IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Wetzer et al.

Title: Methods, Apparatus And Systems for Providing and Monitoring Secure Information via Multiple Authorized Channels and Generating Alerts Relating to Same

Appl. No.: Unknown

Filing Date: Herewith

Examiner: Unknown

Art Unit: Unknown

UTILITY PATENT APPLICATION TRANSMITTAL

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

Sir:

Transmitted herewith for filing under 37 C.F.R. § 1.53(b) is the nonprovisional utility patent application of:

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Fayetteville, NY 13066

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[**X**] Applicant claims small entity status under 37 CFR 1.27.

SAP AMERICA, INC.
EXHIBIT 1002

Enclosed are:

[X] Description, Claim(s), and Abstract (56 pages).

[X] Informal drawings (26 sheets, Figures 1-6, 7A, 7B, 8-25).

[X] Application Data Sheet (37 CFR 1.76).

The adjustment to the number of sheets for EFS-Web filing follows:

Number of Sheets		**EFS-Web Adjustment**	**Number of Sheets for EFS-Web**
82	x	75%	62

The filing fee is calculated below:

	Number Filed		**Included in Basic Fee**		**Extra**		Rate		Fee Totals
Basic Filing Fee							$330.00	=	$330.00
Search Fee							$540.00		$540.00
Examination Fee							$220.00		$220.00
Size Fee	62	-	100	=	0	x	$270.00		$0.00
Total Claims:	36	-	20	=	16	x	$52.00	=	$832.00
Independents:	3	-	3	=	0	x	$220.00	=	$0.00
If any Multiple Dependent Claim(s) present:						+	$390.00	=	$0.00
Surcharge under 37 CFR 1.16(f) for late filing of Executed Declaration and late payment of Basic Filing Fee and late payment of Search Fee and late payment of Examination Fee						+	$130.00	=	$130.00
							SUBTOTAL:	=	$2052.00
[X]							Small Entity Fees Apply (subtract ½ of above):	=	$1026.00
							Basic Filing Fee Reduction for Filing via EFS-Web		$83.00
							TOTAL FILING FEE:	=	$943.00
Assignment Recordation Fee:						+		=	$0.00
Processing Fee under 37 CFR 1.17(i) for Late Filing of English Translation of Application:						+	$130.00	=	

TOTAL FEE	=	$943.00

The required filing fees are not enclosed but will be submitted in response to the Notice to File Missing Parts of Application.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date 4/13/11

By _____

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Joseph Teja, Jr.
Attorney for Applicant
Registration No. 45,157

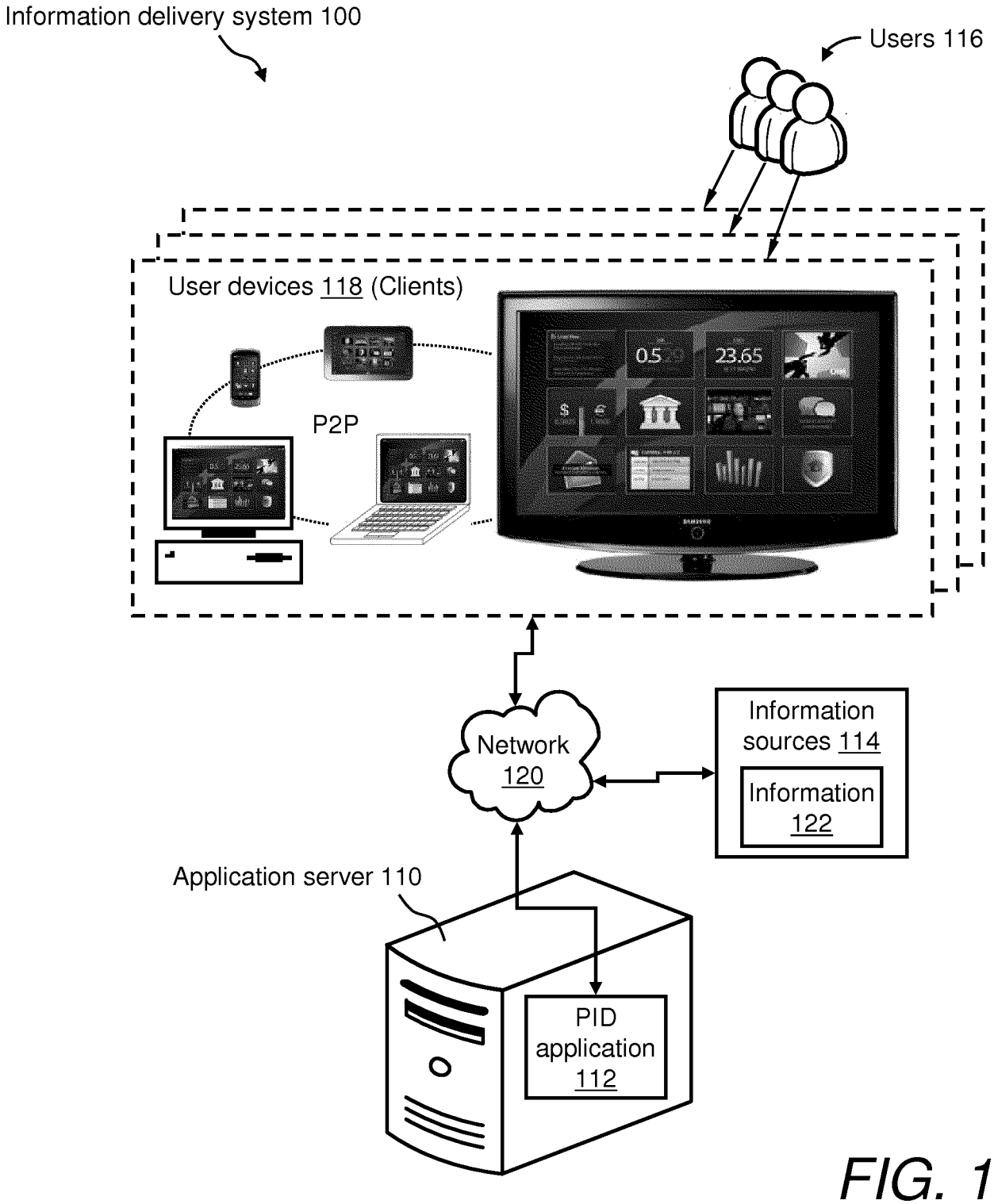

Information delivery system 100
Users 116
User devices 118 (Clients)
P2P
Network 120
Information sources 114
Information 122
Application server 110
PID application 112

FIG. 1

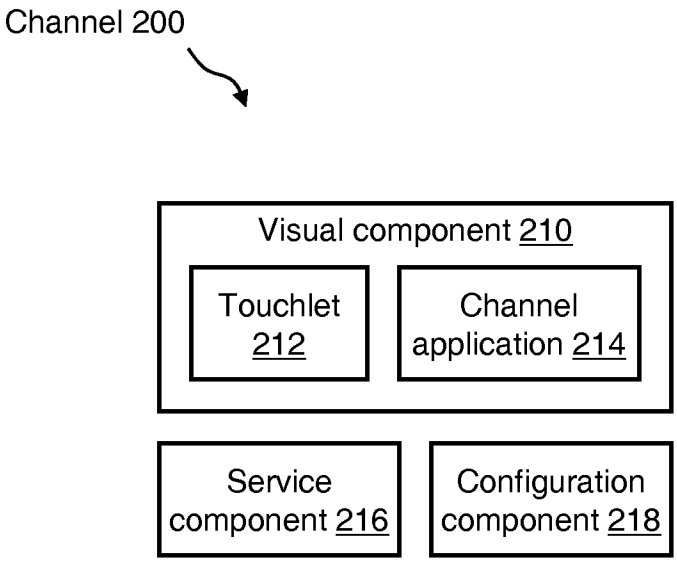

Channel 200
Visual component 210
Touchlet 212
Channel application 214
Service component 216
Configuration component 218

FIG. 2

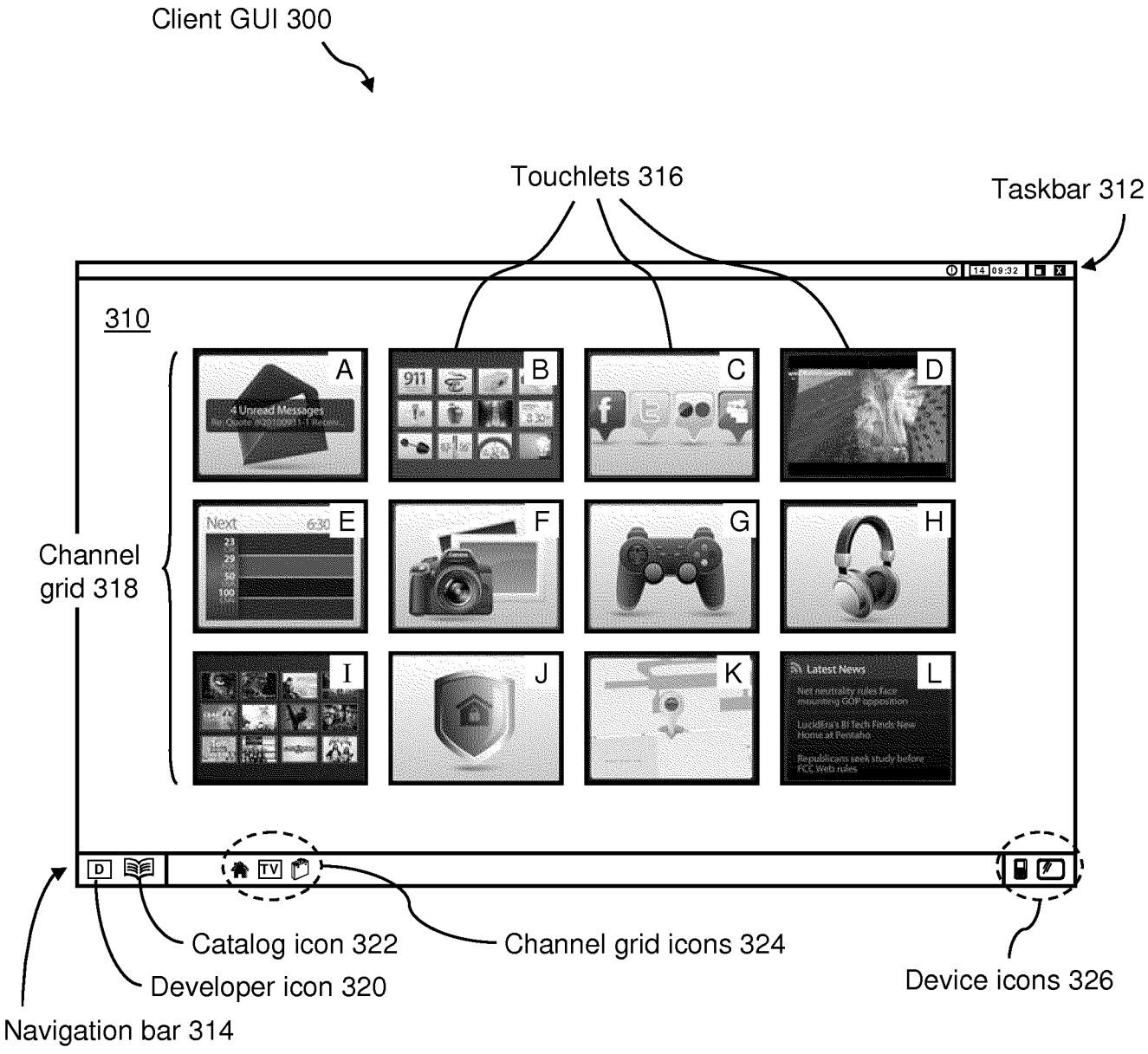

Client GUI 300
Touchlets 316
Taskbar 312
310
A
B
C
D
E
F
G
H
I
J
K
L
Latest News
Channel grid 318
Catalog icon 322
Channel grid icons 324
Developer icon 320
Device icons 326
Navigation bar 314

FIG. 3

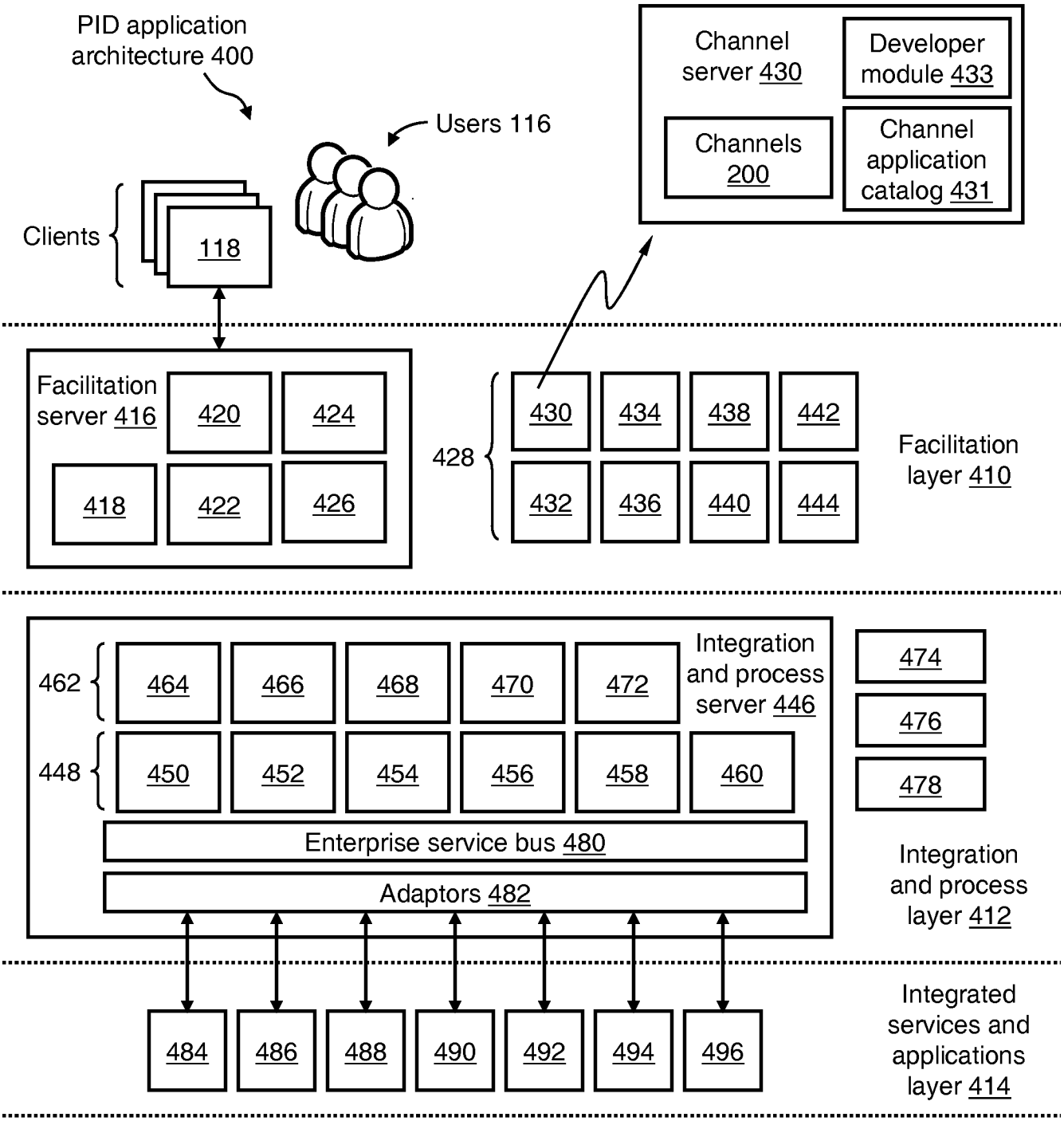

PID application architecture 400
Users 116
Clients
118
Channel server 430
Developer module 433
Channels 200
Channel application catalog 431
Facilitation server 416
420
424
418
422
426
428
430
434
438
442
432
436
440
444
Facilitation layer 410
462
464
466
468
470
472
Integration and process server 446
448
450
452
454
456
458
460
474
476
478
Enterprise service bus 480
Adaptors 482
Integration and process layer 412
484
486
488
490
492
494
496
Integrated services and applications layer 414

FIG. 4

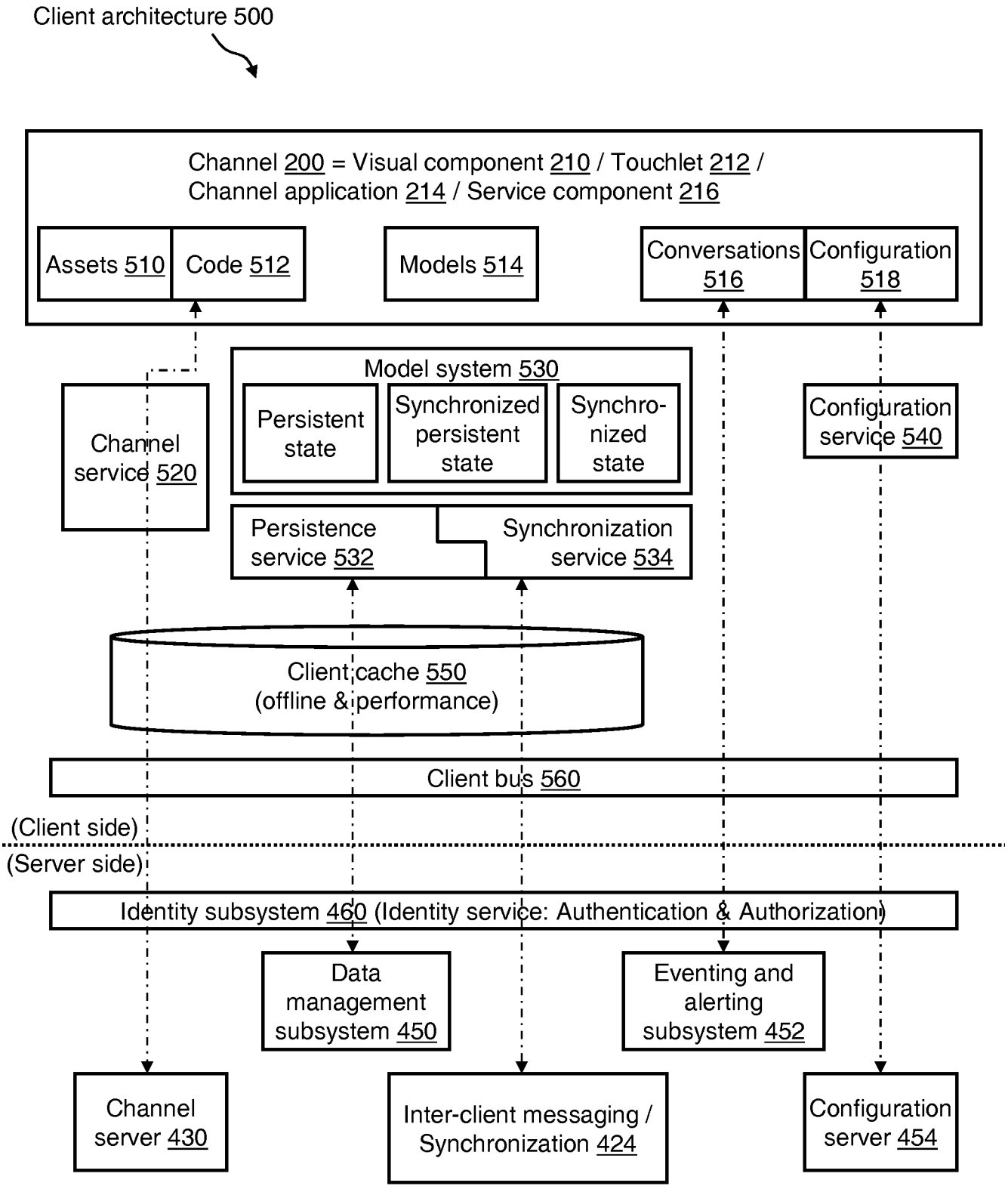

Client architecture 500
Channel 200 = Visual component 210 / Touchlet 212 /
Channel application 214 / Service component 216
Assets 510
Code 512
Models 514
Conversations 516
Configuration 518
Model system 530
Persistent state
Synchronized persistent state
Synchro-nized state
Channel service 520
Configuration service 540
Persistence service 532
Synchronization service 534
Client cache 550
(offline & performance)
Client bus 560
(Client side)
(Server side)
Identity subsystem 460 (Identity service: Authentication & Authorization)
Data management subsystem 450
Eventing and alerting subsystem 452
Channel server 430
Inter-client messaging / Synchronization 424
Configuration server 454

FIG. 5

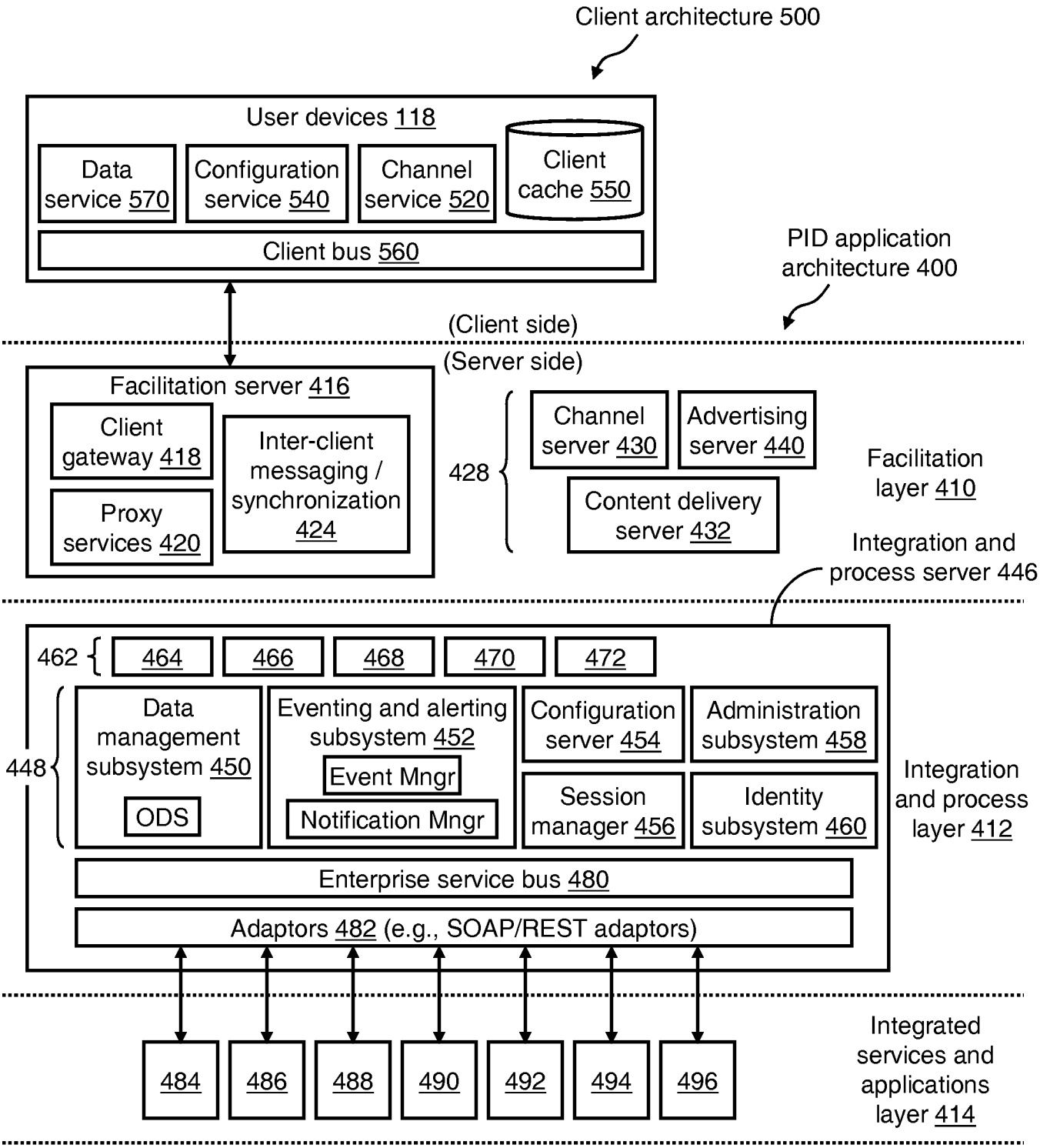

Client architecture 500
User devices 118
Data service 570
Configuration service 540
Channel service 520
Client cache 550
Client bus 560
PID application architecture 400
(Client side)
(Server side)
Facilitation server 416
Client gateway 418
Inter-client messaging / synchronization 424
Proxy services 420
428
Channel server 430
Advertising server 440
Content delivery server 432
Facilitation layer 410
Integration and process server 446
462
464
466
468
470
472
448
Data management subsystem 450
ODS
Eventing and alerting subsystem 452
Event Mngr
Notification Mngr
Configuration server 454
Administration subsystem 458
Session manager 456
Identity subsystem 460
Enterprise service bus 480
Adaptors 482 (e.g., SOAP/REST adaptors)
Integration and process layer 412
484
486
488
490
492
494
496
Integrated services and applications layer 414

