TPPP. Transaction files are not a request to generate a token. Instead, they are for example image files. EX1004, ¶ 51. Smith does not disclose that this data is a request to **generate** a token. I have seen no disclosure in Smith that the transaction data files mention the alleged token at all, and Dr. Shen has not identified any.

112. I have reviewed Smith, and the only time I have found it discussing any “communications” mentioning the transaction key is when the transaction key has already been generated and provided to the business. Smith describes that the business can provide the detail record “without a transaction key” or with the transaction key “entered into ... the detail record ... by the business.” EX1004, ¶ 41. A POSITA would not understand the communication to be a request to generate the transaction key when the key was already generated. Nor would the POSITA understand that the same communication is a request to generate the transaction key just because the key is not included in the communication.

113. Moreover, in Smith, the unique transaction key is created after the TPPP has verified that the business is licensed. EX1004, ¶ 53 (“**If the business 30 is verified** by the third-party payment processor 70 to be **licensed in a state**, the third-party payment processor 70 then **updates its database to include a unique transaction key** that is associated with the transaction data file(s) provided by the business 30.”).

114. Thus, in Smith, it is the act of verifying a valid state license that causes any creation of a new transaction key. This act takes place independent of any actions of the numerous business computers.

6. Claims 2 and 5-20

115. My opinions with respect to claim 1 apply to all claims of the '413 Patent. Claims 2 and 5-14 of the '413 Patent are dependent claims that all depend on claim 1. Thus, it is my opinion that all of these dependent claims are not obvious for all of the reasons I have already discussed above for why claim 1 is not obvious in light of the Smith / Seger combination.

116. Claim 15 includes the following elements that correspond to elements in claim 1 that I have already discussed above:

Claim 1	Claim 15
[Element 1] transmitting one or more documents pertaining to the financial transaction, from a first intermediary server in a centralised financial system to a first document store	[Element 4] wherein the first intermediary server is configured to: transmit one or more documents pertaining to the financial transaction, to the first document store
[Element 2] generating an enriched data record from the one or more documents, at the first intermediary server, and adding the enriched data record into a blockchain being a distributed ledger, from the first intermediary server;	[Element 5] [wherein the first intermediary server is configured to] generate an enriched data record from the one or more documents and add the enriched data record into the blockchain;
[Element 3] requesting generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system	[Element 6] [wherein the first intermediary server is configured to] request generation of a token corresponding to the financial transaction to identify the one or more documents, to the token server, via the messaging bus
[Element 4] generating the token at the token server and adding the token into	[Element 8] wherein the token server is configured to: generate the token and

Claim 1	Claim 15
the blockchain from the token server in association with the enriched data record	add the token into the blockchain in association with the enriched data record

117. Thus, for the same reasons I have discussed above for why these elements in claim 1 are not disclosed or rendered obvious by the Smith / Seger combination, it is also my opinion that claim 15 is not obvious in light of this combination.

118. Claim 16 includes the following elements that correspond to elements in claim 1 that I have discussed above:

Claim 1	Claim 16
[Element 1] transmitting one or more documents pertaining to the financial transaction, from a first intermediary server in a centralised financial system to a first document store	[Element 1] [A first intermediary server . . . configured to:] transmit one or more documents pertaining to the financial transaction, to the first document store
[Element 2] generating an enriched data record from the one or more documents, at the first intermediary server, and adding the enriched data record into a blockchain being a distributed ledger, from the first intermediary server;	[Element 2] [A first intermediary server . . . configured to:] generate an enriched data record from the one or more documents and add the enriched data record into a blockchain being a distributed ledger;
[Element 3] requesting generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system	[Element 3] [A first intermediary server . . . configured to:] request generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, via a messaging bus in the centralised financial system

119. I note that while claim 16 does not recite “generating the token at the token server and adding the token into the blockchain from the token server in association with the enriched data record,” as recited in element 4 of claim 1, claim 16 requires the claimed token in element 3. Thus, my opinion relating to claim 1, element 4 applies to claim 16.

120. Thus, for the same reasons I have discussed above for why these elements in claim 1 are not disclosed or rendered obvious by the Smith / Seger combination, it is also my opinion that claim 16 is not obvious in light of this combination.

121. Finally, claims 17-20 of the '413 Patent all depend on claim 16, and thus in my opinion are not obvious for the same reasons that claim 16 is not obvious based on the Smith / Seger combination.

7. Claims 3 and 4

122. Claim 3 of the '413 Patent depends on claim 1. For this claim, Dr. Shen asserts that the claim is obvious in light of the combination of Smith / Seger as well as a third reference, U.S. Patent Pub. No. 2015/0206106 (“Yago”). I note, however, that Dr. Shen does not argue that Yago teaches any of the elements of claim 1. Rather, Dr. Shen argues only that Yago teaches the additional limitation in claim 3 of “implementing a smart contract at the token server; and adding the smart contract into the blockchain, from the token server.” EX1003, ¶¶ 192-201.

Yago therefore has no impact on any of my opinions for why claim 1 is not obvious based on the combination of Smith and Seger. Thus, it is my opinion that the combination of Smith, Seger, and Yago does not render claim 3 obvious for the same reasons I have discussed above for why claim 1 is not obvious in light of the Smith / Seger combination.

123. Claim 4 of the '413 Patent also depends on claim 1. For this claim, Dr. Shen asserts that the claim is obvious in light of the combination of Smith / Seger as well as a third reference, U.S. Patent 11,270,274 ("Kurani-274"). I note, however, that Dr. Shen does not argue that Kurani-274 teaches any of the elements of claim 1. Rather, Dr. Shen argues only that Kurani-274 teaches the additional limitations of claim 4. EX1003, ¶¶ 202-214. Kurani-274 therefore has no impact on any of my opinions for why claim 1 is not obvious based on the combination of Smith and Seger. Thus, it is my opinion that the combination of Smith, Seger, and Kurani-274 does not render claim 4 obvious for the same reasons I have discussed above for why claim 1 is not obvious in light of the Smith / Seger combination

XI. Conclusion

124. This declaration reflects my opinions as currently held. However, my analysis may continue such that I may consider additional information that may result in additional observations.

125. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

5/28/2024

Date

James Olivier Ph.D.
James Olivier, Ph.D.