FIG. 6

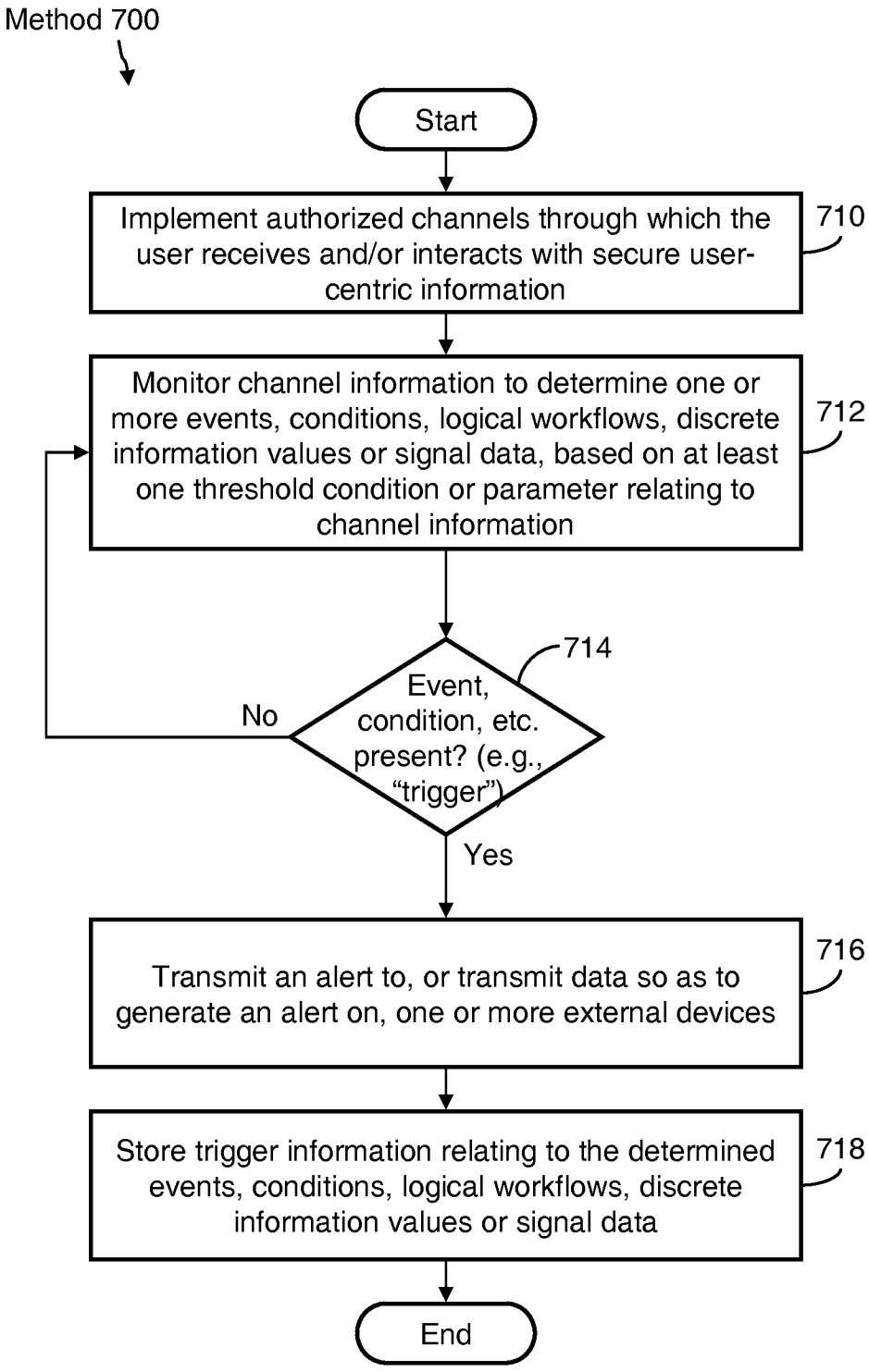

Method 700
Start
Implement authorized channels through which the user receives and/or interacts with secure user-centric information
710
Monitor channel information to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to channel information
712
714
Event, condition, etc. present? (e.g., "trigger")
No
Yes
Transmit an alert to, or transmit data so as to generate an alert on, one or more external devices
716
Store trigger information relating to the determined events, conditions, logical workflows, discrete information values or signal data
718
End

FIG. 7A

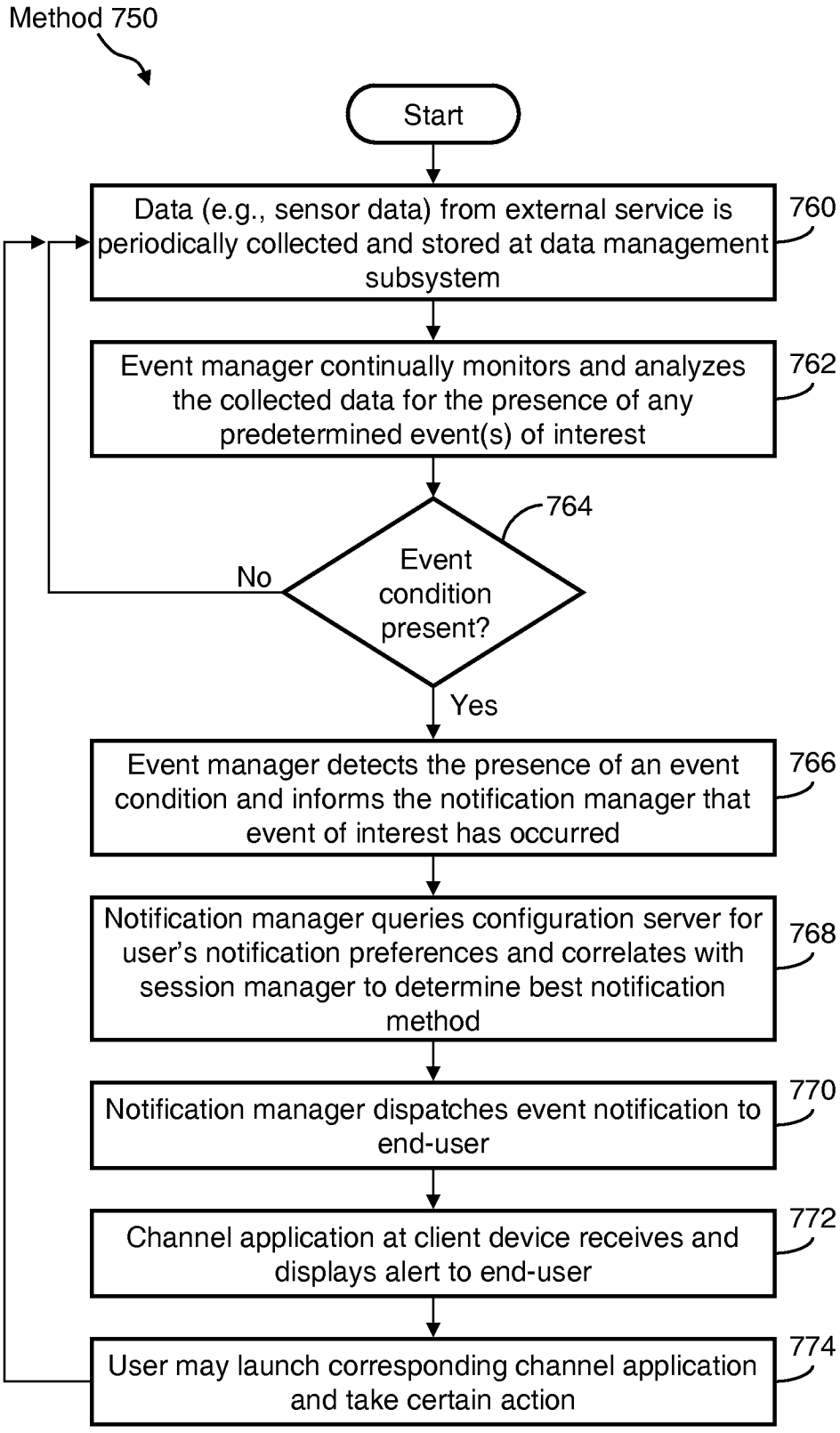

Method 750
Start
Data (e.g., sensor data) from external service is periodically collected and stored at data management subsystem
760
Event manager continually monitors and analyzes the collected data for the presence of any predetermined event(s) of interest
762
764
Event condition present?
No
Yes
Event manager detects the presence of an event condition and informs the notification manager that event of interest has occurred
766
Notification manager queries configuration server for user's notification preferences and correlates with session manager to determine best notification method
768
Notification manager dispatches event notification to end-user
770
Channel application at client device receives and displays alert to end-user
772
User may launch corresponding channel application and take certain action
774

FIG. 7B

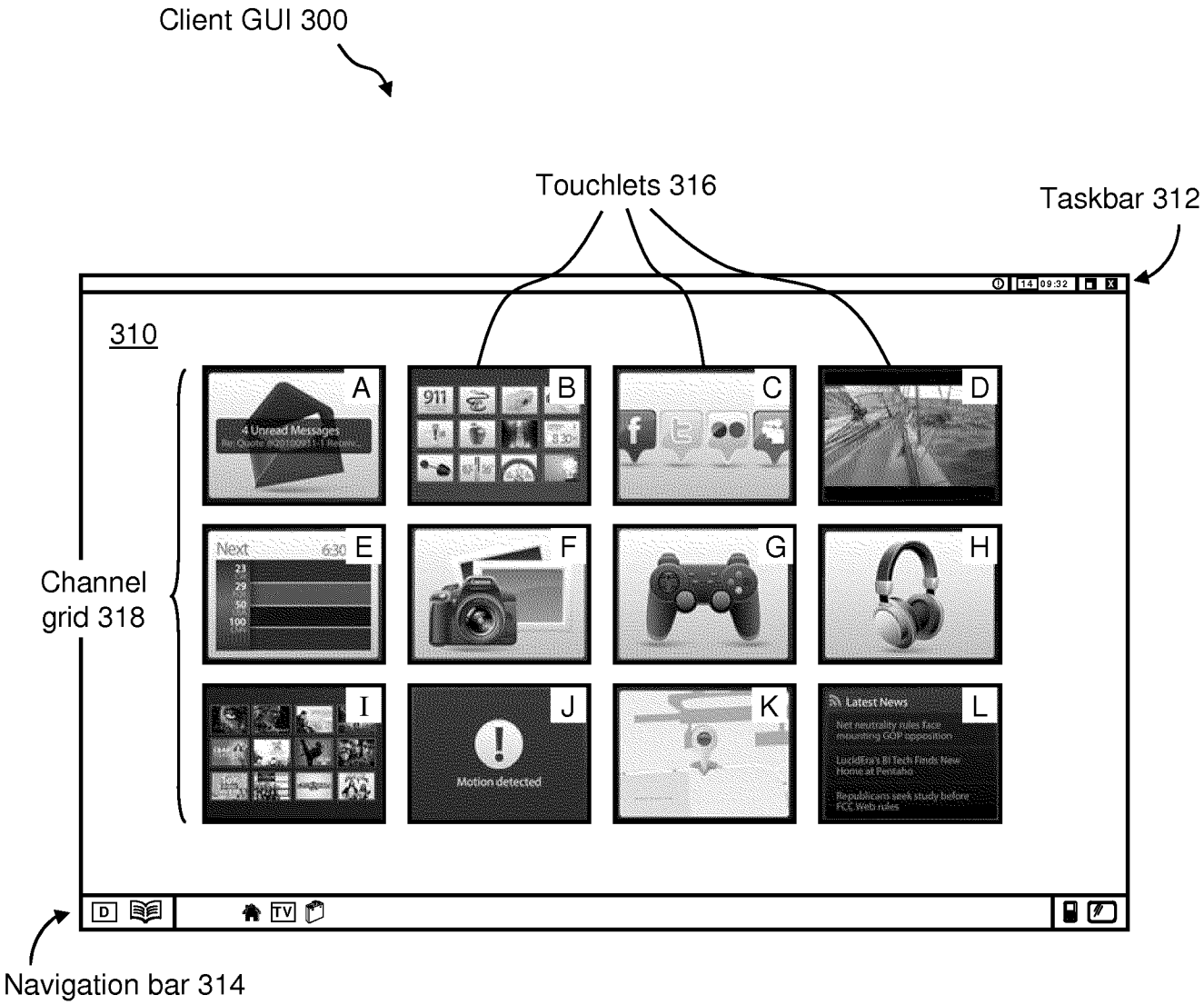

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
B
C
D
E
F
G
H
I
J
K
L
4 Unread Messages
911
Next
6:30
Motion detected
Latest News
09:32

FIG. 8

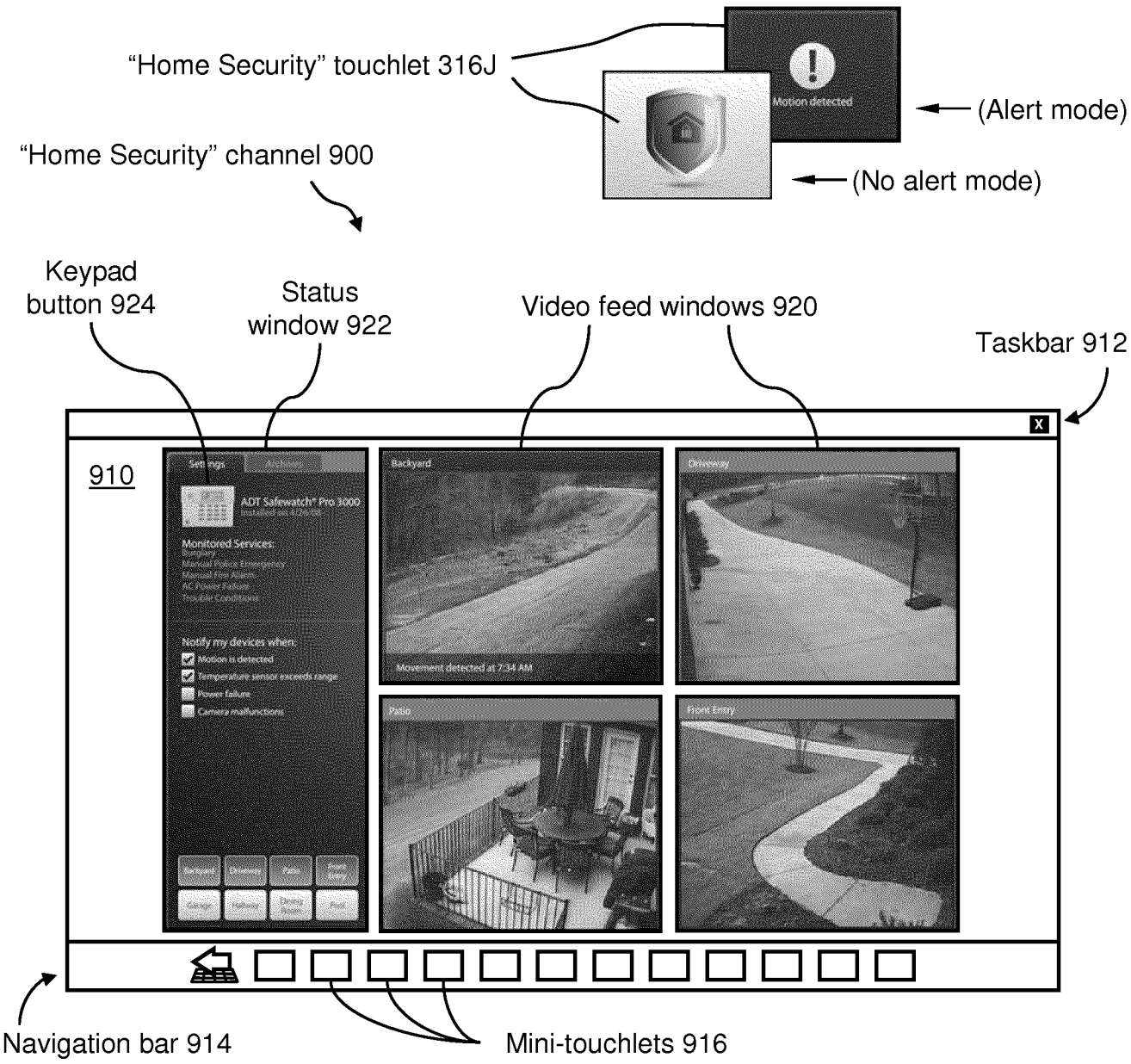

"Home Security" touchlet 316J
Motion detected
(Alert mode)
(No alert mode)
"Home Security" channel 900
Keypad button 924
Status window 922
Video feed windows 920
Taskbar 912
910
ADT Safewatch* Pro 3000
Monitored Services:
Notify my devices when:
Motion is detected
Temperature sensor exceeds range
Power failure
Camera malfunctions
Backyard
Movement detected at 7:34 AM
Driveway
Patio
Front Entry
Navigation bar 914
Mini-touchlets 916

FIG. 9

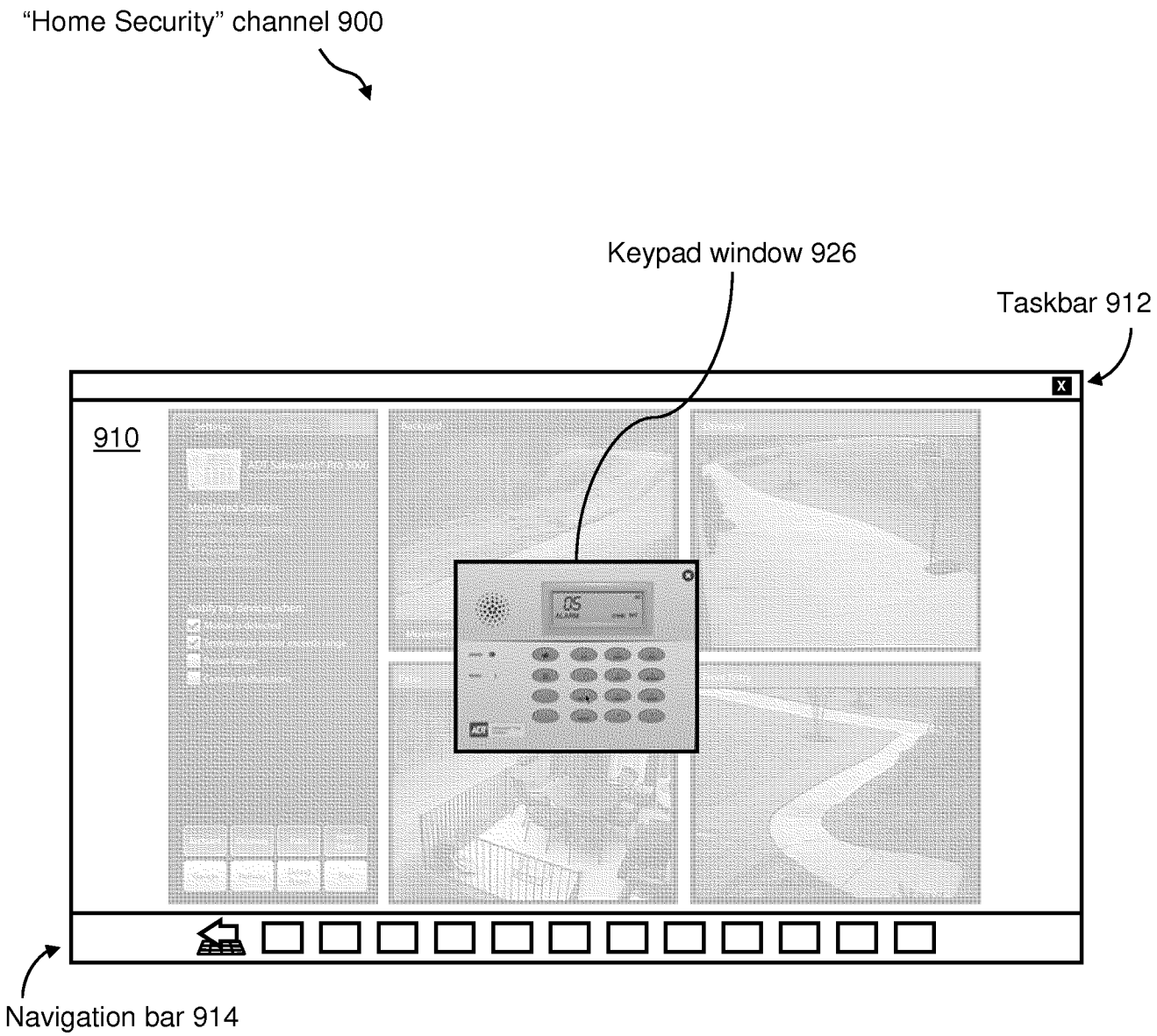

"Home Security" channel 900
Keypad window 926
Taskbar 912
910
Navigation bar 914

FIG. 10

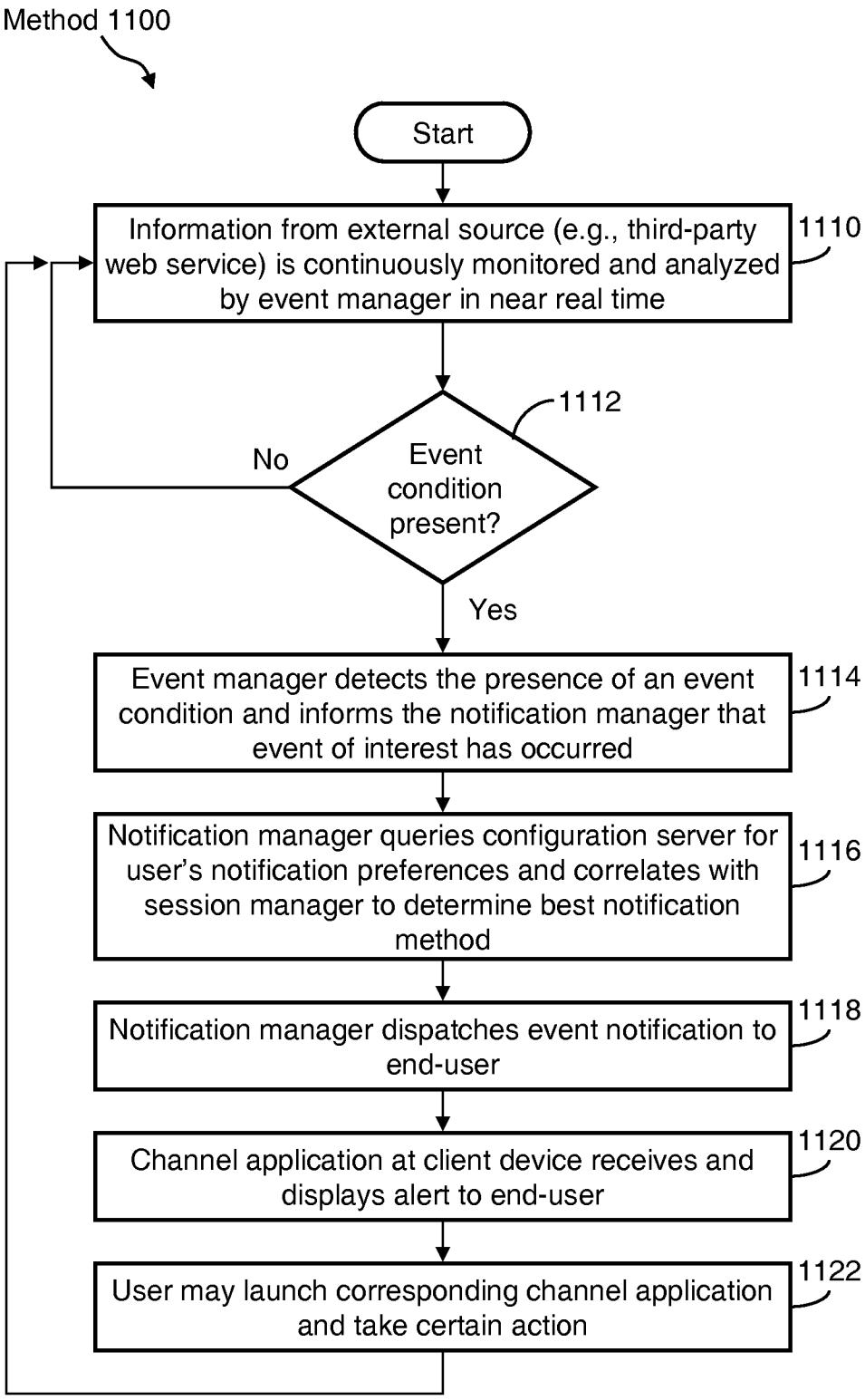

Method 1100
Start
Information from external source (e.g., third-party web service) is continuously monitored and analyzed by event manager in near real time
1110
1112
Event condition present?
No
Yes
Event manager detects the presence of an event condition and informs the notification manager that event of interest has occurred
1114
Notification manager queries configuration server for user's notification preferences and correlates with session manager to determine best notification method
1116
Notification manager dispatches event notification to end-user
1118
Channel application at client device receives and displays alert to end-user
1120
User may launch corresponding channel application and take certain action
1122

FIG. 11

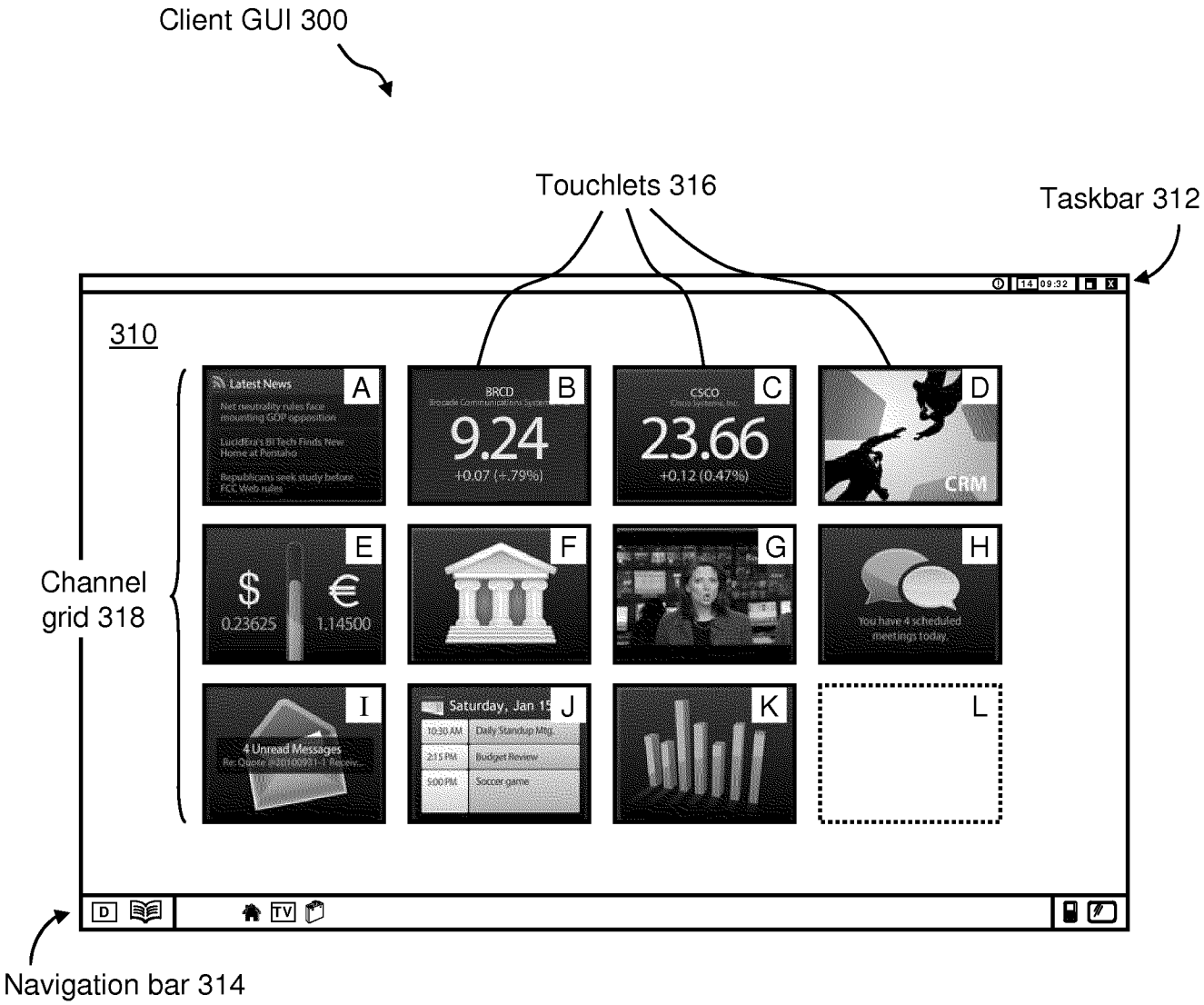

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
Latest News
B
BRCD
9.24
+0.07 (+.79%)
C
CSCO
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
H
You have 4 scheduled meetings today.
I
4 Unread Messages
J
Saturday, Jan 15
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L

FIG. 12

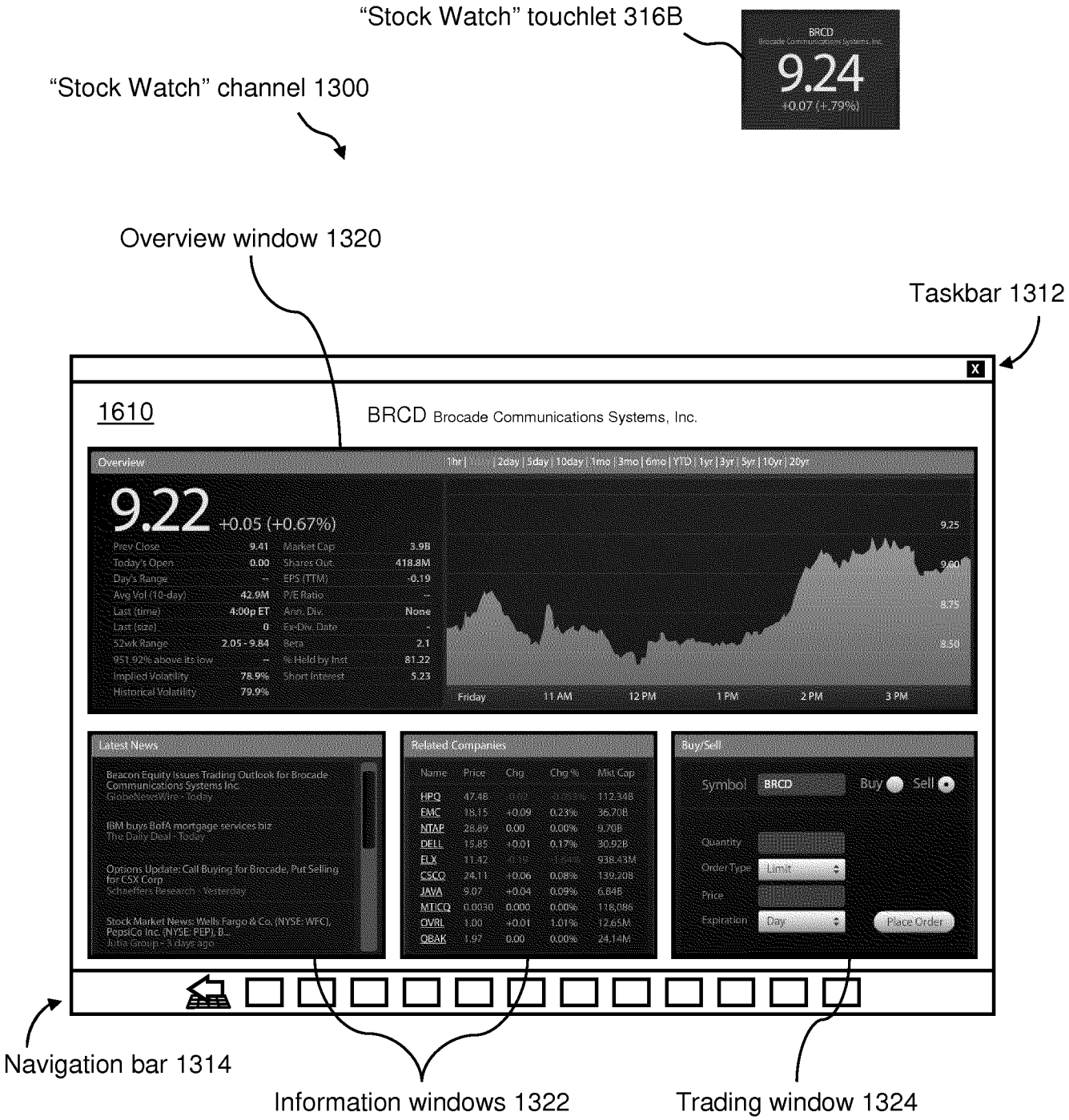

"Stock Watch" touchlet 316B
BRCD
9.24
+0.07 (+.79%)
"Stock Watch" channel 1300
Overview window 1320
Taskbar 1312
1610
BRCD Brocade Communications Systems, Inc.
Overview
9.22 +0.05 (+0.67%)
Prev Close 9.41
Today's Open 0.00
Day's Range --
Avg Vol (10-day) 42.9M
Last (time) 4:00p ET
Last (size) 0
52wk Range 2.05 - 9.84
951.92% above its low --
Implied Volatility 78.9%
Historical Volatility 79.9%
Market Cap 3.9B
Shares Out 418.8M
EPS (TTM) -0.19
P/E Ratio --
Ann. Div. None
Ex-Div. Date -
Beta 2.1
% Held by Inst 81.22
Short Interest 5.23
Friday 11 AM 12 PM 1 PM 2 PM 3 PM
Latest News
Related Companies
Name Price Chg Chg % Mkt Cap
HPQ 47.48 112.34B
EMC 18.15 +0.09 0.23% 36.70B
NTAP 28.89 0.00 0.00% 9.70B
DELL 15.85 +0.01 0.17% 30.92B
ELX 11.42 938.43M
CSCO 24.11 +0.06 0.08% 139.20B
JAVA 9.07 +0.04 0.09% 6.84B
MTICQ 0.0030 0.000 0.00% 118,086
OVRL 1.00 +0.01 1.01% 12.65M
QBAK 1.97 0.00 0.00% 24.14M
Buy/Sell
Symbol BRCD Buy Sell
Quantity
Order Type Limit
Price
Expiration Day
Place Order
Navigation bar 1314
Information windows 1322
Trading window 1324

FIG. 13

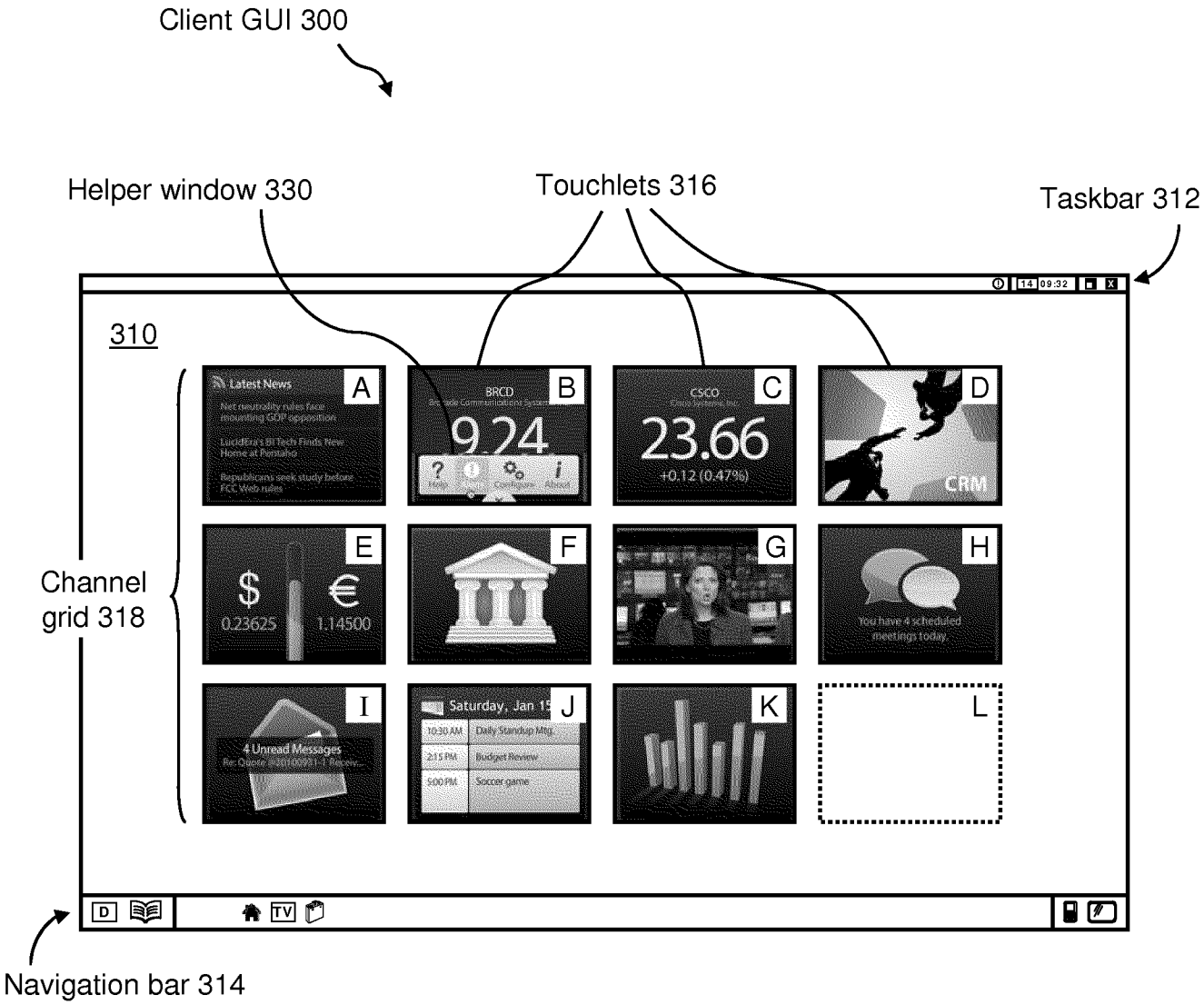

Client GUI 300
Helper window 330
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
Latest News
A
BRCD
B
9.24
C
CSCO
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
H
You have 4 scheduled meetings today.
I
4 Unread Messages
J
Saturday, Jan 15
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L

FIG. 14

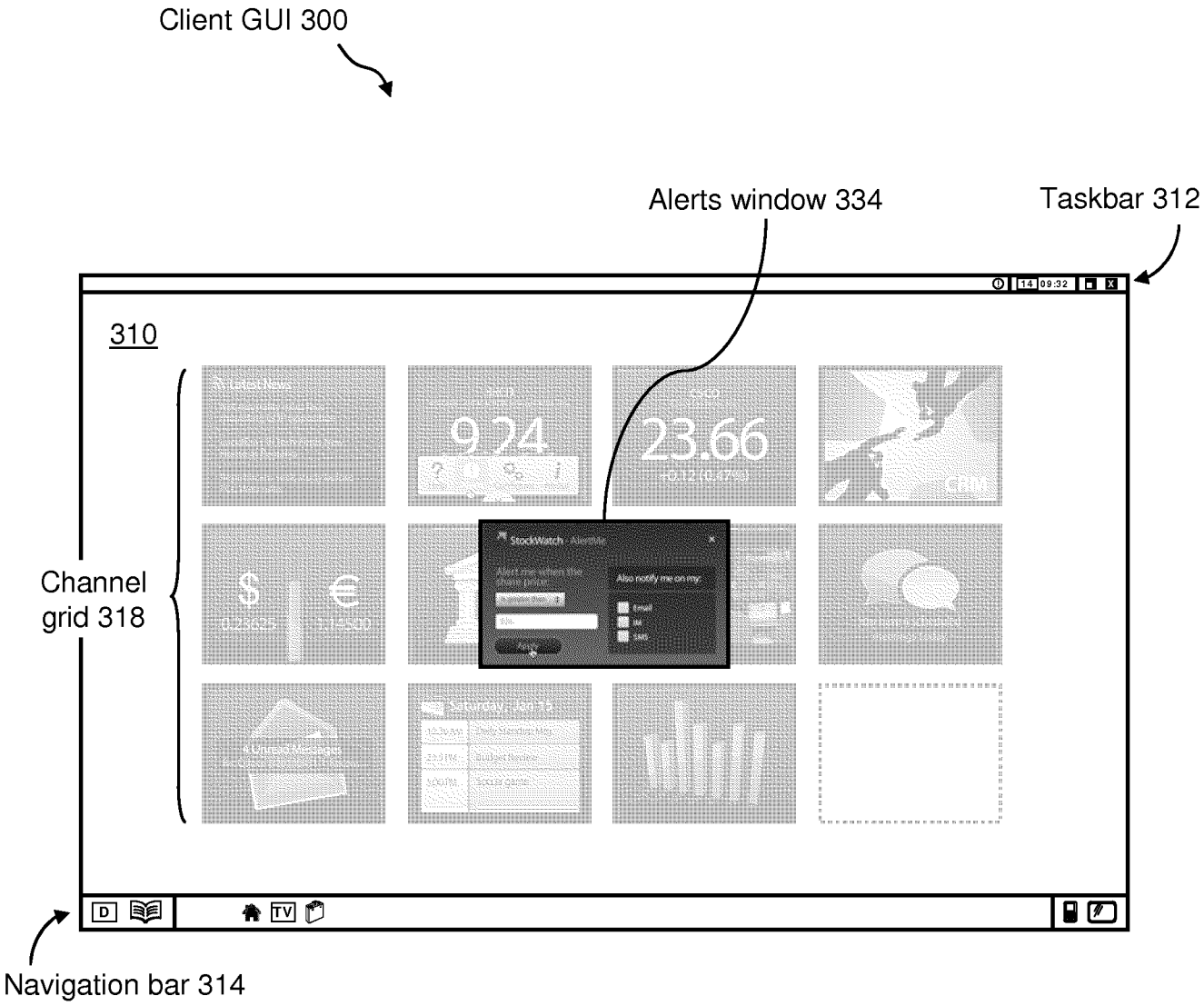

Client GUI 300
Alerts window 334
Taskbar 312
310
Channel grid 318
Navigation bar 314

FIG. 15

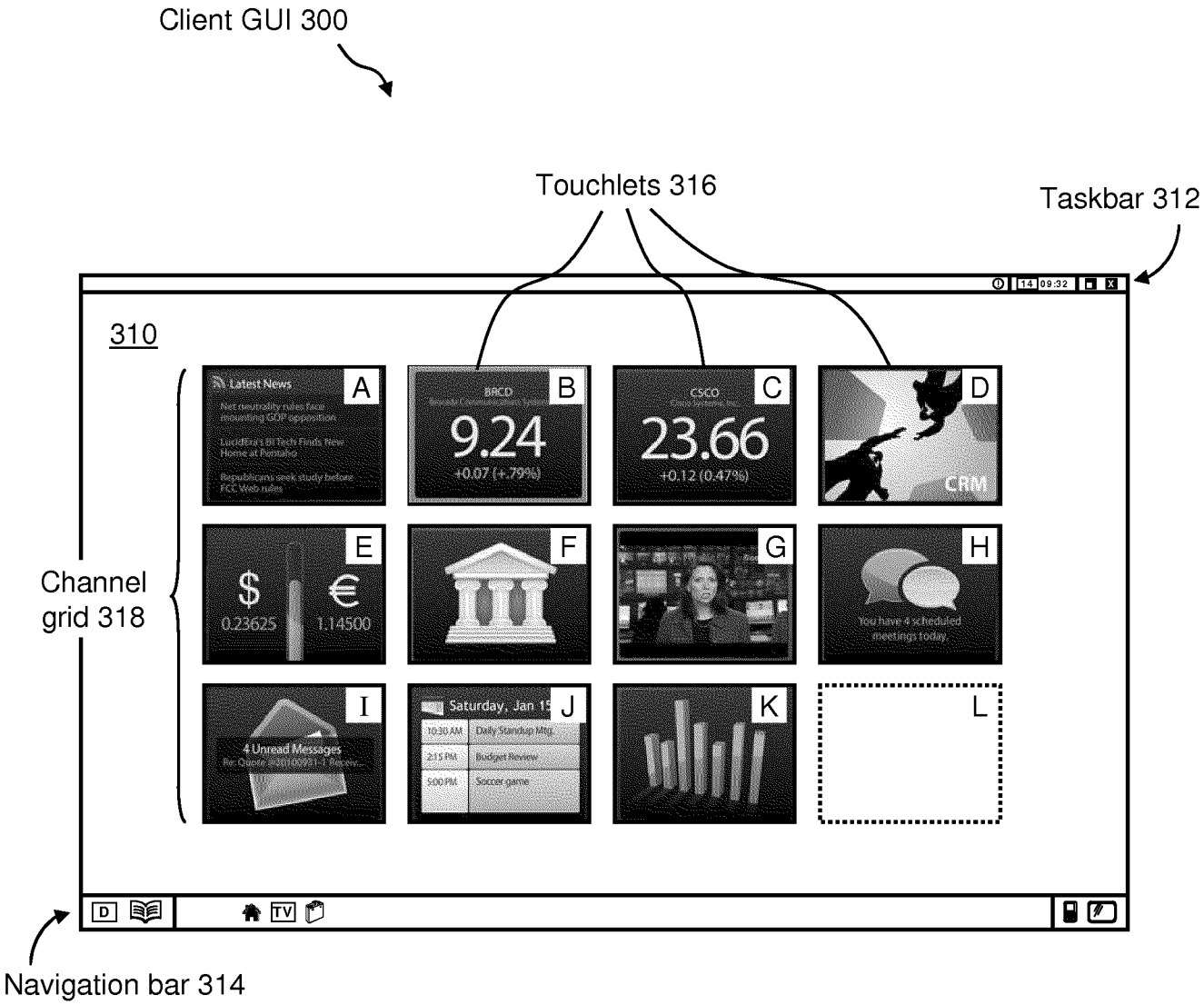

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
Latest News
A
BRCD
9.24
+0.07 (+.79%)
B
CSCO
23.66
+0.12 (0.47%)
C
CRM
D
$
0.23625
€
1.14500
E
F
G
You have 4 scheduled meetings today.
H
4 Unread Messages
I
Saturday, Jan 15
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
J
K
L

FIG. 16

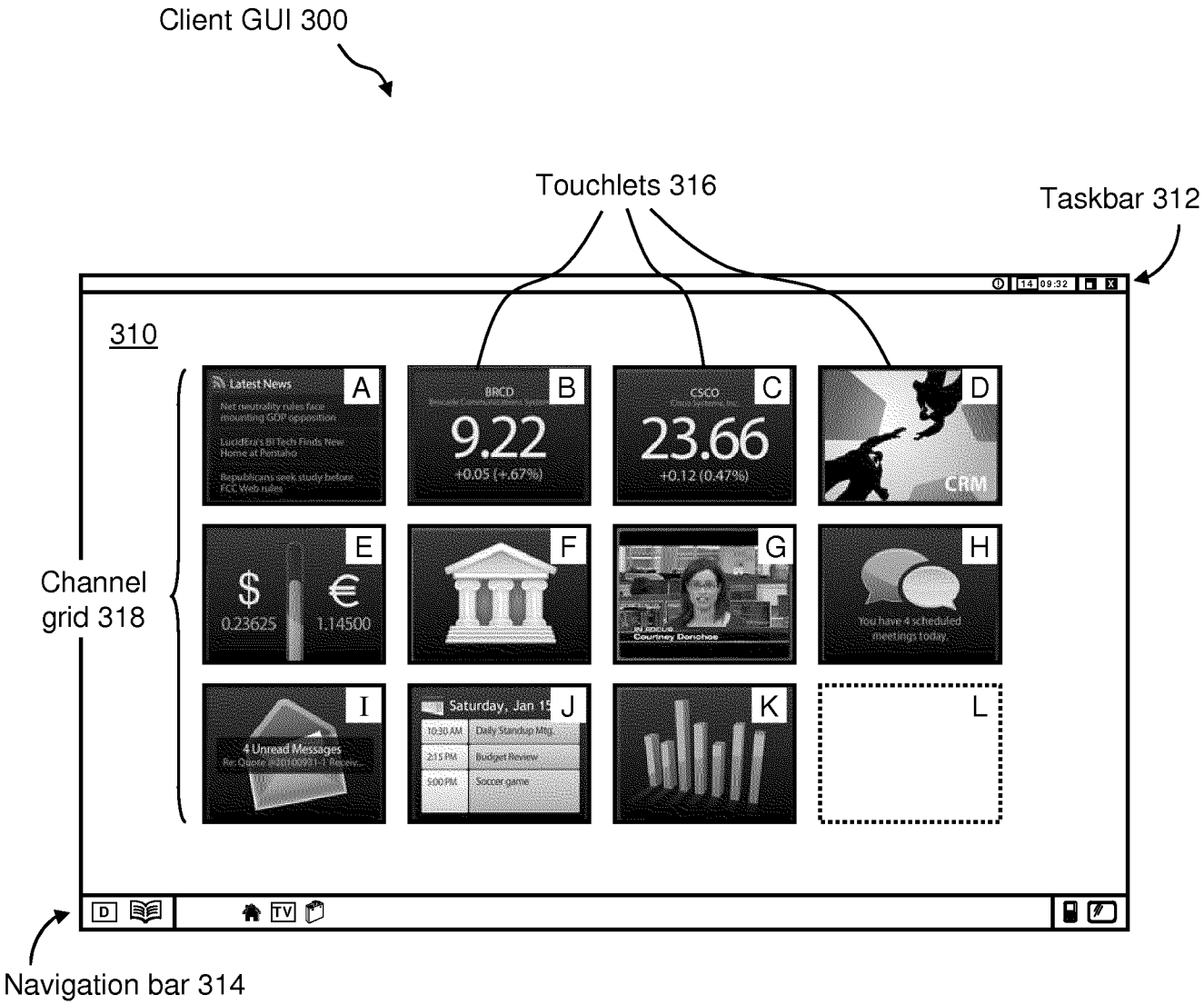

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
Latest News
B
BRCD
9.22
+0.05 (+.67%)
C
CSCO
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
Courtney Donohoe
H
You have 4 scheduled meetings today.
I
4 Unread Messages
J
Saturday, Jan 15
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L

FIG. 17

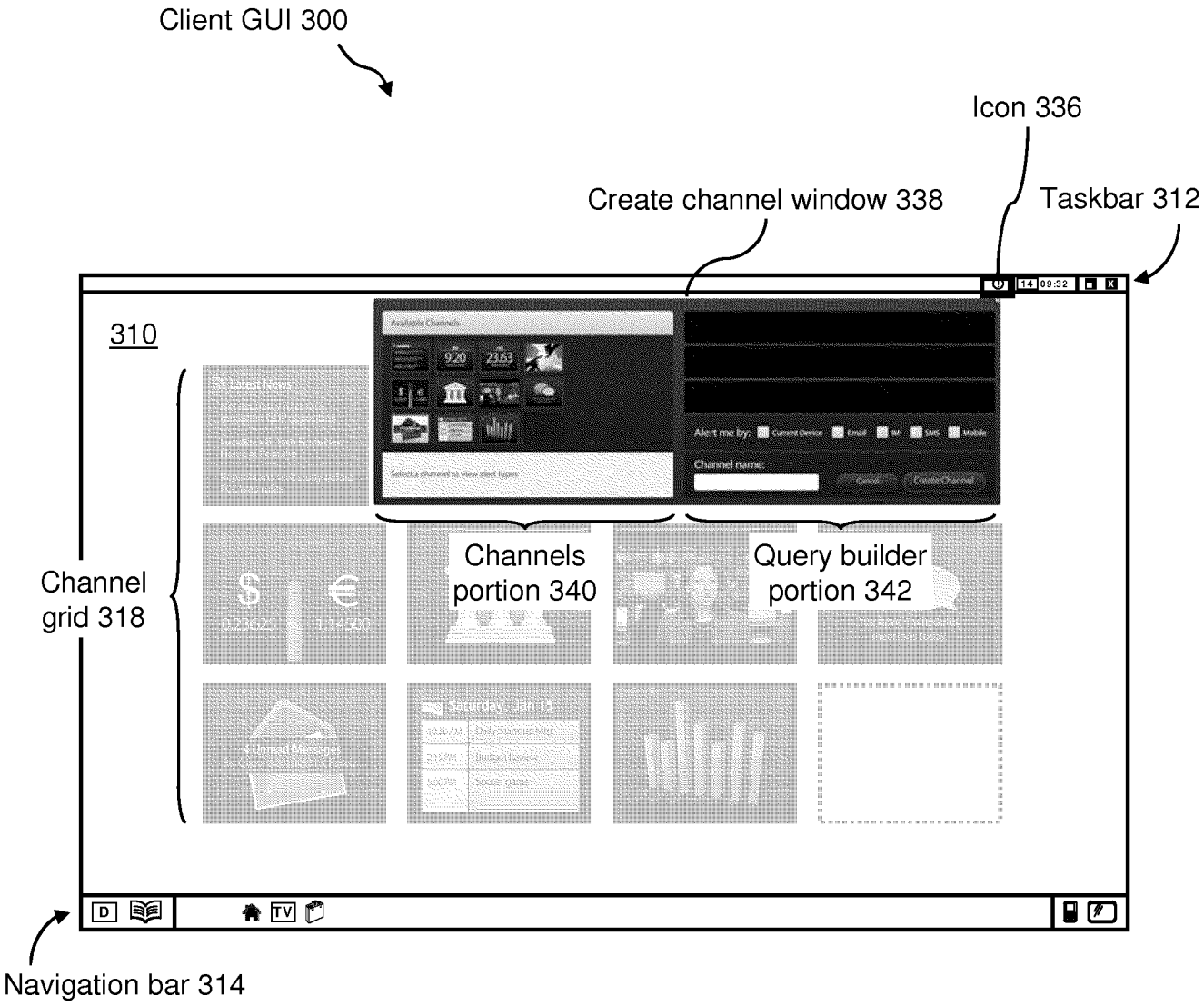

Client GUI 300
Icon 336
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 18

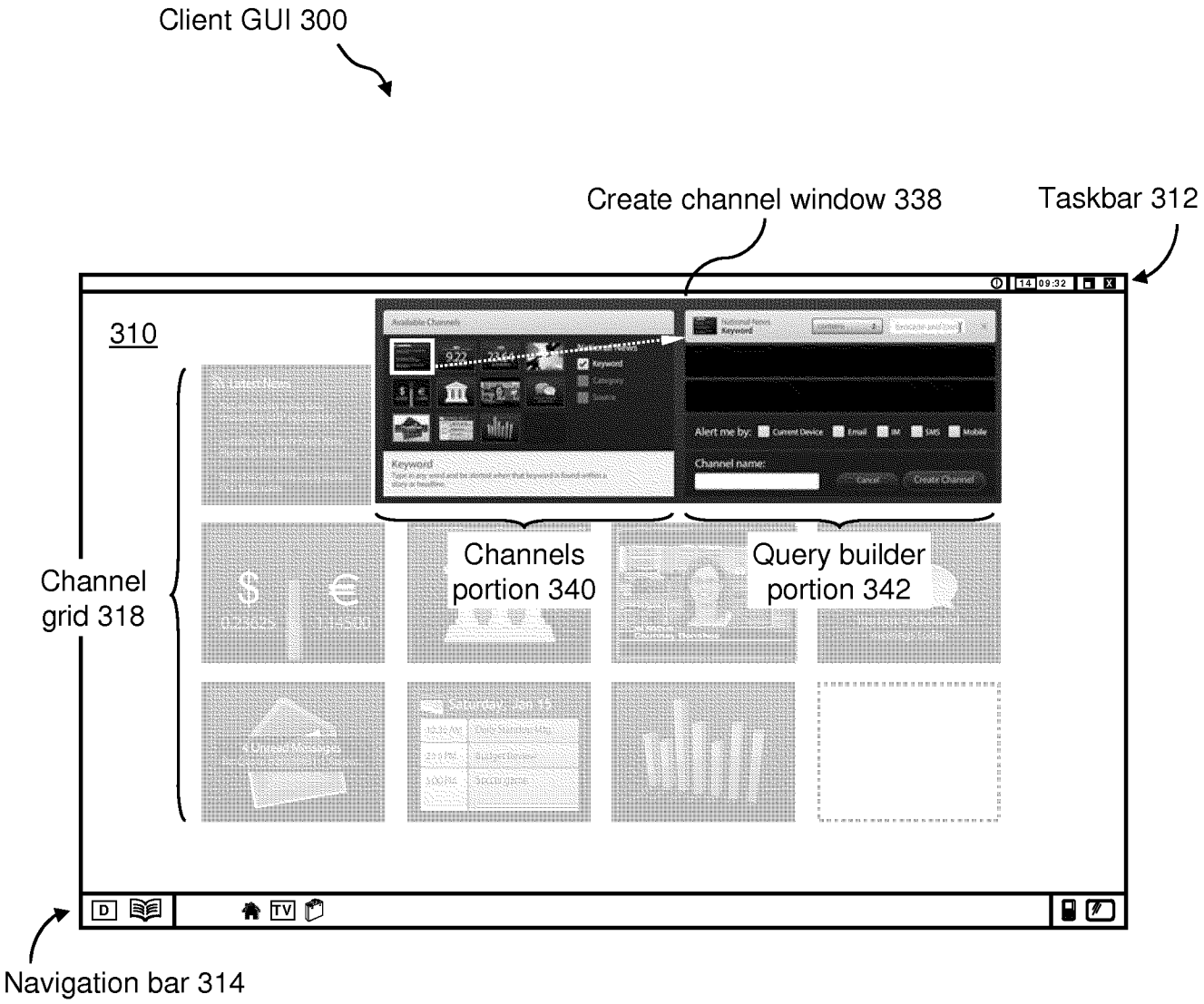

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 19

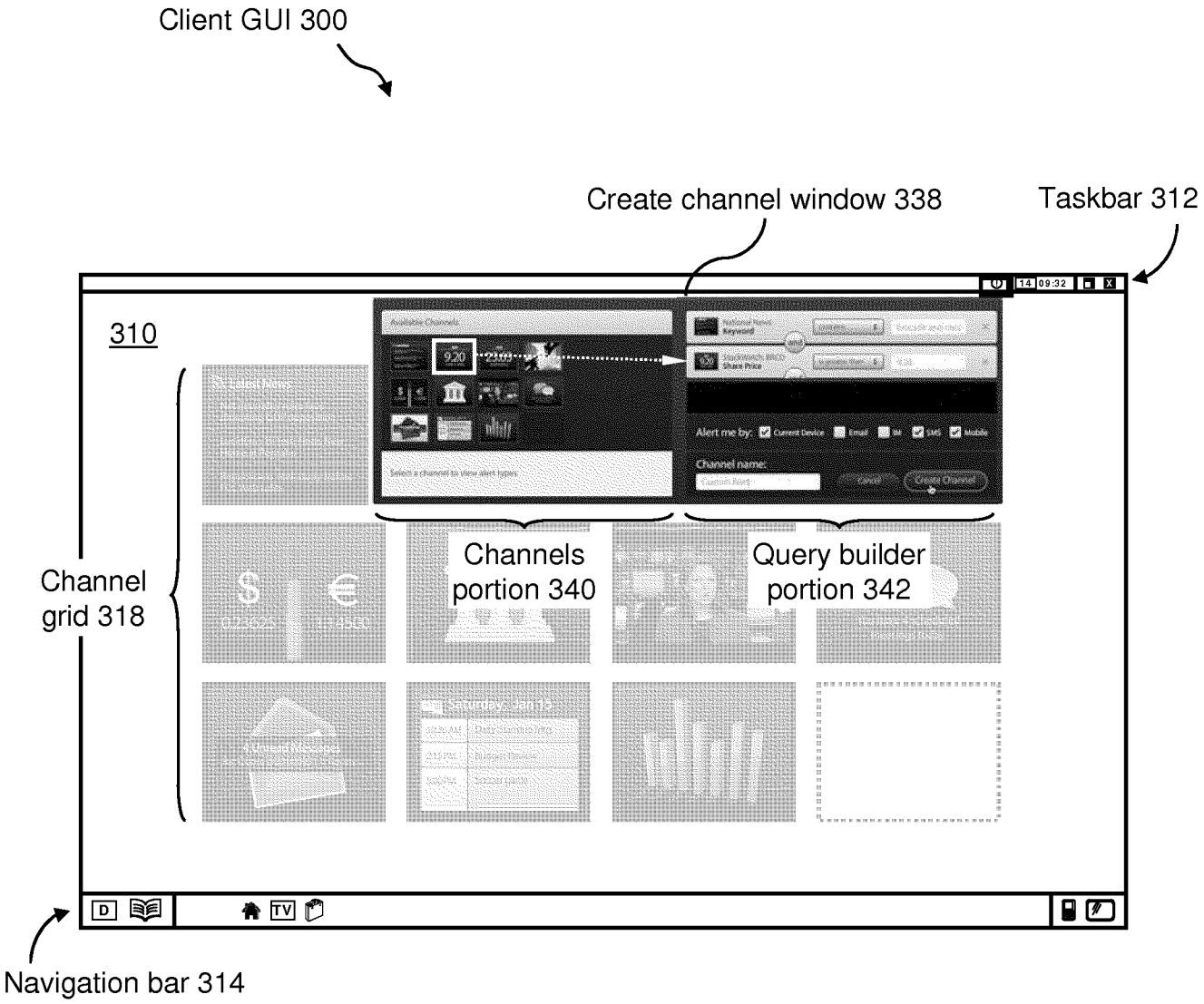

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 20

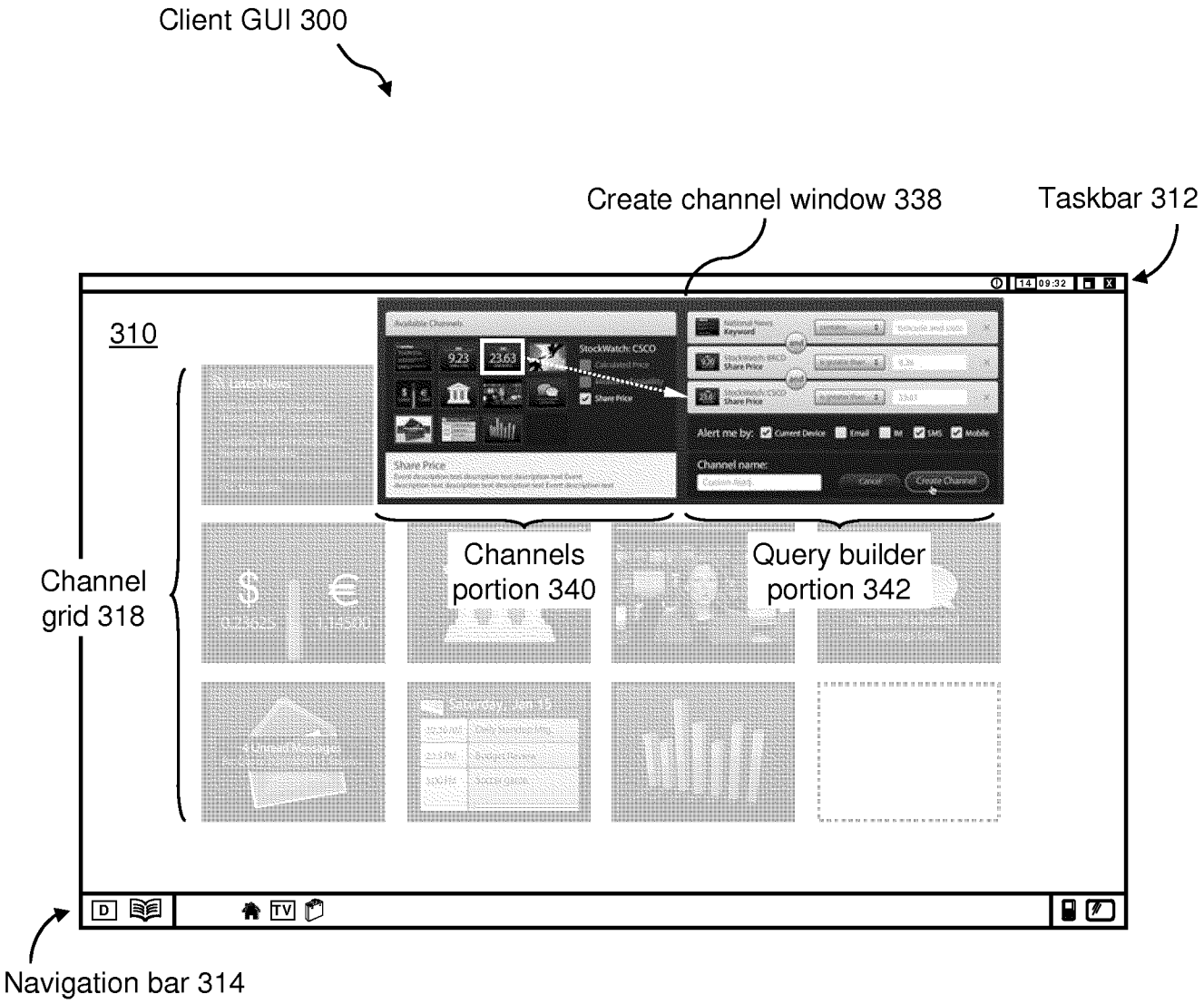

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 21

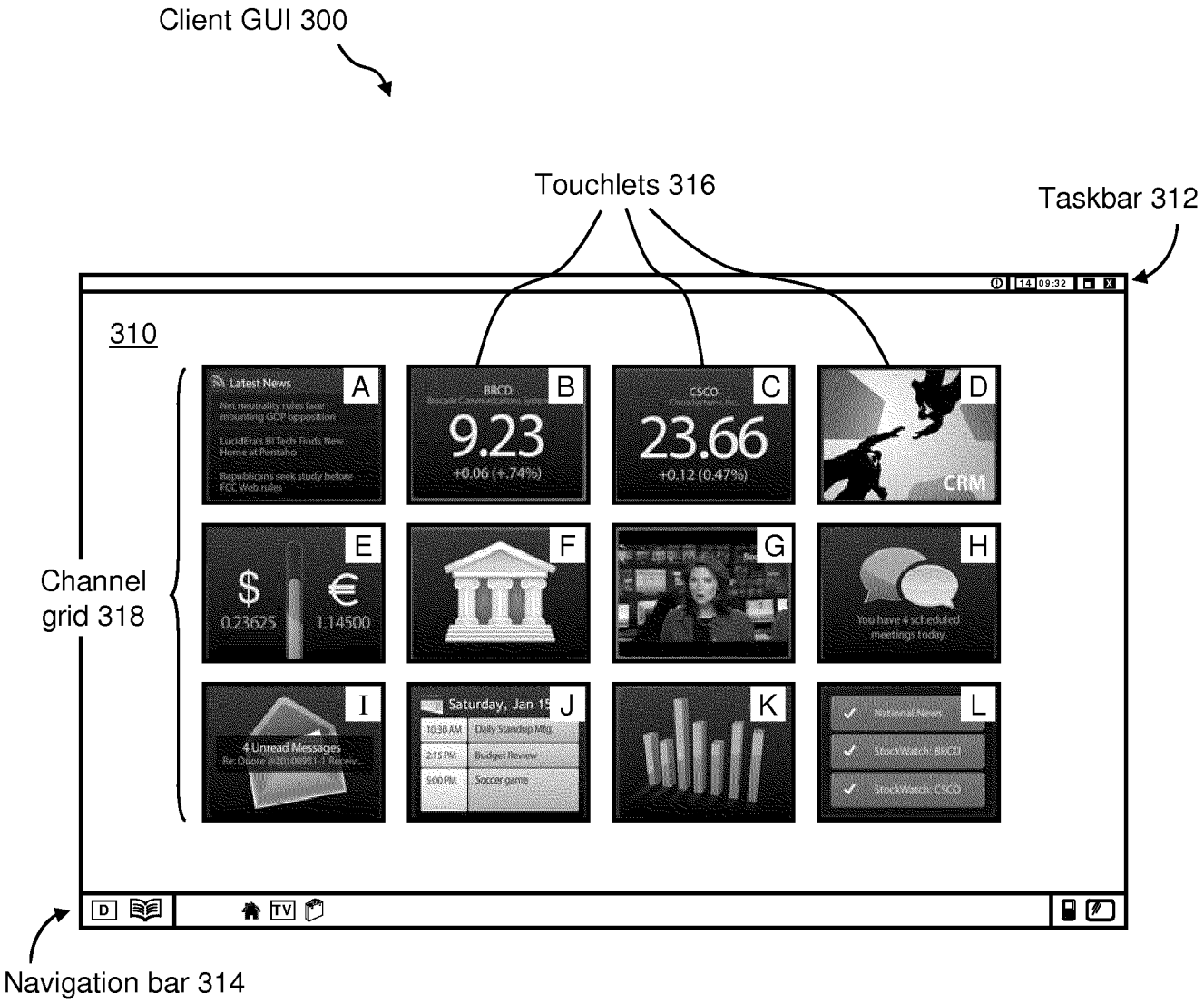

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
Latest News
A
BRCD
B
9.23
+0.06 (+.74%)
CSCO
C
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
H
You have 4 scheduled meetings today.
I
4 Unread Messages
Saturday, Jan 15
J
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L
National News
StockWatch: BRCD
StockWatch: CSCO

FIG. 22

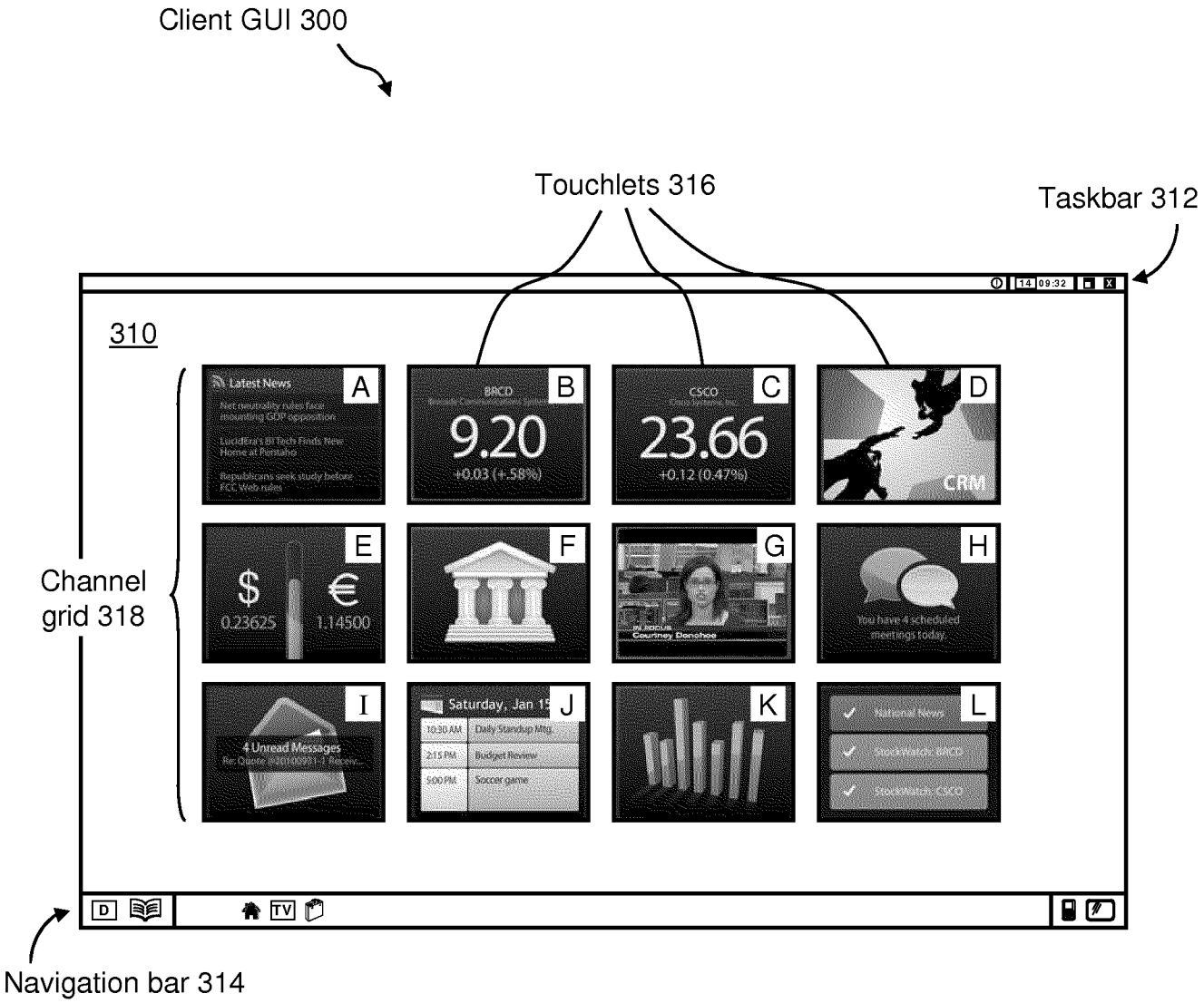

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
Latest News
A
BRCD
B
9.20
+0.03 (+.58%)
CSCO
C
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
H
You have 4 scheduled meetings today.
I
4 Unread Messages
Saturday, Jan 15
J
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L
National News
StockWatch: BRCD
StockWatch: CSCO

FIG. 23

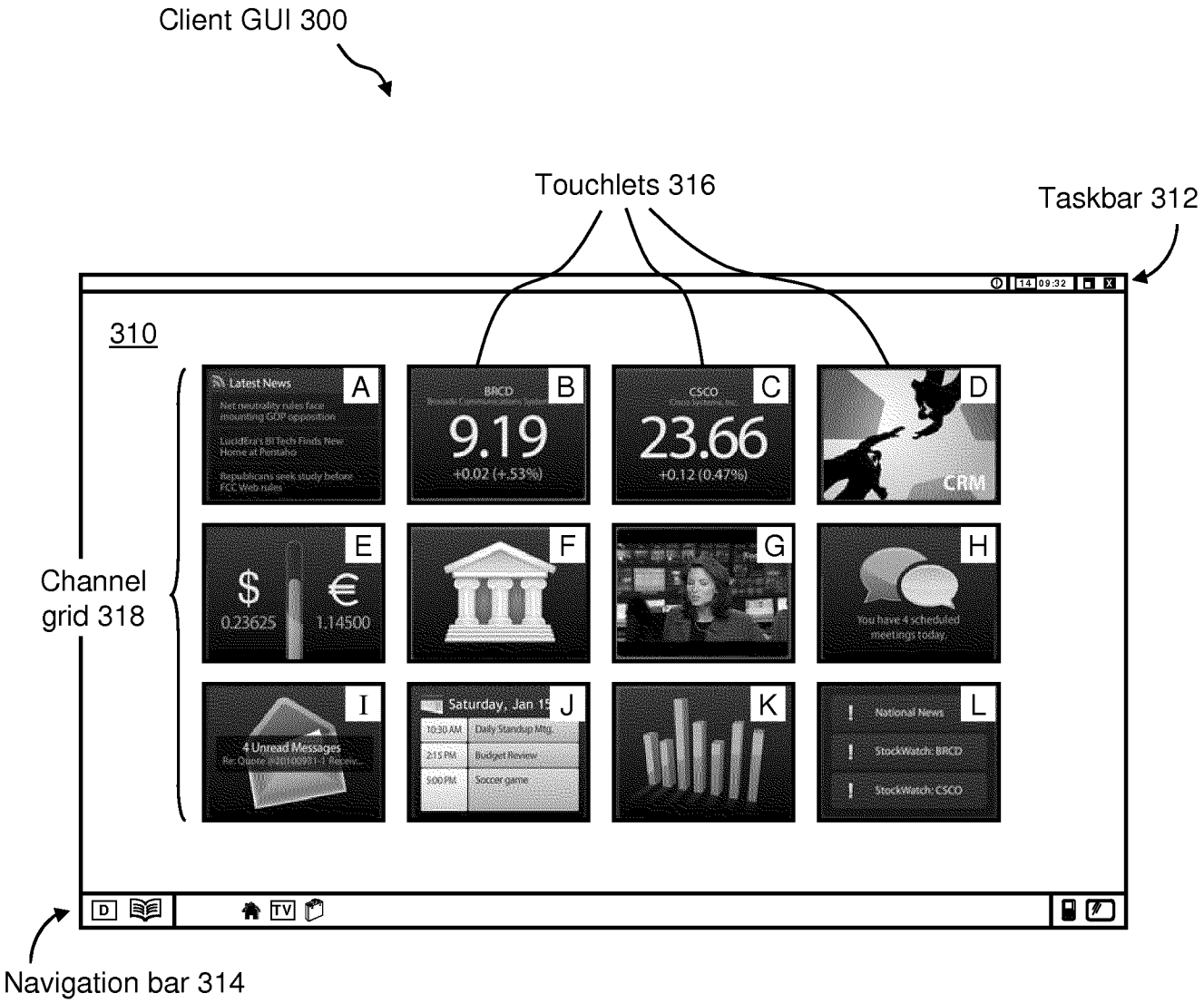

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
Latest News
A
BRCD
B
9.19
+0.02 (+.53%)
CSCO
C
23.66
+0.12 (0.47%)
D
CRM
E
$
0.23625
€
1.14500
F
G
H
You have 4 scheduled meetings today
I
4 Unread Messages
Saturday, Jan 15
J
10:30 AM
Daily Standup Mtg
2:15 PM
Budget Review
5:00 PM
Soccer game
K
L
National News
StockWatch: BRCD
StockWatch: CSCO

FIG. 24

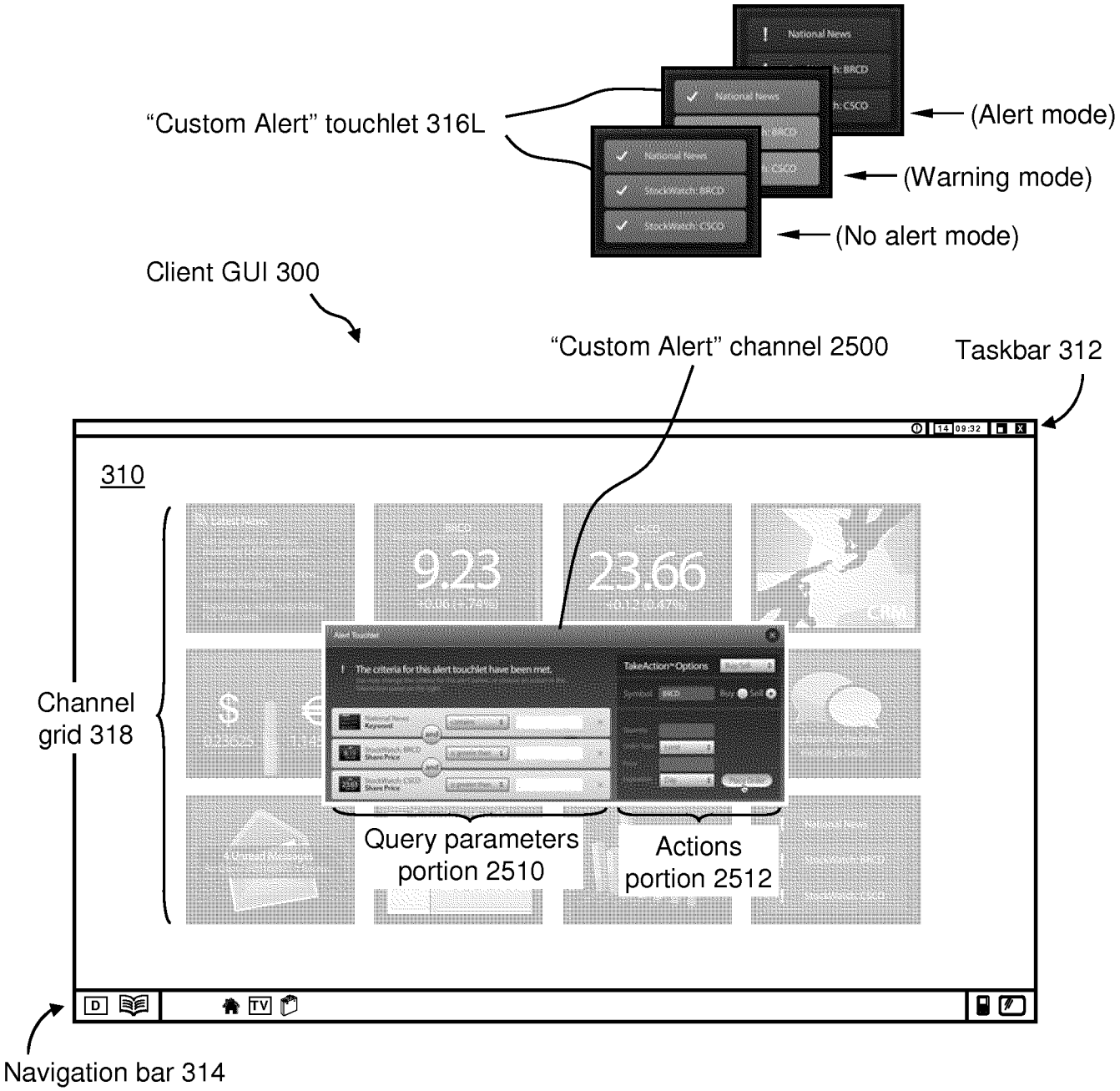

"Custom Alert" touchlet 316L
(Alert mode)
(Warning mode)
(No alert mode)
Client GUI 300
"Custom Alert" channel 2500
Taskbar 312
310
Channel grid 318
Query parameters portion 2510
Actions portion 2512
Navigation bar 314

FIG. 25

METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application also claims a priority benefit, under 35 U.S.C. §119(e), to U.S. provisional application serial no. 61/435,976, filed January 25, 2011, entitled "Information Delivery System for, and Methods of, Interaction with Multiple Information Forms Across Multiple Types and/or Brands of Electronic Devices, such as Televisions, Mobile Phones, and Computing Devices."

[0002] This application also claims a priority benefit, under 35 U.S.C. §119(e), to U.S. provisional application serial no. 61/474,942, filed April 13, 2011, entitled "Information Delivery System for, and Methods of, Eventing and Alerting Using Multiple Information Forms and Sources Across Multiple Types and/or Brands of Electronic Devices."

[0003] This application claims a priority benefit, under 35 U.S.C. §120, as a continuation-in part (CIP) of U.S. non-provisional application serial no. 12/465,331, filed May 13, 2009, entitled "Apparatus and Methods for Interacting with Multiple Information Forms Across Multiple Types of Computing Devices."

[0004] Serial No. 12/465,331 in turn claims a priority benefit, under 35 U.S.C. §119(e), to U.S. provisional application serial no. 61/052,765, filed May 13, 2008, entitled "System and Method for Conducting Business in a Virtual World or Metaverse."

[0005] Each of the above-identified applications is hereby incorporated herein by reference in its entirety.

BACKGROUND

[0006] Consumer and business users want to access digital information such as broadcast TV; internet text, graphics, and video; and social networking media across different devices. These devices include laptop computers, smart phones, TVs, and tablets and each device has its own interface, content metaphor, format, and access method. Users' experience with digital

content over different devices is poor for two reasons: 1) the quality of the information delivery is varied and, 2) users are required to learn how to use each device in order to receive their desired information. This learning process is time consuming and does not guarantee the users' success.

[0007] In addition, although certain technologies, such as Internet browsers and multimedia players, provide some centralized manner of accessing digital information, such technologies are largely static. As a result, these technologies cannot be customized for individual user preferences.

[0008] For example, in the broadcast TV environment, users select and receive information using traditional channel guides. With this technology, user interaction and information customization is extremely limited. The ability to combine broadcast TV content with other forms of information, such as social media, is restricted.

[0009] In other information areas such as healthcare, finance, and home security, users want to do more than just access information: users want to combine and interrogate information to produce more meaningful interactions with information and other users.

SUMMARY

[0010] Various embodiment of the present invention relate generally to monitoring secure sources of information to determine particular aspects, trends, and/or values associated with the information, and providing one or more alerts in connection with same.

[0011] In exemplary embodiments discussed in greater detail below, display of and access to secure user-centric information is provided via the construct of a channel grid framework serving as a desktop on one or more user devices. Multiple authorized channels represented in the channel grid framework, and through which the user receives and/or interacts with respective portions of the secure user-centric information, are implemented based on information access rights and/or security protocols respectively associated with the channels.

[0012] In one aspect, channel information is monitored to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on one or more threshold conditions or parameters relating to the channel information. For example, monitored channel information may be compared to one or more threshold conditions or parameters, and

various criteria for such comparisons may be predetermined/established (e.g., less than, greater than, equal to, within a certain range, corresponding to a certain pattern or trend, particular time-varying behavior, etc.). In another aspect, if an established condition is met (e.g., the comparison meets one or more criteria, such as exceeding a quantified numerical limit, and/or multiple similar events trending in a certain direction), a "trigger" is established upon which one or more alerts may be generated. For purposes of the present disclosure, any information associated with establishing a trigger upon which one or more alerts may be generated is referred to as "trigger information." Examples of trigger information may include, but are not limited to, one or more values or other information content associated with monitored channel information that resulted in a trigger (e.g., one or more events, conditions, logical workflows, discrete information values or signal data), one or more date stamps and/or time stamps associated with values/information content that resulted in a trigger, identities of one or more content sources providing at least some of the channel information being monitored and resulting in a trigger, and the criterion/criteria used to establish the trigger.

[0013] In other aspects, actionable and/or non-actionable alerts may be generated (e.g., in response to one or more triggers) on one or more authenticated user devices and/or other devices. Information relating to determination of one or more events, conditions, logical workflows, discrete information values or signal data (e.g., trigger information) may be transmitted to various devices and/or stored for archival purposes.

[0014] In sum, one embodiment of the present invention is directed to an apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information. The apparatus comprises: at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media; at least one memory to store processor-executable instructions; and at least one processor communicatively coupled to the at least one communication interface and the at least one memory. Upon execution of the processor-executable instructions by the at least one processor, the at least one processor provides and evaluates at least some of the secure user-centric information by: A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with

the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information; B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B): C) controlling the at least one communication interface to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one external device; and/or D) controlling the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

[0015] Another embodiment is directed to a computer-implemented method for evaluating secure user-centric information to be provided on at least one user platform operated by a user. The method comprises: A) electronically implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information; B) electronically monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B): C) electronically transmitting at least one alert to, or transmitting data so as to generate at least one alert on, at least one external device; and/or D) electronically storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

[0016] Another embodiment is directed to at least one non-transitory computer readable storage medium encoded with processor-executable instructions that, when executed by at least one processor, perform a method for evaluating secure user-centric information to be provided on at least one user platform operated by a user. The method comprises: A) implementing, at

least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information; B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B): C) transmitting at least one alert to, or transmitting data so as to generate at least one alert on, at least one external device; and/or D) storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

[0017] It should be appreciated that all combinations of the foregoing concepts and additional concepts discussed in greater detail below (provided such concepts are not mutually inconsistent) are contemplated as being part of the inventive subject matter disclosed herein. In particular, all combinations of claimed subject matter appearing at the end of this disclosure are contemplated as being part of the inventive subject matter disclosed herein. It should also be appreciated that terminology explicitly employed herein that also may appear in any disclosure incorporated by reference should be accorded a meaning most consistent with the particular concepts disclosed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The skilled artisan will understand that the figures, described herein, are for illustration purposes only, and that the drawings are not intended to limit the scope of the disclosed teachings in any way. In some instances, various aspects or features may be shown exaggerated or enlarged to facilitate an understanding of the inventive concepts disclosed herein (the drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the teachings). In the drawings, like reference characters generally refer to like features, functionally similar and/or structurally similar elements throughout the various figures.

[0019] Figure 1 illustrates a high level block diagram of an example of an information delivery system that includes a personal information delivery application for eventing and alerting using multiple information forms and sources across multiple types and/or brands of electronic devices, according to one embodiment of the present invention.

[0020] Figure 2 illustrates a functional block diagram of an example of a channel of a personal information delivery application for providing users access to and interaction with information and for performing eventing and alerting operations, according to one embodiment of the present invention.

[0021] Figure 3 illustrates a screenshot of an example of a client GUI that shows an example of a channel grid, which is one example of a presentation framework of the personal information delivery application, according to one embodiment of the present invention.

[0022] Figure 4 illustrates a functional block diagram of an example of a personal information delivery application architecture that is suitable for performing eventing and alerting operations, according to one embodiment of the present invention.

[0023] Figure 5 illustrates a functional block diagram of an example of a client architecture of the personal information delivery application, according to one embodiment of the present invention.

[0024] Figure 6 illustrates a functional block diagram of a portion of the personal information delivery application architecture along with a portion of the client architecture, according to one embodiment of the present invention.

[0025] Figure 7A illustrates a flow diagram of an example of a method of evaluating at least some of the secure user-centric information using the personal information delivery application, according to one embodiment of the present invention.

[0026] Figure 7B illustrates a flow diagram of an example of a method of performing eventing and alerting using the personal information delivery application, according to one embodiment of the present invention.

[0027] Figure 8 illustrates a screenshot of the client GUI of the personal information delivery application that includes a "Home Security" touchlet, which is displaying an alert condition, according to one embodiment of the present invention.

[0028] Figures 9 and 10 illustrate screenshots of certain components of an example of a "Home Security" channel by which a user may take action based on an alert that is received, according to one embodiment of the present invention.

[0029] Figure 11 illustrates a flow diagram of another example of a method of performing eventing and alerting using the personal information delivery application, according to one embodiment of the present invention.

[0030] Figure 12 illustrates a screenshot of an example of the client GUI that includes another example of a channel grid, according to one embodiment of the present invention.

[0031] Figure 13 illustrates screenshots of certain components of an example of a "Stock Watch" channel of the personal information delivery application, according to one embodiment of the present invention.

[0032] Figures 14 through 17 illustrate screenshots of a client GUI of the personal information delivery application another example of a process of eventing and alerting using the personal information delivery application, according to various embodiments of the present invention.

[0033] Figures 18 through 25 illustrate screenshots of certain channels of the personal information delivery application and an example of a process of combining two or more independent channels to create a new channel (and touchlet) and a process of eventing off of the combined data, according to various embodiments of the present invention.

DETAILED DESCRIPTION

[0034] Following below are more detailed descriptions of various concepts related to, and embodiments of, inventive methods, apparatus and systems for providing and monitoring secure information via multiple authorized channels and generating alerts relating to same. It should be appreciated that various concepts introduced above and discussed in greater detail below may be implemented in any of numerous ways, as the disclosed concepts are not limited to any particular manner of implementation. Examples of specific implementations and applications are provided primarily for illustrative purposes.

[0035] Various embodiments of the present invention describe an information delivery system for, and methods of, eventing and alerting using multiple information forms and sources

across multiple types and/or brands of electronic devices, such as televisions, mobile devices, and computing devices.

[0036] The information delivery system for and methods of the invention provide the display of and access to secure user-centric information via the construct of a channel grid framework serving as a desktop on a user device. The channel grid framework includes multiple user-selectable items that provide access to corresponding "channels" by which respective portions of user-centric information are delivered to a user. The user and the user device are first authenticated to receive the secure user-centric information, and the user-selectable items included in the channel grid framework on the desktop for the user device are based on information access rights and security protocols defined for the corresponding channels, the user, and the user device.

[0037] An aspect of the information delivery system and methods of the invention is the server-side capability to monitor/interrogate channel information of one or more channels to detect events and generate alerts. In one embodiment, a secure user-centric information provider implements multiple "channels" through which a user receives and/or interacts with respective portions of user-centric information, via one or more user platforms, based on information access rights/security protocols associated with the channels. Channel information in one or more channels is monitored at the server and/or client to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter. For example, monitored channel information may be compared to one or more threshold conditions or parameters, and various criteria for such comparisons may be predetermined/established (e.g., less than, greater than, equal to, within a certain range, corresponding to a certain pattern or trend, particular time-varying behavior, etc.).

[0038] In one aspect of this embodiment, if an established condition is met (e.g., the comparison meets one or more criteria, such as exceeding a quantified numerical limit, and/or multiple similar events trending in a certain direction), a "trigger" is established upon which one or more alerts may be generated. For purposes of the present disclosure, any information associated with establishing a trigger upon which one or more alerts may be generated is referred to as "trigger information." Examples of trigger information may include, but are not limited to, one or more values or other information content associated with monitored channel information

that resulted in a trigger (e.g., one or more events, conditions, logical workflows, discrete information values or signal data), one or more date stamps and/or time stamps associated with values/information content that resulted in a trigger, identities of one or more content sources providing at least some of the channel information being monitored and resulting in a trigger, and the criterion/criteria used to establish the trigger. In one example, discrete information values or signal data may be based on time of day.

[0039] In other aspects, actionable and/or non-actionable alerts may be generated (e.g., in response to one or more triggers) on one or more authenticated user devices and/or other devices. Information relating to determination of one or more events, conditions, logical workflows, discrete information values or signal data (e.g., trigger information) may be transmitted to various devices and/or stored for archival purposes.

[0040] Another aspect of the information delivery system and methods of the invention is that is may provide two types of eventing and alerting (1) actionable alerts and (2) non-actionable alerts. With respect to actionable alerts, the user may be alerted to a condition that is important to them. Upon the presence of the alert condition, the user may be presented a means by which to take action on the alert. With respect to non-actionable alerts, the user may be alerted to a condition that is important to them and then may choose or not choose to take action. For example, a non-actionable alert may simply be an informational alert that does not require user action.

[0041] Yet another aspect of the information delivery system and methods of the invention is that configuration, user preferences, and session information may be used to determine automatically the optimal method of delivering alert notifications to users. Additionally, if the best method of delivering the alert is unsuccessful and/or not available, the next best delivery method is attempted.

[0042] Still another aspect of the information delivery system and methods of the invention is that data from one or more disparate data sources may be collected and analyzed with respect to performing eventing and alerting operations. Additionally, eventing and alerting processes of the invention may be based on (1) the direct query of any external system and/or service, and/or (2) monitoring data (e.g., machine and/or sensor data) that is collected and stored locally at the server.

[0043] Referring to Figure 1, a high level block diagram of an example of an information delivery system 100 that includes a personal information delivery (PID) application 112 for eventing and alerting using multiple information forms and sources across multiple types and/or brands of electronic devices is presented. Information delivery system 100 may include an application server 110 upon which is installed the PID application 112 that has access to one or more information sources 114. One or more users 116 are associated with information delivery system 100. Users 116 may be, for example, individuals or groups of individuals. Each user 116 may have one or more user devices 118. Application server 110, the one or more information sources 114, and user devices 118 may be connected to a network 120 by any wired and/or wireless means. Network 120 may be, for example, any local area network (LAN) and/or wide area network (WAN) for connecting to the Internet.

[0044] Application server 110 may be a networked computer, such as the networked server of the owner and/or provider of PID application 112. The one or more information sources 114 may be, for example, networked computers of the owners and/or providers of the information stored thereon. For example, certain information 122 may be stored on information sources 114. Information 122 may be any information that can be delivered electronically over network 120 and that is capable of being consumed by users 116 via their user devices 118. More particularly, information 122 of the one or more information sources 114 may include different types and/or forms of information, data, and/or content. Examples of information 122 may include, but are not limited to, text, graphics, pictures, 3D graphic visualization of objects, sound, sensor data, streaming media data (e.g., streaming video and audio data), web-services data, Really Simple Syndication (RSS) feeds, image data, eventing and alerting, raw data, any type of information, and the like.

[0045] Information 122 of information sources 114 may be any information that resides outside of the environment of application server 110. However, with regard to information to be consumed by users 116 via their user devices 118, the invention is not limited to "external" information sources, such as information sources 114. Users 116 may also consume information from "internal" information sources (not shown), which are any information sources that reside directly at application server 110 and/or directly at user devices and/or from sensors contained on or communicating with user devices 118.

[0046] PID application 112 is a software application that facilitates user interaction with multiple information forms across multiple types and/or brands of electronic devices (e.g., user devices 118). Generally, PID application 112 is operating under a client-server model of computing in which application server 110 is the server and each user device 118 is the client.

[0047] Preferably, user devices 118 have a runtime environment that includes, but is not limited to, the following attributes: 1) capability to access multiple different operating systems; 2) capability to access any information that is exposed at the device level; 3) capability to allow software and/or information updates without interrupting the device and/or service (i.e., "hot" updates); 4) capability to operate offline; 5) capability to maintain state information, and 6) any combinations of the foregoing.

[0048] An example of such a runtime environment is the Adobe® AIR® 2.5 runtime (available from Adobe Systems Inc, San Jose, CA) and the HTML5 runtime. HTML5 is the next major revision of the HTML standard, which is currently under development.

[0049] For the purpose of illustration, the present invention is described hereafter with respect to user devices 118 (i.e., client devices) that are Adobe Air-enabled. Therefore, examples of user devices 118 may include, but are not limited to, any type and/or brand of Adobe Air-enabled desktop computer, Adobe Air-enabled laptop computer; Adobe Air-enabled tablet computer; Adobe Air-enabled net-book computing device; Adobe Air-enabled handheld computing device; Adobe Air-enabled personal digital assistant, Adobe Air-enabled enterprise digital assistant, or Adobe Air-enabled portable digital assistant; Adobe Air-enabled telecommunications device including one of an Adobe Air-enabled telephone, Adobe Air-enabled cell phone, and Adobe Air-enabled smart phone; Adobe Air-enabled personal navigation device; Adobe Air-enabled vehicle-based device; Adobe Air-enabled optical disk player; Adobe Air-enabled television; Adobe Air-enabled game console; and the like.

[0050] Therefore, an aspect of information delivery system 100 of the invention is that its operation is not limited to any particular type and/or brand of client device and/or to any particular operating system (OS). That is, the operation of information delivery system 100 of the invention is substantially device-agnostic and/or OS-agnostic because it may operate, for example, on substantially any Air-enabled client device. Additionally, information delivery

system 100 of the invention is substantially information type-agnostic and/or information source-agnostic.

[0051] User devices 118 serve as a user platform operated by a user 116 to facilitate display of, and interaction with, secure user-centric information. Preferably, the set of user devices 118 belonging to each respective user 116 is connected in a peer-to-peer (P2P) fashion. In one example, the user devices 118 of a certain user 116 may include a mobile phone, a tablet, a laptop computer, a desktop computer, and a television. In this example, the user's mobile phone, tablet, laptop computer, desktop computer, and television are connected (wired and/or wirelessly) in a P2P fashion.

[0052] PID application 112 of the invention provides a personalized information delivery utility that includes one or more sets of processor-executable instructions executing on one or more processors controlling various other hardware devices, with client-server system architecture, to facilitate delivery of a wide variety of information to a user, via one or more user devices or "platforms" (clients). Information is displayed on a graphical user interface (GUI) of a given user platform in a "presentation framework" that is customized based on a "user context." The presentation framework is homogenous amongst different user platforms so as to facilitate user familiarity and ease of interaction with displayed information. The presentation framework also facilitates the user's ability to take meaningful "real-time" action(s) in response to the displayed information.

[0053] The "user context" may be with respect to user attributes, such as, but not limited to, identity of the user, an identifier for one or more user devices associated with the user, location, activity, role, event, and any combinations thereof. Further, the "user context" may be with respect to user preferences, such as, but not limited to, source(s) of information of interest to the user, category/type of information of interest to the user, priority and/or importance of information, time (of day, week, month, year) at which information is displayed, and any combinations thereof.

[0054] The mechanism of PID application 112 for providing the user access to and interaction with, for example, information 122 and/or any other information is referred to as a "channel." That is, the channel is a conduit for delivering information to a user (e.g., providing access to and interaction with information), and is an elemental feature (basic building-block) of

PID application 112. With respect to the PID application 112, the channel two pieces (1) a visualization piece that is presented on the client device (e.g., user devices 118) and (2) the integration piece residing at the server (e.g., application server 110). More details of the channel with respect to PID application 112 are described with reference to Figures 2 through 6.

[0055] Referring to Figure 2, a functional block diagram of an example of a channel 200 of PID application 112 for providing users access to and interaction with information and for performing eventing and alerting operations is presented. PID application 112 may provide at least one channel 200. Preferably, PID application 112 provides one or more function-specific channels 200. There may be a server portion of channel 200 that is resident at application server 110 and a client portion of channel 200 that is resident at each user device 118. The client side portion of channel 200 is for presenting and interacting with content. There is a server side portion of channel 200 provides services and that are always running. More details of the client architecture and server architecture underlying the client and server portions of any channel 200 are described with reference to Figures 4 through 6.

[0056] Any channel 200 of PID application 112 provides a gateway to content, such as information 122 of information sources 114. Additionally, each channel 200 has a built in eventing and alerting feature, which will be described in subsequent text. Each channel 200 may include a visual component 210 that is formed of a touchlet 212 and a channel application 214. Additionally, channel 200 may include one or more service components 216 and a configuration component 218.

[0057] Visual component 210 may be any text and/or graphic element that may be presented to users 116 for viewing on the display, screen, and/or GUI of any user device 118. With respect to a certain function-specific channel 200, the design and implementation of visual component 210 may be channel-specific. That is, visual component 210 may be used to visually render at least some of the function-specific information on a GUI of a user device 118 via one or more text and/or graphic elements, and provide for interaction with the displayed channel information. The invention is not limited to presenting information to users 116 in a visual fashion only. Other ways (not shown) of conveying information to users 116 may be, for example, audible indicators (i.e., sound) and/or tactile indicators (e.g., vibration).

[0058] Channel application 214 may be any application software that is designed to perform singular and/or multiple related specific tasks and/or functions of a certain channel 200. Channel application 214 is used to manage the visual rendering of at least some of the channel-specific information on a GUI of a user device 118. Channel application 214 is also designed and used to manage user interaction with the displayed channel information.

[0059] Some channel applications 214 support implementation of the channel in a "full screen mode" on the GUI of a user device 118 once the channel 200 is deployed on the platform of PID application 112 and a channel 200 is invoked by a user (i.e., selected by the user to operate in substantially full-screen mode). A user invokes a certain channel 200 via its respective touchlet 212. Touchlet 212 includes a graphic element associated with its channel 200 that appears on a portion of the GUI of a user device 118, as part of the presentation framework, to provide a gateway/portal to its channel 200. A touchlet 212 has multiple behaviors as described with reference to Figure 3. One example of a function-specific channel 200 and the associated touchlets 212 is described with reference to Figures 9 and 13.

[0060] The one or more service components 216 of a channel 200 are used to access information from outside the environment of PID application 112. For example, service components 216 are used to retrieve the information 122 from the authorized information source(s) 114 and securely provide the retrieved information 122 to any visual components 210 of a channel 200 for display to user. Additionally, service components 216 may be used to monitor/process the channel information (e.g., via event processing and/or complex event processing (CEP)) to derive "secondary" information (e.g., events–particular changes in state or content of channel information), and provide secondary information to any visual components 210 for conveying to the user (e.g., alerts).

[0061] Every channel 200 has at least one service that is invokes via service components 216. For example, one service is an identity service. The identity service may be used for (1) authenticating and authorizing users 116 to use a channel 200 and (2) authenticating channels 200 to invoke one or more services (at the server) in order to access content from, for example, authorized information source(s) 114. Every service has identity. The authorization and authentication is by channel, in this way authorization and authentication does not have to occur for each information request.

[0062] Configuration component 218 of any channel 200 includes information that defines the behaviors and "personality" of the channel 200. Configuration component 218 also includes user preferences. Further, the information in configuration component 218 defines the services being used, the data being used, alerts, user preferences for the content and alerts, state information, synchronization information, versioning information, and the like.

[0063] There are additional authorization aspects of each channel 200. For example, user authorization may be based on user identity, user role, user device, user/device location, time, date, day of week, and the like. For example, a certain user 116 is authorized to access certain content at his/her workplace location between 8am and 8pm, and only with his/her laptop computer that has a certain MAC address. At application server 110, configuration queries the identity subsystem (shown in Figures 4 and 6) to understand any user permissions. The user may be generally authorized to use a channel 200, but there may be conditions.

[0064] Because there is two pieces to each channel 200, the client side visualization piece and the server side integration piece, an aspect of the invention is that there is operational persistence at the server. Client devices may be shut down, but the channels are still operating on the server and services are still being run. As client devices become available, content will begin to stream.

[0065] A "presentation framework" is the manner in which information (generally multiple types or classes of information) is visually rendered (displayed to a user via a GUI of a user device 118) by PID application 112. The presentation framework is customized at least in part based on a user context (e.g., user attributes and/or preferences) and the presentation framework may sometimes purposefully constrain the scope and/or type of the information displayed on a GUI of a user device at any given time. The presentation framework thereby allows a user to interact with more limited information that may be particularly important to them in a given user context. This purposeful limitation on displayed information facilitates the user's ability to meaningfully absorb and respond to the information (e.g., take real-time action and/or make decisions in response to the displayed information).

[0066] PID application 112 provides a presentation framework that is homogenous amongst different user platforms so as to facilitate user familiarity and ease of interaction with available information; i.e., the presentation framework "follows a user around" from user device 118 to

user device 118 and appears the same or substantially the same to the user on any GUI of any user device 118 on which the "client portion" of PID application 112 is installed.

[0067] A presentation framework includes one or more user-selectable items, or "touchlets" that are selectable by a user (e.g., via touch-screen and/or point and click, sound recognition, movement recognition or image recognition user interfaces) so as to invoke a "channel," through which one or more particular types of information are displayed to the user on the GUI of the user platform in a substantially full-screen mode. More details of one example of a presentation framework of PID application 112 are described with reference to Figure 3.

[0068] Referring to Figure 3, a screenshot of an example of a client GUI 300 is presented that shows an example of a channel grid, which is one example of a presentation framework of PID application 112. Client GUI 300 may include, for example, a main viewing panel 310. Additionally, a taskbar 312 may be provided along the top of main viewing panel 310 and a navigation bar 314 may be provided along the bottom of main viewing panel 310.

[0069] Taskbar 312 may include, for example, standard calendar, time, window controls, and the like. Navigation bar 314 may include, for example, icons for launching other applications, icons of other user devices 118, and the like. For example, navigation bar 314 may include a developer icon 320, a catalog icon 322, and certain device icons 326. The developer icon 320 may be used to launch a "developer environment" that may be built into the framework of PID application 112. The catalog icon 322 may be used to launch an "application store" by which users 116 may acquire (e.g., purchase) and then install and synchronize specific channels 200. Device icons 326 may depict any types of user devices 118 in the user's P2P network, such as a mobile phone, a tablet device, any computing device, a television, and the like.

[0070] Client GUI 300 shows an example of a presentation framework that is organized into a grid for presenting channels 200 to a user 116 on any user device 118. In this example, multiple touchlets 316 are presented in a 3x4 channel grid 318 in the main viewing panel 310 of client GUI 300. For example, 3x4 channel grid 318 includes touchlets 316A through 316L. Each touchlet 316 in the 3x4 channel grid 318 of client GUI 300 represents a channel 200 of a specific purpose and/or function. User 116 may have multiple channel grids of information, which are accessible via the navigation bar 314. For example, navigation bar 314 may include certain channel grid icons 324, which are icons of other channel grids of the user. In one

example, channel grid icons 324 may include an "At Home" channel grid icon, a "My TV" channel grid icon, and an "At Work" channel grid icon. A user 116 may specify a certain default channel grid in his/her profile. Additionally, as defined in the user's profile, the default channel grid may change based upon, for example, device type, time, location, prior activities, and the like. Further, user 116 may be presented an option of several different channel girds from which to select. In one example, the channel grid 318 shown in main viewing panel 310 of client GUI 300 of Figure 3 may be the user's "At Home" channel grid.

[0071] Presentation of channel grids may change based upon user context or preferences. Generally, PID application 112 is capable to combine, screen, and/or synthesize information in any way to present information in an intelligent manner to the user. The invention is not limited to presenting content in a 3x4 or any other nxn channel grid. Other presentation styles are possible. For example, the touchlets of channels may be presented in a tiled fashion on a 3D cube, a tiled fashion on a 3D globe, a stacked tiled fashion, and the like.

[0072] A touchlet 212 of channel 200 of Figure 2, such as touchlets 316A through 316L of Figure 3, has multiple behaviors – (1) a touchlet 212 may serve as an icon to launch its associated channel application 214 to full screen mode, (2) a touchlet 212 may receive dynamically streaming data, such as audio and video data, sensor data, any web-services data, RSS feeds, eventing and alerting, raw data, any type of information, and the like. Data may be pushed to the channel 200 and its touchlet 212 in near real time, and (3) a touchlet 212 may serve as a viewer for presenting information dynamically in near real time.

[0073] Additionally, a touchlet 212 may include substantially all the functionality of a full channel application. The "touchlet information" typically is related to or derived from the channel information provided by the corresponding channel associated with the touchlet, so that when visually rendered, the touchlet information provides a more limited but nonetheless intuitive representation of the channel information. Therefore, an aspect of the invention is that the construct of a channel 200 includes two levels of presentation (1) information that is streaming and/or displayed at the touchlet level and (2) information that is streaming and/or displayed at the full screen level that is launched via the touchlet.

[0074] Unlike standard icons and windows that are static and have little or no built-in intelligence, touchlets 212 have both static and dynamic behaviors, as well as intelligence. For

example, touchlets 212 can provide information in context (e.g., context based on certain relationships between different data sources, time of day, day of week, geographic location, devices, users, user's role, and the like). Therefore, an aspect of the invention is that touchlets may be designed to present only information that is most interesting and/or meaningful to the user, and with context. Another aspect of the invention is that touchlets provide mechanisms for taking action and/or making decisions on that information.

[0075] An aspect of the invention is that multiple touchlets in a channel grid may be displaying near real-time dynamic content to the user simultaneously. For example, the twelve touchlets 316 in 3x4 channel grid 318 of client GUI 300 may be displaying near real-time dynamic content simultaneously (e.g., 12 streaming videos) to the user 116. Again, the content presented in each touchlet is designed to present only what is important to the user without saturating the user with content he/she does not want or need.

[0076] Another purpose and/or function of a touchlet 212, such as touchlets 316A through 316L of Figure 3, is that a touchlet 212 is capable of visually presenting static and/or dynamic content to a user 116 in a small window, until such time that the user 116 launches the associated channel application 214 in full-screen mode. For example, in near real time, application server 110 is pushing dynamic information from any sources to one or more touchlets 316 in near real time.

[0077] Referring to Figure 4, a functional block diagram of an example of a PID application architecture 400 that is suitable for performing eventing and alerting operations is presented. PID application architecture 400 is the application architecture of the server side of PID application 112. That is, PID application architecture 400 is the application architecture of application server 110. PID application architecture 400 may include a facilitation layer 410 through which all messaging of user devices 118 (the clients) pass, an integration and process layer 412, and an integrated services and applications layer 414.

[0078] Facilitation layer 410 further includes a facilitation server 416 and certain other servers 428. Generally, facilitation server 416 manages the communication between the client (e.g., user devices 118) and the server (e.g., application server 110). Facilitation server 416 serves as the gate keeper. In a sense, facilitation server 416 introduces the client to the integration and process server 446 and then goes away. Facilitation server 416 serves as the

client representative to the rest of the server stack. In one example, facilitation server 416 is implemented using a Java server component that provides a set of real-time data management and messaging capabilities. One example of this Java server component may be Adobe® LiveCycle® Data Services.

[0079] Facilitation server 416 of the facilitation layer 410 may include, for example, a client gateway 418, proxy services 420, invocation services 422, inter-client messaging/synchronization 424, and a facilitation processor 426.

[0080] Client gateway 418 may be the direct interface with the client (e.g., user devices 118) for handling messaging operations. In one example, client gateway 418 uses Action Message Format (AMF) and/or Java Message Service (JMS) for exchanging messages and/or data between the client and server and/or between one client and another client.

[0081] Servers 428 of the facilitation layer 410 may include, for example, a channel server 430, a content delivery server 432, a collaboration media server 434 (e.g., video conferencing server), a stream sync server 436, an analytics server 438, an advertising server 440, a transcoding server 442, and a media server 444.

[0082] Generally, channel server 430 is used for the creation and consumption of channels 200. Channel server 430 is not utilized in the operation of channels 200. For example, channel server 430 may include a repository of channels 200, a channel application catalog 431, and a developer module 433. Channel application catalog 431 may be an "application store" of available channels 200 from which users 116 may acquire (e.g., purchase), download, and install and synchronize specific channels 200.

[0083] Developer module 433 may be the "developer environment" that may be built into the framework of PID application 112. For example, developer module 433 may be used by software developers to design specific channels 200. In one example, the developer icon 320 of client GUI 300 of Figure 3 may be used to launch the developer module 433.

[0084] Content delivery server 432 may be a server for storing and/or managing any other content that is not managed by, for example, collaboration media server 434, advertising server 440, and media server 444. Collaboration media server 434 is used to facilitate video conferencing. Stream sync server 436 is the server that integrates with advertising and analytics

as it relates to the client and content that is being presented. An example of using stream sync server 436 is synchronizing and/or relating ads on one user device 118 (e.g., TV) with ads on another user device 118 (e.g., tablet). Analytics server 438 is used to configure and administer analytics applications. Advertising server 440 may be a dedicated server for storing and/or managing advertising content. Media server 444 may be a dedicated server for storing and/or managing various digital media, such as digital videos/movies, audio/music, and picture files.

[0085] Transcoding server 442 may be a dedicated server for performing transcoding operations. Transcoding is the ability to adapt digital files so that content can be viewed on different playback devices. Working like an interpreter, a transcoder translates files to a suitable format for the end user. Transcoding servers (e.g., transcoding server 442) and services reformat material that would otherwise have to be developed separately for different platforms. Transcoding servers and services are commonly used for adapting content for mobile devices or serving video.

[0086] Integration and process layer 412 may be organized in a standard service-oriented architecture (SOA). Integration and process layer 412 further includes an integration and process server 446 along with certain hosting applications 474, hosted communications applications 476, and integral identity provider SSO provider 478. Integration and process server 446 of integration and process layer 412 further includes certain platform service components 448 and certain server channel components 462.

[0087] Platform service components 448 may include, but are not limited to, a data management subsystem 450, an eventing and alerting subsystem 452, a configuration server 454, a session manager 456, an administration subsystem 458, and an identity subsystem 460.

[0088] Data management subsystem 450 performs the master data management operations of PID application architecture 400. Master data management may include, for example, correlating user ID (which user are you?) to content and/or correlating user devices (user has 4 phones, which phone are you?) to content. Associated with data management subsystem 450 may be an operational data store (ODS) (not shown) and/or a data warehouse (not shown) for storing temporary data or long term data. The ODS may serve two purposes (1) the ODS is used to store data for historical purposes, because data may not persist or be stored at the source. For example, a channel 200 may poll a service every few minutes and store the data in the ODS; and

(2) the ODS is used in general application usage. For example, there is a background process of any channel 200 of PID application 112 that is retrieving data and pushing it to the ODS. Therefore, any data that is presented to the user at the user device 118 (i.e., at the client device) may be supplied by the ODS. This ensures good response time for the end-user because the network will not have to be continually interrogated for information.

[0089] Eventing and alerting subsystem 452 is used to collect and/or analyze information from any one or more disparate data sources with respect to certain predetermined or dynamic event conditions. Example of types of information that may be evaluated/monitored by eventing and alerting subsystem 452 may include, but are not limited to, text information, graphic information, one or more pictures, one or more videos, audio or digital sound, streaming data, audio or video, content associated with an executing computer application, voice-over-IP communication, instant messaging/SMS information, video-conferencing information, environmental monitoring information, financial services information, enterprise resource planning information, enterprise content management information, building information, project management information, product lifecycle management information, RSS reader information, remote device control/interaction information, a three-dimensional graphic visualization of one or more objects and/or immersive environments, one or more word processing documents, one or more spreadsheets, one or more presentation/slide shows, email, address book information, and any combinations thereof. CEP systems may also be utilized to evaluate/monitor event conditions.

[0090] Upon detecting the presence of an event condition, eventing and alerting subsystem 452 transmits alert notifications to users 116 via one or more user devices 118. Eventing and alerting subsystem 452 may include, for example, an event manager component, a notification manager, and a complex event processor. Further, events maybe stored for delivery at a later time or for use in a CEP system.

[0091] Once an event is registered in the event manager of the eventing and alerting subsystem 452, the event manager uses CEP (e.g., via complex query language (CQL) programming) to continually monitor the ODS of data management subsystem 450 based on event(s) that have been set and/or to perform a direct query of any external system and/or service.

[0092] Once the event manager recognizes that a certain event condition is present, the notification manager checks the user's configuration, which is at configuration server 454, as well as the user's session information at session manager 456 in order to determine how best to notify the end-user. Then, the alert notification is pushed through the client gateway 418 of the facilitation server 416 (e.g., via AMF) and to one or user devices 118 (client devices). As a result, the one or user devices 118 receive the alert notification and the alert presented to the user 116 via one or user devices 118.

[0093] Example of types of alerts that may be generated by eventing and alerting subsystem 452 may include, but are not limited to, visual alerts, auditory alerts, tactile alerts, email messages, SMS text messages, activation of at least one channel of a plurality of channels, and notifications to a law enforcement agency.

[0094] A main aspect of a channel 200 is that eventing and alerting subsystem 452 provides actionable eventing and alerting capability to the user 116. That is, channels 200 of PID application 112 provide users the ability to take action upon receiving an alert, in which the mechanism for user response to an alert may be conveniently built into the channel itself.

[0095] Configuration server 454 manages device configurations, user profiles, data configurations, application configurations, and the like. Configuration server 454 is the counterpart to configuration component 218 of any channel 200.

[0096] Session manager 456 performs session management and/or handles state. Session manager 456 may include, for example, a session module and a policy module. In one example of managing state, a user 116 is watching TV (one user device 118) and decides to pause the TV show and resume watching the TV show on his/her laptop computer (another user device 118). Session manager 456 stores state information and communicates this state information between user devices 118 so that the user 116 can resume watching the TV show at his/her laptop computer from the same point in the broadcast.

[0097] Administration subsystem 458 is used to perform standard system administration tasks. For example, when a channel 200 is accepted into the channel application catalog 431, the administration subsystem 458 associates what users 116 are allowed to access the channel. With respect to authorizations, channels are assigned to groups and users. For example, anyone

working in the accounting department of a company has access to a certain channel or only a certain user's family members are allowed access to a certain channel.

[0098] Identity subsystem 460 manages the authorization of users, places, times, and things. Identity subsystem 460 may include, for example, an authorize module and an authenticate module. For example, users must be authorized for content, services must be authorized for content. Accordingly, services check to ensure that users are authorized to access their services.

[0099] A main aspect of PID application 112 of the invention is single sign-on (or universal sign-on) capability, wherein once the user 116 is activated on the system, the user 116 is automatically authenticated when accessing any applications that normally require user login, i.e., unified access to all applications. That is, once the user 116 logs into information delivery system 100, the user will not be prompted for any other login operations when accessing information and/or services via PID application 112. For example, the user 116 may have one or more secure email services, one or more secure banking and/or financial accounts, one or more secure web-services accounts, and the like. Login information of all the user's secure accounts is stored, for example, identity subsystem 460. When a user access these secure accounts, identity subsystem 460 automatically provides the necessary login credentials to the requesting entity, thereby automatically logging in the user with no further action on the user's part. Because mulitple user devices 118 may be associated with a user 116, PID application 112 requires that the user 116 login on each of his/her user devices 118 as they become available in order to ensure the identity of the user 116.

[00100] In a location-based example, a user 116 is authorized to use a certain user device 118 and/or service only when inside his/her place of business. Therefore, upon leaving the building the authorization is revoked. In a time-based example, a user 116 is authorized to use a certain user device 118 and/or service only at a certain time of day, perhaps during off-peak hours. Therefore, during off-peak hours the authorization is allowed, but during peak hours the authorization is revoked.

[00101] Generally, server channel components 462 are used to perform the integration. Server channel components 462 may include Java-based components, such as, but not limited to, a Camel server channel component 464, a Spring server channel component 466, a Java server

channel component 468, a JavaScript server channel component 470, a business process execution language (BPEL) server channel component 472.

[00102] Camel server channel component 464 may be, for example, the Apache Camel server channel component (available from The Apache Software Foundation). Camel server channel component 464 is used for the orchestration and integration of services. Spring server channel component 466 is used for implementing Inversion of Control (IoC) and aspect-oriented programming (AOP). For example, when passing information from one component to another, the components involved have placeholders for data to be injected (or inserted). Spring server channel component 466 is used to manage this process. Java server channel component 468 may be implemented via (e.g., Java 2 Platform Standard Edition (J2SE)). JavaScript server channel component 470 is used for running JavaScript on the server side of PID application 112. BPEL server channel component 472 is used to export and import information by using web service interfaces.

[00103] With respect to integration and process layer 412, certain unique tasks are possible, independent of the source of the content. For example, sensor data and streaming media data are being normalized, which allows the capability to combine content. Therefore, a main aspect of the invention is that PID application 112 is agnostic to the source of the content and agnostic to the user device on which it is presented. From a client perspective, PID application 112 is agnostic to what content sources are connected.

[00104] The components of PID application architecture 400 communicate via an enterprise service bus 480 of integration and process server 446. Enterprise service bus 480 manages "calls" in and out of the PID application architecture 400. A set of adaptors 482 are connected to enterprise service bus 480 for interfacing with entities of integrated services and applications layer 414, which are outside of the environment of application server 110. That is, adaptors 482 are connected to enterprise service bus 480 for handling various communication protocols.

[00105] Integrated services and applications layer 414 may include, but is not limited to, one or more third-party services 484, one or more relational database management systems (RDBMS) 486, Parlay X 488 (i.e., a set of standard Web service APIs for the telephone network), one or more IP multimedia subsystem (IMS) servers 490, basic wireline

telecommunication 492, one or more communications modules 494 (e.g., instant message, calendar, mail/SMS, address book), and one or more directory servers 496.

[00106] An aspect of the invention is that PID application 112 provides built in security at the application server 110, which inherently provides security at each user device 118. Any applications running in the environment of PID application 112 are checked for viruses, spyware, and the like. In this way, it is ensure that users 116 are operating in a secure environment.

[00107] Referring to Figure 5, a functional block diagram of an example of client architecture 500 of PID application 112 is presented. Client architecture 500 is the application architecture of the client side of PID application 112. That is, client architecture 500 is the application architecture of any user device 118.

[00108] Figure 5 shows a channel 200, which includes visual component 210, touchlet 212, channel application 214, and service component 216. Associated with a channel 200 are certain sub-components, such as assets 510, code 512, models 514, conversations 516, as well as configuration 518.

[00109] Assets 510 may be, for example, images, descriptive language for the layout of the channel, and the like. Code 512 is the actual programming code for the channel 200. A channel service 520 on the client side communicates with the channel server 430 on the server side. Code 512 interacts with channel service 520 in the client. Additionally, code 512 is cached in client cache 550 and then transmitted via a client bus 560 to identity subsystem 460 (performing authentication and authorization) and then to channel server 430. Any channels 200 that are installed on a user device 118 originate from channel server 430 (e.g., from channel application catalog 431).

[00110] Models 514 may be the data models for the channel 200. A model system 530 on the client side may include user-defined models, persistent models, synchronized persistent models, synchronized models, and the like. Associated with model system 530 may be a persistence service 532 and a synchronization service 534. Models 514 interact with persistence service 532 and synchronization service 534 in the client. Persistence service 532 on the client side communicates with the data management subsystem 450 on the server side. Synchronization service 534 on the client side communicates with the inter-client messaging/synchronization 424 on the server side. Additionally, models 514 are cached in client cache 550 and then transmitted

via client bus 560 to identity subsystem 460 (performing authentication and authorization) and then to inter-client messaging/synchronization 424.

[00111] Conversations 516 may be any communication over the bus between client components and/or server components. Conversations 516 on the client side are transmitted via client bus 560 to the eventing and alerting subsystem 452 on the server side.

[00112] Configuration 518 may define, for example, the position of the touchlet on the channel grid, that the channel now monitoring a certain data stream, the user is receiving data and needs to be synchronized, the user has multiple devices that need to be synchronized, when any application is installed perform synchronization, location, ID, the channel is a synchronizable channel, the channel is an alertable channel, and the like. Configuration 518 includes any channel attributes that convey the "personality" or functionality of the channel. Certain information in configuration 518 may be selected by the user.

[00113] A configuration service 540 on the client side communicates with the configuration server 454 on the server side. Configuration 518 interacts with configuration service 540 in the client. Additionally, configuration 518 is transmitted via client bus 560 to identity subsystem 460 (performing authentication and authorization) and then to configuration server 454.

[00114] Client architecture 500 of the client side of PID application 112 is architected similar to an SOA for an enterprise stack. The client services use the idea of GUI conversations to exchange messages between client components and/or server components, all using the client bus and/or server bus. Therefore, an aspect of the invention is a sophisticated client architecture, similar to an SOA, that allows complex processing to occur locally at the client as well as at the server (yet without relying on the server), thereby enabling a rich user experience.

[00115] Referring to Figure 6, a functional block diagram of a portion of PID application architecture 400 of Figure 4 along with a portion of client architecture 500 of Figure 5 is presented. Figure 6 is provided for reference with respect to the example methods of performing eventing and alerting that are described with reference to Figures 7A through 25.

[00116] Referring to Figure 7A, a flow diagram of an example of a method 700 of evaluating at least some of the secure user-centric information using PID application 112 is presented. Method 700 of Figure 7A may include, but is not limited to, the following steps.

[00117] At step 710, authorized channels are implemented (e.g., at least in part by application server 110) through which the user receives and/or interacts with secure user-centric information. For example, using developer module 433, which is the developer environment that is built into the framework of PID application 112, developers may design a plurality of authorized channels 200, through which users 116 may receive and/or interact with respective portions of the secure-user-centric information. In particular, these channels may be implemented by the application server 110 (e.g., via one or more processors executing processor-executable instructions), and users 116 may access implemented channels via one or more user platforms communicatively coupled to the application server 110. Respective portions of the secure user-centric information provided by the channels are based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels 200. Relevant information associated with implementation of the channels 200 is stored at channel server 430.

[00118] At step 712, channel information is monitored to determine one or more events, conditions, logical workflows, discrete information values or signal data, based at least in part on at least one threshold condition or parameter relating to channel information. For example, the event manager of the eventing and alerting subsystem 452 of integration and process server 446 continually monitors channel information to determine the presence of one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to certain channel information.

[00119] At decision step 714, if one or more events, conditions, logical workflows, discrete information values or signal data is present, method 700 may proceed, for example, to step 716. However, if one or more events, conditions, logical workflows, discrete information values or signal data is not present, method 700 may return, for example, to step 712.

[00120] For example, monitored channel information may be compared to one or more threshold conditions or parameters and, as discussed in greater detail below, various criteria for such comparisons may be predetermined/established (e.g., less than, greater than, equal to, within a certain range, corresponding to a certain pattern or trend, particular time-varying behavior, etc.). In one aspect, if an established condition is met (e.g., the comparison meets one or more criteria, such as exceeding a quantified numerical limit, and/or multiple similar events trending in a certain direction) such that a presence of one or more events, conditions, logical

workflows, discrete information values or signal data is determined, a "trigger" is established upon which one or more alerts may be generated. For purposes of the present disclosure, any information associated with establishing a trigger upon which one or more alerts may be generated is referred to as "trigger information." Examples of trigger information may include, but are not limited to, one or more values or other information content associated with monitored channel information that resulted in a trigger (e.g., one or more events, conditions, logical workflows, discrete information values or signal data), one or more date stamps and/or time stamps associated with values/information content that resulted in a trigger, identities of one or more content sources providing at least some of the channel information being monitored and resulting in a trigger, and the criterion/criteria used to establish the trigger. In one example, discrete information values or signal data may be based on time of day.

[00121] In one aspect, actionable and/or non-actionable alerts may be generated (e.g., in response to one or more triggers) on one or more authenticated user devices and/or other devices. For example, at step 716, the communication interface is controlled to transmit an alert to, or transmit data so as to generate an alert on, an external device. In one exemple, client gateway 418 of facilitation server 416 may be used to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one user device 118.

[00122] In another aspect, information relating to determination of one or more events, conditions, logical workflows, discrete information values or signal data (e.g., trigger information) may be transmitted to various devices and/or stored for archival purposes. For example, at step 718, the memory is controlled so as to store trigger information relating to the determined events, conditions, logical workflows, discrete information values or signal data. In one example, trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data may be stored in data management subsystem 450 of integration and process server 446.

[00123] Referring to Figure 7B, a flow diagram of an example of a method 750 of performing eventing and alerting using PID application 112 is presented. Method 750 includes an example of an actionable alert. In this example, eventing and alerting may be based on that state of certain data (e.g., sensor data) that originates from a certain external information source 114. Further, the data may not persist at the source and, therefore, the ODS of data management

subsystem 450 may be used to store a certain amount of data for processing. By way of example, method 750 is performing eventing and alerting based on sensor data of a home security system. Examples of sensor data of security systems may include, but are not limited to, door sensor data, window sensor data, motion sensor data, and/or smoke detector data. In this example, eventing operations of information delivery system 100 may be based on the home security system sensor data. According to the presence of a certain event, a corresponding alert may be transmitted to a user 116 via one or more of his/her user devices 118.

[00124] A "Home Security" touchlet 316J of channel grid 318 of client GUI 300 of Figure 3 is an example of a touchlet that is associated with a "Home Security" channel 900 (shown in Figure 9). Touchlet 316J may be used to convey certain dynamic, near real-time information to the user 116 about a home security system. Using the example of eventing and alerting based on information of a home security system, method 750 of Figure 7B may include, but is not limited to, the following steps.

[00125] At step 760, data (e.g., sensor data) from an external service is periodically or continuously collected and stored at data management subsystem 450. Using the example of a home security system, a service of, for example, the "Home Security" channel 900 interrogates the data from the external application of the home security service provider. For example and referring to Figure 6, this interrogation of the external home security service provider is performed across enterprise service bus 480 using a certain adaptor 482, such as a REST adaptor. In this example, door sensor data, window sensor data, motion sensor data, and/or smoke detector data is periodically requested (e.g., every 5 minutes) form the external home security service. Accordingly, the data is collected and stored in the ODS of data management subsystem 450 for display to the user 116 via his/her user device 118 and/or for performing eventing and alerting operations.

[00126] At step 762, the event manager continually monitors the collected data for the presence of any predetermined event(s) of interest. Continuing the example of the "Home Security" channel 900, the predetermined event(s) of interest for which the user 116 wishes to be notified (i.e., alerted) may be, for example, any triggering of a door sensor, window sensor, motion sensor, smoke detector, and any combinations thereof. Referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 uses CEP (e.g., via CQL

programming) to continually monitor the ODS of data management subsystem 450 based on event(s) that have been set.

[00127] Referring to Figure 3, the "Home Security" touchlet 316J of channel grid 318 of client GUI 300 is shown in a non-alert state. In this example, the non-alert state of the "Home Security" channel 900 is indicated by a green shield symbol displayed in the "Home Security" touchlet 316J.

[00128] At decision step 764, referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 determines whether an event condition is present. That is, the event manager of the eventing and alerting subsystem 452 determines whether any condition is present that corresponds to any of the predetermined event(s) of interest for which an alert is to be generated. If the event manager detects an event condition is present, method 750 may proceed, for example, to step 766. However, if the event manager detects no event condition is present, method 750 may return, for example, to step 760.

[00129] At step 766, referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 detects the presence of an event condition and informs the notification manager of the eventing and alerting subsystem 452 that an event of interest has occurred. Continuing the example of the "Home Security" channel 900, in one example, the event manager is monitoring the motion detector data at the ODS and detects that a motion detector at the user 116's home has been triggered. Therefore, the event manager of the eventing and alerting subsystem informs the notification manager of the eventing and alerting subsystem 452 of "motion detected."

[00130] At step 768, referring again to Figure 6, the notification manager of the eventing and alerting subsystem 452 queries the configuration server 454 for the user's notification preferences and correlates these notification preferences with session manager 456 to determine the best notification method. That is, the notification manager queries the configuration server 454 and determines, for example, that the user has certain online notification preferences and certain offline notification preferences. If online, notify by, for example, the user's active session. If offline, notify by, for example, a txt message, call the user's landline, call a friend of the user, and the like. Additionally, notifications may be based on user identity, user role, user location, time, date, and the like.

[00131] The notification manager of the eventing and alerting subsystem 452 then queries session manager 456 to determine the user's connectedness. For example, it is determined whether the user 116 has an active session as well as any other special conditions, such as, but not limited to, user role, user location, time, date, and the like. In one example, it is determined that the user 116 has an active session on his/her laptop computer, which is one user device 118. As a result, it is determined that the best alert notification method is via the laptop computer of the user 116.

[00132] At step 770, referring again to Figure 6, the notification manager of the eventing and alerting subsystem 452 dispatches the event notification (i.e., alert) through user's logical event queue. For example, the client gateway 418 of the facilitation server 416 transmits (via AMF) the alert to one or more user devices 118. Continuing the example, the alert is transmitted to the laptop computer of the user 116.

[00133] At step 772, referring again to Figure 6, the channel application at the client device (e.g., user device 118) receives and displays the alert to the user 116. Continuing the example, the "Home Security" channel 900 continually monitors the client bus 560 and, thereby, receives and displays the event notification (i.e., alert) to the user 116. For example, the visual components of the associated touchlet may transition from a non-alert state to an alert state. In this example, and referring to Figure 8, a screenshot of client GUI 300 of PID application 112 is presented in which the "Home Security" touchlet 316J is shown in an alert state. In this example, the alert state of the "Home Security" channel 900 is indicated by the "Home Security" touchlet 316J turning red and displaying a "Motion detected" message.

[00134] At step 774, the user 116 may launch the corresponding channel application and take certain action. Continuing the example, the user 116 may touch/click on the "Home Security" touchlet 316J that is indicating the alert and, thereby, launch the corresponding "Home Security" channel 900, as shown in Figures 9 and 10.

[00135] Referring to Figures 9 and 10, screenshots of certain components of an example of "Home Security" channel 900 are presented, by which a user may take action based on an alert that is received. Figures 9 and 10 show "Home Security" channel 900 operating in a substantially full-screen mode. "Home Security" touchlet 316J is provided for presenting dynamic information of, interacting with, and/or launching "Home Security" channel 900.

"Home Security" channel 900 provides a mechanism for monitoring and/or reporting information about the user 116's home security system, which is supported by a home security service provider that is accessible via PID application architecture 400 of information delivery system 100.

[00136] The display of "Home Security" channel 900 may include, for example, a main viewing panel 910. Additionally, a taskbar 912 may be provided along the top of main viewing panel 910 and a navigation bar 914 may be provided along the bottom of main viewing panel 910. Navigation bar 914 may include, for example, a set of mini-touchlets 916, which are substantially the same as, for example, touchlets 316 of channel grid 318 of Figure 8 but presented in miniature form. A user may navigate directly to any channel application by selecting one of the mini-touchlets 916.

[00137] The display of "Home Security" channel 900 may include, for example, one or more video feed windows 920 and a status window 922. In this example, four video feeds from four cameras in four respective locations in the user's home are presented in video feed windows 920. The video feed that is related to a particular alert condition may be color coded to stand out to the viewer. For example, Figure 9 shows the video feed window 920 of the backyard is highlighted in red, while the others are not highlighted in red. The status window 922 shows in text form any alert conditions that are present as well as any other useful control buttons. For example, a keypad button 924 may be provided for launching a keypad window 926, as shown in Figure 10.

[00138] The keypad window 926 substantially mimics the physical keypad in the user's home and provides a mechanism by which the user may interact remotely with his/her home security system via any user device 118. This is an example of channels 200 of PID application 112 providing users the ability to take action upon receiving an alert. That is, PID application 112 provides actionable eventing and alerting capability. For example, by viewing the video feed, the user 116 may determine that the motion detected was caused by an animal in his/her backyard. Therefore, the user 116 may use keypad window 926 to clear the alert condition.

[00139] Referring to Figure 11, a flow diagram of another example of a method 1100 of performing eventing and alerting using PID application 112 is presented. Method 1100 includes an example of an actionable alert. In this example, the eventing and alerting process may be

based on the direct query of another external system instead of monitoring data that is collected and stored in the ODS of data management subsystem 450.

[00140] By way of example, method 1100 is performing eventing and alerting based on near real-time currency and foreign exchange data of, for example, a currency trading system. In this example, eventing operations of information delivery system 100 may be based, for example, on the direct query of the currency trading system and the detection of one or more exchange rates at which the user wishes to be alerted via one or more of his/her user devices 118. Method 1100 may include, but is not limited to, the following steps.

[00141] At step 1110, information from an external source (e.g., third-party web service) is continuously monitored and analyzed by the event manager in near real time. Continuing the example of the currency trading system, an example of a predetermined event of interest for which the user 116 wishes to be notified (i.e., alerted) may be when 1 Euro is equal to 1.3 U.S. dollars or less (i.e., 1 EUR=1.3 USD or less). Referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 uses CEP (e.g., via complex query language (CQL) programming) to continually monitor the currency and foreign exchange data of the currency trading system based on event(s) that have been set.

[00142] For example and referring to Figure 6, the direct query of the external currency trading system is performed across enterprise service bus 480 using a certain adaptor 482, such as a REST adaptor. In this example, currency and foreign exchange data is may be pushed form the external currency trading system in near real time to the requesting "Currency Trading" channel (not shown). Accordingly, the currency and foreign exchange data may be displayed in near real time to the user 116 via his/her user device 118 and/or analyzed in near real time for performing eventing and alerting operations.

[00143] At decision step 1112, referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 determines whether an event condition is present. That is, the event manager of the eventing and alerting subsystem 452 determines whether any condition is present that corresponds to any of the predetermined event(s) of interest for which an alert is to be generated. If the event manager detects an event condition is present, method 1100 may proceed, for example, to step 1114. However, if the event manager detects no event condition is present, method 1100 may return, for example, to step 1110.

[00144] At step 1114, referring again to Figure 6, the event manager of the eventing and alerting subsystem 452 detects the presence of an event condition and informs the notification manager of the eventing and alerting subsystem 452 that an event of interest has occurred. Continuing the example of the currency trading system, in one example, the event manager is monitoring whether 1 Euro is equal to 1.3 U.S. dollars or less and detects that currently 1 EUR=1.29 USD and, thus, the condition of 1 EUR=1.3 USD or less is met. Therefore, the event manager of the eventing and alerting subsystem informs the notification manager of the eventing and alerting subsystem 452 of "Exchange rate met."

[00145] At step 1116, referring again to Figure 6, the notification manager of the eventing and alerting subsystem 452 queries the configuration server 454 for the user's notification preferences and correlates these notification preferences with session manager 456 to determine the best notification method. That is, the notification manager queries the configuration server 454 and determines, for example, that the user has certain online notification preferences and certain offline notification preferences. If online, notify by, for example, the user's active session. If offline, notify by, for example, a txt message, call the user's landline, call a friend of the user, and the like. Additionally, notifications may be based on user identity, user role, user location, time, date, and the like.

[00146] The notification manager of the eventing and alerting subsystem 452 then queries session manager 456 to determine the user's connectedness. For example, it is determined whether the user 116 has an active session as well as any other special conditions, such as, but not limited to, user role, user location, time, date, and the like. In one example, it is determined that the user 116 has an active session on his/her laptop computer, which is one user device 118. As a result, it is determined that the best alert notification method is via the laptop computer of the user 116.

[00147] At step 1118, referring again to Figure 6, the notification manager of the eventing and alerting subsystem 452 dispatches the event notification (i.e., alert) through user's logical event queue. For example, the client gateway 418 of the facilitation server 416 transmits (via AMF) the alert to one or more user devices 118. Continuing the example, the alert is transmitted to the laptop computer of the user 116.

[00148] At step 1120, referring again to Figure 6, the "Currency Trading" channel at the client device (e.g., user device 118) receives and displays the alert to the user 116. Continuing the example, the requesting the "Currency Trading" channel continually monitors the client bus 560 and, thereby, receives and displays the event notification (i.e., alert) to the user 116. For example, the visual components of a "Currency Trading" touchlet (not shown) may transition from a non-alert state to an alert state. In one example, the color of the touchlet may change from green to red when 1 Euro is equal to 1.3 U.S. dollars or less (i.e., 1 EUR=1.3 USD or less). Further, a certain text message may be displayed in the "Currency Trading" touchlet, such as "Exchange rate=1.3 or less."

[00149] At step 1122, the user 116 may launch the corresponding channel application and take certain action. Continuing the example, the user 116 may touch/click on the "Currency Trading" touchlet (not shown) that is indicating the alert and, thereby, launch the corresponding "Currency Trading" channel (not shown) that allows the user to perform any desired transactions.

[00150] Referring to Figure 12, a screenshot of client GUI 300 that includes another example of a channel grid 318 is presented. In this example, the channel grid 318 may be, for example, the user's "At Work" channel grid. This channel grid 318 includes, for example, eleven touchlets 316 (touchlets 316A through 316K), with one channel grid location empty (e.g., touchlet 316L). Touchlet 316B is a "Stock Watch" touchlet that is associated with a "Stock Watch" channel (e.g., "Stock Watch" channel 1300 of Figure 13). The "Stock Watch" channel may provide a mechanism by which a user 116 may monitor a certain company's stock and/or financial information. In this example, the "Stock Watch" channel is monitoring the stock and/or financial information of Brocade Communications Systems, Inc (BRCD).

[00151] Referring to Figure 13, screenshots of certain components of an example of a "Stock Watch" channel 1300 of PID application 112 is presented. Figure 13 shows "Stock Watch" channel 1300 operating in a substantially full-screen mode. "Stock Watch" touchlet 316B is provided for presenting dynamic information of, interacting with, and/or launching "Stock Watch" channel 1300. "Stock Watch" channel 1300 provides a mechanism for monitoring and/or reporting certain stock and/or financial information of a company of interest. In this example, "Stock Watch" channel 1300 is monitoring Brocade Communications Systems, Inc (BRCD).

[00152] The display of the "Stock Watch" channel 1300 may include, for example, a main viewing panel 1310. Additionally, a taskbar 1312 may be provided along the top of main viewing panel 1310 and a navigation bar 1314 may be provided along the bottom of main viewing panel 1310. The display of "Stock Watch" channel 1300 may include, for example, an overview window 1320, one or more information windows 1322, and a trading window 1324.

[00153] In this example, overview window 1320 shows a plot of the BRCD stock price over some selectable period of time (e.g., last hour, day, week, month, etc), as well as other statistical information about the BRCD stock. Figure 13 shows two information windows 1322. For example, one information window 1322 displays information about the latest news. The other information window 1322 displays stock information about certain other companies (i.e., companies related to BRCD in some manner). Trading window 1324 provides mechanisms by which the user 116 may perform stock trading transactions (e.g., buying and selling stock).

[00154] The "Stock Watch" channel 1300 is a good example of a channel application that to the user is seemingly a single application, but is in fact pulling publicly available information from multiple disparate data sources. For example, the real-time stock price display information in "Stock Watch" touchlet 316B and in the overview window 1320 may originate from the "Yahoo! Finance" web service, the related companies display information in an information window 1322 may also originate from the "Yahoo! Finance" web service, the plot and other statistical information in the overview window 1320 may originate from the "The Motley Fool" web service, and the "Latest News" information in an information window 1322 may originate from the "Google Finance" web service, trading window 1324 may be supported by the "TD Ameritrade" web service, and the like.

[00155] Additionally, the functions of trading window 1324 is an example of using the single sign-on (or universal sign-on) capability of PID application 112. In this example, the user 116 is already authenticated at PID application 112. Therefore, the user 116 is not prompted for any further login credentials when using trading window 1324, which may be supported by an online trading web-service, such as, but not limited to, TD Ameritrade. In this example, the user's TD Ameritrade login information is already stored in the user's profile/configuration and is automatically provided as needed by any channel application of information delivery system 100. The capability of the single sign-on (or universal sign-on) feature is not limited to user

login information, user banking and/or credit card information may also be stored in the user's profile/configuration. Additionally, the single sign-on (or universal sign-on) feature my include login credentials with respect to the user's different user devices 118. As a result, payments information may be automatically provided as needed. In the example of TD Ameritrade, any transactions performed via trading window 1324 are handled without prompting the user 116 for payments information. The aforementioned features of PID application 112 provide convenience to the user.

[00156] Referring to Figures 14 through 17, screenshots of client GUI 300 of PID application 112 and another example of a process of eventing and alerting using PID application 112 is presented. The eventing and alerting process shown in Figures 14 through 17 is one example of implementing method 750 of Figure 7B and/or method 1100 of Figure 11. In this example, with respect to "Stock Watch" touchlet 316B and "Stock Watch" channel 1300, the user 116 sets an alert for when the BRCD share price rises above a certain value, as follows.

[00157] Figure 14 shows that by hovering the mouse over the "Stock Watch" touchlet 316B, helper window 330 is displayed to the user 116. To set an alert with respect to "Stock Watch" touchlet 316B, the user selects the "Alerts" button. As a result of selecting the "Alerts" button of helper window 330, an alerts window 334 is displayed to the user 116, as shown in Figure 15. Alerts window 334 provides a mechanism by which the user 116 may create an alert that is based, for example, on share price. The share price that the user enters is an example of a threshold condition or parameter for triggering an alert notification, which is an example of trigger information that may be stored in data management subsystem 450 in step 718 of method 700. As shown in Figure 15, alerts window 334 provides an entry field for entering a share price.

[00158] Other controls are provided in alerts window 334 to generate the alert when the share price is "less than," "equal to," or "greater than" the share price that is entered. In one example, the user sets up an alert to occur when the share price is "less than" $9.23. To activate this eventing and alerting process, the user 116 may select an "Apply" button of alerts window 334, which closes the window and automatically registers the event in the event manager of the eventing and alerting subsystem 452 (see Figure 6).

[00159] Accordingly, the event manager of the eventing and alerting subsystem 452 begins monitoring the data stream associated, in this example, with the BRCD stock. Figures 16 and 17 show examples of the visual components for this eventing and alerting process. For example, the event manager of the eventing and alerting subsystem 452 monitors the BRCD data stream and when the BRCD share price is approaching the alert set point (e.g., near $9.23), Figure 16 shows that the "Stock Watch" touchlet 316B may display a warning state to the user 116. An example of the warning state is to change the color of the border of the "Stock Watch" touchlet 316B from, for example, black to yellow. The event manager of the eventing and alerting subsystem 452 continues to monitor the BRCD data stream and when the BRCD share price is "less than" $9.23, Figure 17 shows that the "Stock Watch" touchlet 316B may display an alert state to the user 116. An example of the alert state is to change the color of the border of the "Stock Watch" touchlet 316B to red.

[00160] As described in method 750 of Figure 7B and/or method 1100 of Figure 11, in this example, the alert is delivered according to the user's configuration (notification preferences) and session. In summary, the event manager registers the event; the event manager monitors the bus, using CEP and CQL the event manager recognizes a certain condition is present; the notification manager checks the user's configuration and session; once it is determined how to notify the end-user the notification is pushed through the facilitation manager gateway (using AMF) and to the user device (client device); the client device is monitoring the client bus and receives the notification; and the notification is displayed to the user on the client device (e.g., yellow border, red border).

[00161] Referring to Figures 18 through 25, screenshots of certain channels of PID application 112 and an example of a process of combining two or more independent channels to create a new channel (and touchlet) and a process of eventing off of the combined data is presented. In this example, a user 116 may be a stock broker that hears that Cisco Systems, Inc is interested in buying Brocade Communications Systems, Inc. Therefore, there may be some very specific information that the user 116 wishes to be informed about regarding this potential transaction. Therefore, the user 116 may create a new channel and set up the desired alert notifications, as follows.

[00162] In this example, the process is using the "Latest News" touchlet 316A; the "Stock Watch" touchlet 316B, which is BRCD; and the "Stock Watch" touchlet 316C, which is Cisco Systems, Inc (CSCO); which are shown in Figure 17. That is, in this example the independent channels supporting "Latest News" touchlet 316A, "Stock Watch" touchlet 316B, and "Stock Watch" touchlet 316C are combined to create a new channel (and touchlet). Then, an eventing and alerting process with respect to the new channel is set up with respect to the combined data.

[00163] Referring to Figure 18, in order to create a new channel, the user 116 selects an icon 336 on taskbar 312, which causes a create channel window 338 to be displayed to the user 116. A channels portion 340 of the create channel window 338 shows a list of available channels from which to build an alert. For example, the available channels are from the current channel grid 318 or from any other channel grid of the user 116. A query builder portion 342 of the create channel window 338 provides a query builder function to the user 116, which is used to generate the CQL that interacts with the event manager of the eventing and alerting subsystem 452 (see Figure 6).

[00164] Figure 19 shows that the user 116 may select a first channel, such as the "Latest News" channel from the channels portion 340, which causes the "Latest News" channel to appear in the query builder portion 342 of the create channel window 338. When a channel is designed, the developer exposes certain things that may be useful to users 116. In the case of the "Latest News" channel, a "keywords" field is provided to the user. User 116 enters, for example, the words "Brocade" and "Cisco." Once the channel is deployed, the news information of the "Latest News" channel is monitored for the words "Brocade" and "Cisco" (together in the same news feed) by the event manager of the eventing and alerting subsystem 452.

[00165] Figure 20 shows that the user 116 may select a second channel, such as the BRCD "Stock Watch" channel from the channels portion 340, which causes the BRCD "Stock Watch" channel to also appear in the query builder portion 342 of the create channel window 338. Now two channels are present in the query builder portion 342. Again, when a channel is designed, the developer exposes certain things that may be useful to users 116. In the case of the "Stock Watch" channel, a "share price" field is provided to the user along with a qualifiers dropdown menu (greater than, equal to, less than). User 116 selects, for example, a share price "greater than $9.26." Once the channel is deployed, the share price information of the BRCD "Stock

Watch" channel is monitored for this condition by the event manager of the eventing and alerting subsystem 452. The information that the user enters in the query builder portion 342 of the create channel window 338 is an example of threshold conditions or parameters for triggering an alert notification, which is another example of trigger information that may be stored in data management subsystem 450 in step 718 of method 700.

[00166] Figure 21 shows that the user 116 may select a third channel, such as the CSCO "Stock Watch" channel from the channels portion 340, which causes the CSCO "Stock Watch" channel to also appear in the query builder portion 342 of the create channel window 338. Now three channels are present in the query builder portion 342. User 116 selects, for example, a share price "greater than $23.63." Once the channel is deployed, the share price information of the CSCO "Stock Watch" channel is monitored for this condition by the event manager of the eventing and alerting subsystem 452.

[00167] The query builder portion 342 of the create channel window 338 allows boolean operations between the selected channels. For example, the user 116 may be provided AND, OR, ANDNOT, and XOR functions. In this example, the user selects the "Latest News" channel AND the BRCD "Stock Watch" channel AND the CSCO "Stock Watch" channel. In this way, an alert is generated when the following condition is present: Both the words "Brocade" and "Cisco" are detected in the "Latest News" channel AND when a share price "greater than $9.26" is detected via the BRCD "Stock Watch" channel AND when a share price "greater than $$23.63" is detected via the CSCO "Stock Watch" channel.

[00168] The query builder portion 342 of the create channel window 338 also provides notification settings. For example, the user 116 may select notify by: Current Device, Email, IM, SMS, Mobile, and the like. The user 116 may select one or more. The query builder portion 342 of the create channel window 338 also provides channel name field. In one example, the user 116 enters "Custom Alert." When the setup is complete, the user 116 selects a "Create Channel" button to deploy the new "Custom Alert" channel. By pressing the "Create Channel" button, certain processes occur, such as, but not limited to, the channel server 430 is updated accordingly, a touchlet is created and loaded into the client, all events set up on the menu are registered with the event manager, the user's configuration is updated with the notification

preferences for this channel, the event manager begins monitoring the data streams according to the query. The touchlet is updated in real time as to the status of the three variables.

[00169] In this example and referring now to Figure 22, a "Custom Alert" touchlet 316L is created and presented in channel grid 318. The "Custom Alert" touchlet 316L displays the three components that the channel is eventing off. In this view, the "Custom Alert" touchlet 316L displays the three components (e.g., news, BRCD, and CSCO), which are all in a no alert condition. In one example, the no alert condition for each component is to display the component in a green color in the "Custom Alert" touchlet 316L. Therefore, Figure 22 shows all three components in green to indicate that no alert conditions are present.

[00170] Referring now to Figure 23, two of the three alert conditions are met and the "Custom Alert" touchlet 316L displays a warning state to the user 116. In this example, the BRCD and the CSCO conditions are met, but the news condition is not yet met. Therefore, the color of the BRCD and CSCO components may be changed from green to yellow, while the news component remains green. In this way, the user 116 may perceive a warning that, while the alert condition is not yet fully met, an alert may be eminent.

[00171] Referring now to Figure 24, all three alert conditions are met and the "Custom Alert" touchlet 316L displays an alert state to the user 116. In this example, the news, BRCD, and CSCO conditions are met. Therefore, the color of the news, BRCD, and CSCO components in the "Custom Alert" touchlet 316L may be changed to red. In this way, the user 116 may receive the notification that the alert condition is fully met.

[00172] Referring again to Figure 24, in this view other alerts are presented in certain touchlets 316 of channel grid 318. For example, touchlet 316H, which may be a business calendar channel, is displaying a "You have 4 scheduled meetings today" alert. Touchlet 316I, which may be an email channel, is displaying a "4 unread messages" alert. Both of these alerts are example of non-actionable alerts, as these are informational alerts that do not require user action. For example, the user may choose or not choose to launch the email channel and read his/her emails. However, if the user should choose to launch the email channel and read his/her emails, the "4 unread messages" alert is cleared.

[00173] Referring now to Figure 25, the "Custom Alert" channel provides an alert that is actionable. That is, upon receiving the alert via "Custom Alert" touchlet 316L, the user 116,

who may be a stock broker, may take certain action. By clicking on the "Custom Alert" touchlet 316L, which may be in an alert state, the associated "Custom Alert" channel 2500 may be presented to the user 116. For example, Figure 25 shows the GUI for an example of the "Custom Alert" channel 2500. The GUI for the "Custom Alert" channel 2500 may include, for example, a query parameters portion 2510 and an actions portion 2512.

[00174] The query parameters portion 2510 allows the user 116 to, for example, adjust the query parameters, add more conditions, change conditions, remove conditions, and the like. The actions portion 2512 allows the user 116 to perform certain actions based on the alert. For example, the actions portion 2512 may provide mechanisms by which the user 116 may perform stock trading transactions (e.g., buying and selling stock), similar to trading window 1324 of "Stock Watch" channel 1300 of Figure 16, which may be supported by the "TD Ameritrade" web service.

[00175] The "Custom Alert" channel 2500 is used to generate an alert that is of particular importance to the user 116. The "Custom Alert" channel 2500 is an example of the user-centric aspect of PID application 112 in which only information that is of most importance to the user is processed and/or presented to the user 116. The aforementioned process of combining two or more independent channels to create a new channel (and touchlet) and a process of eventing off of the combined data is an example of the capability of PID application 112 to allow the user 116 to action based on disparate data that is of interest to the user and conditions set by the user.

[00176] Conclusion

[0001] While various inventive embodiments have been described and illustrated herein, those of ordinary skill in the art will readily envision a variety of other means and/or structures for performing the function and/or obtaining the results and/or one or more of the advantages described herein, and each of such variations and/or modifications is deemed to be within the scope of the inventive embodiments described herein. More generally, those skilled in the art will readily appreciate that all parameters, dimensions, materials, and configurations described herein are meant to be exemplary and that the actual parameters, dimensions, materials, and/or configurations will depend upon the specific application or applications for which the inventive teachings is/are used. Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific inventive embodiments

described herein. It is, therefore, to be understood that the foregoing embodiments are presented by way of example only and that, within the scope of the appended claims and equivalents thereto, inventive embodiments may be practiced otherwise than as specifically described and claimed. Inventive embodiments of the present disclosure are directed to each individual feature, system, article, material, kit, and/or method described herein. In addition, any combination of two or more such features, systems, articles, materials, kits, and/or methods, if such features, systems, articles, materials, kits, and/or methods are not mutually inconsistent, is included within the inventive scope of the present disclosure.

[0002] The above-described embodiments of the invention can be implemented in any of numerous ways. For example, some embodiments may be implemented via one or more controllers, which may employ hardware, software or a combination thereof. In some embodiments discussed herein, one or more controllers may be implemented, at least in part, as a state machine.

[0003] When any aspect of an embodiment is implemented at least in part in software, the software code can be executed on any suitable processor or collection of processors, whether provided in a single device or computer or distributed among multiple devices/computers.

[0004] In this respect, various aspects of the invention, may be embodied at least in part as a computer readable storage medium (or multiple computer readable storage media) (e.g., a computer memory, one or more floppy discs, compact discs, optical discs, magnetic tapes, flash memories, circuit configurations in Field Programmable Gate Arrays or other semiconductor devices, or other tangible computer storage medium or non-transitory medium) encoded with one or more programs that, when executed on one or more computers or other processors, perform methods that implement the various embodiments of the technology discussed above. The computer readable medium or media can be transportable, such that the program or programs stored thereon can be loaded onto one or more different computers or other processors to implement various aspects of the present technology as discussed above.

[0005] The terms "program" or "software" are used herein in a generic sense to refer to any type of computer code or set of computer-executable instructions that can be employed to program a computer or other processor to implement various aspects of the present technology as discussed above. Additionally, it should be appreciated that according to one aspect of this

embodiment, one or more computer programs that when executed perform methods of the present technology need not reside on a single computer or processor, but may be distributed in a modular fashion amongst a number of different computers or processors to implement various aspects of the present technology.

[0006] Computer-executable instructions may be in many forms, such as program modules, executed by one or more computers or other devices. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Typically the functionality of the program modules may be combined or distributed as desired in various embodiments.

[0007] Also, the technology described herein may be embodied as a method, of which at least one example has been provided. The acts performed as part of the method may be ordered in any suitable way. Accordingly, embodiments may be constructed in which acts are performed in an order different than illustrated, which may include performing some acts simultaneously, even though shown as sequential acts in illustrative embodiments.

[0008] All definitions, as defined and used herein, should be understood to control over dictionary definitions, definitions in documents incorporated by reference, and/or ordinary meanings of the defined terms.

[0009] The indefinite articles "a" and "an," as used herein in the specification and in the claims, unless clearly indicated to the contrary, should be understood to mean "at least one."

[0010] The phrase "and/or," as used herein in the specification and in the claims, should be understood to mean "either or both" of the elements so conjoined, i.e., elements that are conjunctively present in some cases and disjunctively present in other cases. Multiple elements listed with "and/or" should be construed in the same fashion, i.e., "one or more" of the elements so conjoined. Other elements may optionally be present other than the elements specifically identified by the "and/or" clause, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, a reference to "A and/or B", when used in conjunction with open-ended language such as "comprising" can refer, in one embodiment, to A only (optionally including elements other than B); in another embodiment, to B only (optionally including elements other than A); in yet another embodiment, to both A and B (optionally including other elements); etc.

[0011] As used herein in the specification and in the claims, "or" should be understood to have the same meaning as "and/or" as defined above. For example, when separating items in a list, "or" or "and/or" shall be interpreted as being inclusive, i.e., the inclusion of at least one, but also including more than one, of a number or list of elements, and, optionally, additional unlisted items. Only terms clearly indicated to the contrary, such as "only one of" or "exactly one of," or, when used in the claims, "consisting of," will refer to the inclusion of exactly one element of a number or list of elements. In general, the term "or" as used herein shall only be interpreted as indicating exclusive alternatives (i.e. "one or the other but not both") when preceded by terms of exclusivity, such as "either," "one of," "only one of," or "exactly one of." "Consisting essentially of," when used in the claims, shall have its ordinary meaning as used in the field of patent law.

[0012] As used herein in the specification and in the claims, the phrase "at least one," in reference to a list of one or more elements, should be understood to mean at least one element selected from any one or more of the elements in the list of elements, but not necessarily including at least one of each and every element specifically listed within the list of elements and not excluding any combinations of elements in the list of elements. This definition also allows that elements may optionally be present other than the elements specifically identified within the list of elements to which the phrase "at least one" refers, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, "at least one of A and B" (or, equivalently, "at least one of A or B," or, equivalently "at least one of A and/or B") can refer, in one embodiment, to at least one, optionally including more than one, A, with no B present (and optionally including elements other than B); in another embodiment, to at least one, optionally including more than one, B, with no A present (and optionally including elements other than A); in yet another embodiment, to at least one, optionally including more than one, A, and at least one, optionally including more than one, B (and optionally including other elements); etc.

[00177] In the claims, as well as in the specification above, all transitional phrases such as "comprising," "including," "carrying," "having," "containing," "involving," "holding," "composed of," and the like are to be understood to be open-ended, i.e., to mean including but not limited to. Only the transitional phrases "consisting of" and "consisting essentially of" shall be closed or semi-closed transitional phrases, respectively, as set forth in the United States Patent Office Manual of Patent Examining Procedures, Section 2111.03.

CLAIMS

1. An apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information, the apparatus comprising:

at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media;

at least one memory to store processor-executable instructions; and

at least one processor communicatively coupled to the at least one communication interface and the at least one memory, wherein upon execution of the processor-executable instructions by the at least one processor, the at least one processor provides and evaluates at least some of the secure user-centric information by:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) controlling the at least one communication interface to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one external device; and/or

D) controlling the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

2. The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs C).

3. The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs D).

4. The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs C) and D).

5. The apparatus of claim 1, wherein the first channel information includes at least one of:
text information;
graphic information;
one or more pictures;
one or more videos;
audio or digital sound;
streaming data, audio or video;
content associated with an executing computer application;
voice-over-IP communication;
instant messaging/SMS information;
video-conferencing information;
environmental monitoring information;
financial services information;
enterprise resource planning information;
enterprise content management information;
building information;
project management information;
product lifecycle management information;

RSS (Really Simple Syndication) reader information;

remote device control/interaction information;

a three-dimensional graphic visualization of one or more objects and/or immersive environments;

one or more word processing documents;

one or more spreadsheets;

one or more presentation/slide shows;

email; and

address book information.

6. The apparatus of claim 1, wherein the at least one threshold condition or parameter includes a numerical limit or a trend.

7. The apparatus of claim 1, wherein B) comprises:

B1) making a comparison of the monitored first channel information and the at least one threshold condition or parameter based at least in part on at least one criterion for the comparison; and

B2) establishing a trigger, based at least in part on B1), if the at least one criterion is met.

8. The apparatus of claim 7, wherein the at least one criterion for the comparison includes at least one of:

exceeding a quantified numerical limit; and

multiple similar events trending in a certain direction.

9. The apparatus of claim 7, wherein the at least one processor performs D), and wherein the trigger information includes at least one of:

one or more values or other information content associated with the monitored first channel information that resulted in the trigger;

one or more date stamps and/or time stamps associated with the one or more values or the other information content associated with the monitored first channel information that resulted in the trigger;

an identifier for one or more content sources providing at least some of the monitored first channel information that resulted in the trigger;

the at least one criterion for the comparison that resulted in the trigger.

10. The apparatus of claim 1, wherein the at least one processor performs C), and wherein the at least one alert includes at least one of:

at least one visual alert;

at least one auditory alert;

at least one email message; and

at least one SMS text message.

11. The apparatus of claim 1, wherein the at least one processor performs C), and wherein the at least one alert includes activation of at least one channel of the plurality of channels.

12. The apparatus of claim 1, wherein the at least one processor performs C), and wherein the at least one alert includes a notification to a law enforcement agency.

13. The apparatus of claim 1, wherein the at least one processor performs C), and wherein:

C) comprises transmitting data so as to generate the at least one alert on at least one external device;

the at least one processor further provides the at least some of the secure user-centric information by:

E) controlling the at least one communication interface so as to transmit to the at least one external device channel information relating to at least one authorized channel of the plurality of authorized channels implemented in A); and

the data transmitted in C) causes an appearance of the at least one authorized channel, as represented on the at least one external device, to change so as to generate the at least one alert on the at least one external device.

14. The apparatus of claim 13, wherein the at least one external device includes the at least one user platform.

15. The apparatus of claim 13, wherein the at least one authorized channel includes the first channel.

16. The apparatus of claim 13, wherein the data transmitted in C) causes the at least one authorized channel, as represented on the at least one external device, to expand into additional channels represented on the at least one external device so as to generate the at least one alert on the at least one external device.

17. The apparatus of claim 13, wherein the data transmitted in C) renders the at least one authorized channel, as represented on the at least one external device, as a simulated three-dimensional representation of the channel information relating to the at least one authorized channel, so as to generate the at least one alert on the at least one external device.

18. The apparatus of claim 1, wherein the at least one processor performs C), and wherein in C), the at least one external device includes at least one of a mobile device, a television, and a Blu-ray player.

19. The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

E) controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

20. The apparatus of claim 19, wherein the at least one processor performs C), and wherein in C), the at least one external device includes the at least one user platform.

21. The apparatus of claim 20, wherein:

the at least one user platform includes a plurality of user platforms;

E) comprises controlling the at least one communication interface to transmit the at least some of the first channel information to the plurality of user platforms; and

C) comprises controlling the at least one communication interface to transmit data so as to generate at least one alert on the plurality of user platforms.

22. The apparatus of claim 21, wherein:

the plurality of user platforms include multiple different types of computing devices and/or multiple different types of communication devices.

23. The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

E) authenticating the user and the at least one user platform to receive at least the first channel information and/or the at least one alert.

24. The apparatus of claim 23, wherein the at least one memory stores a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform, and wherein E) comprises authenticating the user and the at least one user platform based at least in part on the user profile.

25. The apparatus of claim 23, wherein the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the user platform, the authentication directory including a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and wherein E) comprises authenticating the user and the at least one user platform to receive at least the first channel information based at least in part on the authentication directory.

26. The apparatus of claim 23, wherein the at least one processor performs C), and wherein in C), the at least one external device includes the at least one user platform.

27. The apparatus of claim 23, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

F) confirming at least one subscriber to the at least one alert; and

G) determining one or more active devices of the at least one subscriber to the at least one alert.

28. The apparatus of claim 27, wherein the at least one processor performs C), and wherein in C), the at least one external device includes the one or more devices of the at least one subscriber to the at least one alert.

29. The apparatus of claim 1, wherein in A), the at least one processer implements a channel server that defines one or more visual characterizations, one or more functions or features, and/or one or more information types provided by respective channels of the plurality of channels through which the user receives and/or interacts with the respective portions of the secure user-centric information, wherein the channel server implements at least the first channel, and wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

D) controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

30. The apparatus of claim 29, wherein the at least one memory further stores at least one database including registries to one or more services and/or applications used by the channel server to implement at least the first channel and provide the first channel information.

31. The apparatus of claim 30, wherein in B) and C), the at least one processor implements a channel alert server, communicatively coupled to the channel server, to monitor at least the first channel information so as to determine the one or more events, conditions, logical workflows, discrete information values or signal data based on the at least one threshold condition or parameter, and to generate at least one alert in response to the one or more determined events, conditions, logical workflows, discrete information values or signal data relating to the first channel information.

32. The apparatus of claim 31, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

implementing at least one other server, communicatively coupled to the channel server and the channel alert server, to provide the one or more services and/or applications registered in the at least one database and used by the channel server to implement the first channel and provide the first channel information, wherein the at least one other server includes at least one of:

a video server to transform, transmit, and/or support delivery of video information and/or audio information included in the first channel information;

an enterprise content management server to provide configuration, templates, visual content, user interface controls and management control for the first channel information;

a device integration server to manage streaming or real-time information from a machine or device, which streaming or real-time information is included in the first channel information;

a portal server to facilitate Internet-based function access by the at least one communication interface of the user platform; and

a virtual world server to provide a three-dimensional visualization of, and/or interaction with, the first channel information.

33. The apparatus of claim 32, wherein at least a portion of one or more of the first channel information, the video information, the audio information, the streaming or real-time information from a machine or device, the events, the conditions, the logical workflows, the discrete information values, and the signal data are stored in the at least one database.

34. The apparatus of claim 32, wherein the at least one processor establishes a service-oriented architecture (SOA) including an enterprise service bus, wherein the channel server, the channel alert server, and the at least one other server are implemented as logical components that are communicatively coupled to each other and the at least one database via the enterprise service bus.

35. A computer-implemented method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) electronically implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) electronically monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) electronically transmitting at least one alert to, or transmitting data so as to generate at least one alert on, at least one external device; and/or

D) electronically storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

36. At least one non-transitory computer readable storage medium encoded with processor-executable instructions that, when executed by at least one processor, perform a method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) transmitting at least one alert to, or transmitting data so as to generate at least one alert on, at least one external device; and/or

D) storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

ABSTRACT

Display of and access to secure user-centric information via the construct of a channel grid framework serving as a desktop on a user device. Multiple authorized channels through which the user receives and/or interacts with respective portions of the secure user-centric information are implemented based on information access rights and/or security protocols respectively associated with the channels. Channel information is monitored to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on one or more threshold conditions or parameters relating to the channel information. Actionable and/or non-actionable alerts may be generated on one or more authenticated user devices and/or other devices. Information relating to determination of one or more events, conditions, logical workflows, discrete information values or signal data may be transmitted to various devices and/or stored for archival purposes.

Application Data Sheet

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested classification::	
Suggested Group Art Unit::	
CD-ROM or CD-R?::	None
Computer Readable Form (CRF)?::	No
Title::	Methods, Apparatus and Systems for Providing and Monitoring Secure Information via Multiple Authorized Channels and Generating Alerts Relating to Same
Attorney Docket Number::	098944-0130
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	1
Total Drawing Sheets::	26
Small Entity?::	Yes
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

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Representative Information

Representative Customer Number::	48329	

Domestic Priority Information

Application::	**Continuity Type::**	**Parent Application::**	**Parent Filing Date::**
This Application	An application claiming the benefit under 35 USC 119(e)	61/474942	4/13/2011
This Application	An application claiming the benefit under 35 USC 119(e)	61/435976	1/25/2011
This Application	Continuation in part of	12/465331	5/13/2009
12/465331	An application claiming the benefit under 35 USC 119(e) of	61/052765	5/13/2008

Foreign Priority Information

Country::	**Application number::**	**Filing Date::**	**Priority Claimed::**

Assignee Information

Assignee Name:: Monterey Group One, LLC

Electronic Acknowledgement Receipt

EFS ID:	9873708
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	Joseph Teja
Filer Authorized By:	
Attorney Docket Number:	098944-0130
Receipt Date:	13-APR-2011
Filing Date:	
Time Stamp:	17:30:34
Application Type:	Utility under 35 USC 111(a)

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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 of New Application	098944-0130TRANSMITTAL.pdf	152927 a18b949cebe89e5b5fb1da318a61cf42844 24536	no	3

Warnings:	
Information:	

2	Drawings-only black and white line drawings	098944-0130DRAWINGS_IFWSim.pdf	4596496 effd4a743d971fb48130fdf2c2541eee4a8ea7e3	no	26
Warnings:					
Information:					
3		098944-0103APP.pdf	171155 db20740563011b34008d3156af5bcbbbe3b0ff20	yes	56

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	45
	Claims	46	55
	Abstract	56	56

Warnings:					
Information:					
4	Application Data Sheet	098944-0130DATA.pdf	62178 91539ee9e61a401a521c6091359dce57ce23504a	no	4
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
		Total Files Size (in bytes):	4982756		

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<u>New Applications Under 35 U.S.C. 111</u>
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.

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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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/086,165

APPLICATION AS FILED - PART I

	(Column 1)		(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED		NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A		N/A	N/A	82		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A		N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A		N/A	N/A	110		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	36	minus 20 =	* 16	x 26 =	416	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x 110 =	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 $270 ($135 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	878		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
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)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		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	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/086,165	04/13/2011	2611	0.00	098944-0130	36	3

CONFIRMATION NO. 3599

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BOSTON, MA 02199-7610

FILING RECEIPT

OC000000047313512

Date Mailed: 04/26/2011

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Applicant(s)

Michael Wetzer, Fayetteville, NY;
Thomas Theriault, Baldwinsville, NY;

Assignment For Published Patent Application

Monterey Group One, LLC

Power of Attorney: None

Domestic Priority data as claimed by applicant

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which claims benefit of 61/052,765 05/13/2008

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 04/22/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/086,165**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
** **SMALL ENTITY** **

Title

METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

Preliminary Class

375

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.

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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 (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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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
13/086,165	04/13/2011	Michael Wetzer	098944-0130

CONFIRMATION NO. 3599

48329
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
26TH FLOOR
BOSTON, MA 02199-7610

FORMALITIES LETTER

OC000000047313513

Date Mailed: 04/26/2011

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. 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 statutory basic filing fee is missing.
  *Applicant must submit $**82** to complete the basic filing fee for a small entity.*
- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
  Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

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

- Additional claim fees of $**416** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $**65** for a small entity in compliance with 37 CFR 1.27, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is $**943** for a small entity

- $**82** Statutory basic filing fee.
- $**65** Surcharge.
- The application search fee has not been paid. Applicant must submit $**270** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit $**110** to complete the examination fee for a small entity in compliance with 37 CFR 1.27.

- Total additional claim fee(s) for this application is $**416**
  - $**416** for **16** total claims over 20.

Replies should be mailed to:

Mail Stop Missing Parts
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.
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.

/aabranyos/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Wetzer et al.

Title: METHODS AND APPARATUS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

Appl. No.: 13/086165

Filing Date: 4/13/2011

Examiner: Unknown

Art Unit: 2611

Confirmation Number: 3599

TRANSMITTAL OF MISSING PARTS OF PATENT APPLICATION

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

Sir:

In response to the Notice to File Missing Parts of Application mailed April 26, 2011, in the above-identified patent application, transmitted herewith are the missing parts to complete the filing of the subject patent application.

Enclosed are:

[X] Declaration (1 page)

[ ] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[ ]	Extension for response filed within the first month
[ ]	Extension for response filed within the second month
[ ]	Extension for response filed within the third month
[ ]	Extension for response filed within the fourth month
[ ]	Extension for response filed within the fifth month

The adjustment to the number of sheets for EFS-Web filing follows:

Number of Sheets		EFS-Web Adjustment	Number of Sheets for EFS-Web
58	x	75%	44

The filing fee is calculated below:

	Claims as Filed		Included in Basic Fee		Extra Claims		Rate		Fee Totals
Basic Filing Fee, Search Fee & Examination Fee							$1,090.00		$1,090.00
Size Fee	44	-	100	=	0	x	$270.00	=	$0.00
Total Claims:	36	-	20	=	16	x	$52.00	=	$832.00
Independents:	3	-	3	=	0	x	$220.00	=	$0.00
If any Multiple Dependent Claim(s) present:						+	$390.00	=	$0.00
Surcharge under 37 CFR 1.16(f) for late filing of Executed Declaration and late payment of filing fee						+	$130.00	=	$130.00
Extension fee for response filed within the MONTH month:						+		=	$0.00
							SUBTOTAL:	=	$2,052.00
[X]							Small Entity Fees Apply (subtract ½ of above):	=	$1,026.00
							Basic Filing Fee Reduction for Filing via EFS-Web		$83.00
							TOTAL FILING FEE:	=	$943.00
Processing Fee under 37 CFR 1.17(i) for Late Filing of English Translation of Application:						+	$130.00	=	$0.00
							TOTAL FEE	=	$943.00
Difference to pay:						-	$0.00	-	$943.00

The above-identified fees of $943.00 in payment of surcharge fee (37 C.F.R. § 1.16(f)) are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 6/27/11

By _____

FOLEY & LARDNER LLP
Customer Number: 48329
Telephone: (617) 342-4029
Facsimile: (617) 342-4001

Joseph Teja, Jr.
Attorney for Applicant
Registration No. 45,157

Electronic Patent Application Fee Transmittal

Application Number:	13086165
Filing Date:	13-Apr-2011
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Filer:	Joseph Teja/Cassie Zaleski
Attorney Docket Number:	098944-0130

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Claims in excess of 20	2202	16	26	416
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**943**

Electronic Acknowledgement Receipt

EFS ID:	10396664
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	Joseph Teja/Cassie Zaleski
Filer Authorized By:	Joseph Teja
Attorney Docket Number:	098944-0130
Receipt Date:	27-JUN-2011
Filing Date:	13-APR-2011
Time Stamp:	18:51:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$943
RAM confirmation Number	5877
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Oath or Declaration filed	098944-0130DEC.pdf	329578 c3bc43723ce922981122a12b0af87958e225fe6a	no	1
Warnings:					
Information:					
2	Applicant Response to Pre-Exam Formalities Notice	0130RespMP.pdf	461530 5b9325e28c5432fb5c1c48b7eef13d021d5e3e2b	no	3
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	38765 40834ccbae633d7446e2f3265eb32385844ab48b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	829873	

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/SB/01A (07-06)
Approved for use through 01/31/2007. OMB 0651-0032
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.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	METHODS AND APPARATUS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

As the below named inventor(s), I/we declare that:

This declaration is directed to:

☐ The attached application, or

☑ Application No. 13/086185 filed on 4/13/2011

☐ As amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

All statements made herein of my/own knowledge are true, all statements made herein 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 are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF INVENTOR(S)

Inventor one: Michael Welzer

Signature: _____ Citizen of: U.S.A.

Inventor two: Thomas Shrimpton

Signature: _____ Citizen of: U.S.A.

☐ Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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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
13/086,165	04/13/2011	2611	943	098944-0130 (ML0003US01)	36	3

CONFIRMATION NO. 3599

UPDATED FILING RECEIPT

48329
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
26TH FLOOR
BOSTON, MA 02199-7610

OC000000048558988

Date Mailed: 07/05/2011

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Applicant(s)

Michael Wetzer, Fayetteville, NY;
Thomas Theriault, Baldwinsville, NY;

Assignment For Published Patent Application

Monterey Group One, LLC

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/474,942 04/13/2011
and claims benefit of 61/435,976 01/25/2011
and is a CIP of 12/465,331 05/13/2009
which claims benefit of 61/052,765 05/13/2008

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 04/22/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/086,165**

Projected Publication Date: 10/13/2011

Non-Publication Request: No

Early Publication Request: No
** **SMALL ENTITY** **

Title

METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

Preliminary Class

375

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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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 (1-866-999-4158).

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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 grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/086,165

APPLICATION AS FILED - PART I

	(Column 1)		(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED		NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A		N/A	N/A	82		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A		N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A		N/A	N/A	110		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	36	minus 20 =	* 16	x 26 =	416	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x 110 =	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 $270 ($135 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	878		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
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)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		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".
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML0003US01)

CONFIRMATION NO. 3599

48329
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
26TH FLOOR
BOSTON, MA 02199-7610

PUBLICATION NOTICE

OC000000050346905

Title:METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

Publication No.US-2011-0252132-A1
Publication Date:10/13/2011

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Title	METHODS, APPARATUS AND SYSTEMS
Art Unit	2173
Examiner Name	Kieu D. Vu
Attorney Docket Number	098944-0130 (ML0003US01)

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: **48329**

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☐ The address associated with the above-mentioned Customer Number.

OR

☒ The address associated with Customer Number: **48329**

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant/Inventor.

OR

☒ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature		Date	6/21/12
Name	Michael Wetzer	Telephone	(315) 679-4268 558085
Title and Company	CEO, Cyandia, Inc.		

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner:	Wetzer et al.		
Application No.:	13/086165	Filed:	4/13/2011
Patent No.:		Issue Date:	
Docket Number:	098944-0130 (ML0003US01)		
Entitled:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME		

CYANDIA, INC. (Name of Assignee) — Corporation (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title, and interest
   The extent (by percentage) of its ownership interest is %

in the patent application/patent identified above by virtue of either:

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/Frame 027785/0966 or for which a copy thereof is attached.

OR

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

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☐ Additional documents in the chain of title are listed on a supplemental sheet.

☐ Copies of assignments or other documents in the chain of title are attached.

[**NOTE**: A separate copy (i.e., a true copy of the original document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded 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.

Signature	Date 6/21/12
Michael Wetzer	(315) 558-0351 (315) 679-4268
Printed or Typed Name	Telephone Number
CEO, Cyandia, Inc.	
Title	

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 1.14. 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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Electronic Acknowledgement Receipt

EFS ID:	13128411
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	Joseph Teja/Susan DiNicola
Filer Authorized By:	Joseph Teja
Attorney Docket Number:	098944-0130 (ML0003US01)
Receipt Date:	28-JUN-2012
Filing Date:	13-APR-2011
Time Stamp:	12:18:10
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	Power of Attorney	098944-0130POA.pdf	663912 eec280b9a49dbcfdf7c3ecf01f0111cb6d296962	no	1

Warnings:	
Information:	

2	Assignee showing of ownership per 37 CFR 3.73(b).	098944-0130373BSTATEMENT.pdf	546727 f4060aec051eddcb3c9b980a18a61986fc021d48	no	1

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Information:	
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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.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML0003US01)

CONFIRMATION NO. 3599

48329
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
26TH FLOOR
BOSTON, MA 02199-7610

POA ACCEPTANCE LETTER

OC000000055174241

Date Mailed: 07/03/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/28/2012.

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.

/zabraha/

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

(use as many sheets as necessary)

Sheet | 1 | of | 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	2002/0116256-A1	08-22-2002	DE RAFAEL ET AL.	
	A2	2002/0122063-A1	09-05-2002	WEINBERG ET AL.	
	A3	2002/0152117-A1	10-17-2002	CRISTOFALO ET AL.	
	A4	2003/0018967-A1	01-23-2003	GORBATOV ET AL.	
	A5	2003/0018972-A1	01-23-2003	ARORA, JITESH	
	A6	2003/0035010-A1	02-20-2003	KODOSKY ET AL.	
	A7	2003/0058277-A1	03-27-2003	BOWMAN-AMUAH, MICHEL K.	
	A8	2003/0084436-A1	05-01-2003	BERGER ET AL.	
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	A11	2004/0015367-A1	01-22-2004	NICASTRO ET AL.	
	A12	2004/0025174-A1	02-05-2004	CERRATO, DEAN E.	
	A13	2004/0082345-A1	04-29-2004	LUECKHOFF, HERMANN	
	A14	2004/0148184-A1	07-29-2004	SADIQ, WAQAR	
	A15	2005/0027676-A1	02-03-2005	EICHSTAEDT ET AL.	
	A16	2005/0086612-A1	04-21-2005	GETTMAN ET AL.	
	A17	2005/0114881-A1	05-26-2005	PHILYAW ET AL.	
	A18	2005/0137981-A1	06-23-2005	MAES, STEPHANE H.	
	A19	2005/0172018-A1	08-04-2005	DEVINE ET AL.	
	A20	2005/0203771-A1	09-15-2005	ACHAN, PRADEEP PADMAKSHAN	
	A21	2005/0246415-A1	11-03-2005	BELFIORE ET AL.	
	A22	2005/0278741-A1	12-15-2005	ROBARTS ET AL.	
	A23	2006/0015818-A1	01-19-2006	CHAUDHRI ET AL.	
	A24	2006/0061580-A1	03-23-2006	FUJIWARA ET AL.	
	A25	2006/0271953-A1	11-30-2006	JACOBY ET AL.	
	A26	2006/0271959-A1	11-30-2006	JACOBY ET AL.	
	A27	2006/0271960-A1	11-30-2006	JACOBY ET AL.	
	A28	2006/0271961-A1	11-30-2006	JACOBY ET AL.	
	A29	2006/0271997-A1	11-30-2006	JACOBY ET AL.	
	A30	2006/0277469-A1	12-07-2006	CHAUDHRI ET AL.	
	A31	2006/0282312-A1	12-14-2006	CARLSON ET AL.	
	A32	2007/0018887-A1	01-25-2007	FEYEREISEN ET AL.	
	A33	2007/0083616-A1	04-12-2007	MADDEN, THOMAS	
	A34	2007/0083911-A1	04-12-2007	MADDEN ET AL.	
	A35	2007/0088952-A1	04-19-2007	HEWITT ET AL.	
	A36	2007/0101291-A1	05-03-2007	FORSTALL ET AL.	
	A37	2007/0101297-A1	05-03-2007	FORSTALL ET AL.	
	A38	2007/0101368-A1	05-03-2007	JACOBY ET AL.	

Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

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Sheet 2 of 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

U.S. PATENT DOCUMENTS

Examiner	Cite No.[1]	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant
	A39	2007/0101433-A1	05-03-2007	LOUCH ET AL.	
	A40	2007/0118813-A1	05-24-2007	FORSTALL ET AL.	
	A41	2007/0124663-A1	05-31-2007	FISCHER ET AL.	
	A42	2007/0130541-A1	06-07-2007	LOUCH ET AL.	
	A43	2007/0162850-A1	07-12-2007	ADLER ET AL.	
	A44	2007/0186103-A1	08-09-2007	RANDLE ET AL.	
	A45	2007/0189737-A1	08-16-2007	CHAUDHRI ET AL.	
	A46	2007/0192823-A1	08-16-2007	ANDERSEN ET AL.	
	A47	2007/0223462-A1	09-27-2007	HITE ET AL.	
	A48	2007/0266400-A1	11-15-2007	ROGERS ET AL.	
	A49	2008/0005798-A1	01-03-2008	ROSS, ALAN D.	
	A50	2008/0028338-A1	01-31-2008	KODOSKY ET AL.	
	A51	2008/0034309-A1	02-07-2008	LOUCH ET AL.	
	A52	2008/0034314-A1	02-07-2008	LOUCH ET AL.	
	A53	2008/0066011-A1	03-13-2008	URRABAZO ET AL.	
	A54	2008/0104513-A1	05-01-2008	KROGH, JAN OLAF	
	A55	2008/0111818-A1	05-15-2008	STAMBAUGH, THOMAS M.	
	A56	2008/0120327-A1	05-22-2008	BHAT, GURU	
	A57	2008/0126989-A1	05-29-2008	FLORES ET AL.	
	A58	2008/0129725-A1	06-05-2008	STAMBAUGH, THOMAS M.	
	A59	2008/0134256-A1	06-05-2008	DACOSTA, BEHRAM	
	A60	2008/0141170-A1	06-12-2008	KODOSKY ET AL.	
	A61	2008/0141174-A1	06-12-2008	KODOSKY ET AL.	
	A62	2008/0150963-A1	06-26-2008	STAMBAUGH, THOMAS M.	
	A63	2008/0168185-A1	07-10-2008	ROBBIN ET AL.	
	A64	2008/0168245-A1	07-10-2008	DE ATLEY ET AL.	
	A65	2008/0168391-A1	07-10-2008	ROBBIN ET AL.	
	A66	2008/0168526-A1	07-10-2008	ROBBIN ET AL.	
	A67	2008/0172173-A1	07-17-2008	CHANG ET AL.	
	A68	2008/0172625-A1	07-17-2008	MONTGOMERY, CHRISTOPHER K.	
	A69	2008/0172632-A1	07-17-2008	STAMBAUGH, THOMAS M.	
	A70	2008/0207327-A1	08-28-2008	VAN LUCHENE ET AL.	
	A71	2008/0235601-A1	09-25-2008	FRIED ET AL.	
	A72	2008/0256643-A1	10-16-2008	JONES ET AL.	
	A73	2008/0319828-A1	12-25-2008	SOUTHAM ET AL.	
	A74	2009/0013263-A1	01-08-2009	FORTNOW ET AL.	
	A75	2009/0018712-A1	01-15-2009	DUNCAN ET AL.	
	A76	2009/0025025-A1	01-22-2009	VLECK ET AL.	
	A77	2009/0091578-A1	04-09-2009	CARNAHAN ET AL.	
	A78	2009/0113481-A1	04-30-2009	FRIEDMAN	
	A79	2009/0132942-A1	05-21-2009	SANTORO ET AL.	

Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

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Sheet 3 of 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

U.S. PATENT DOCUMENTS

Examiner	Cite No.[1]	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant
	A80	2009/0231128-A1	09-17-2009	WATSON ET AL.	
	A81	2009/0233542-A1	09-17-2009	GRATTON ET AL.	
	A82	2009/0249069-A1	10-01-2009	DASKALOPOULOS ET AL.	
	A83	2009/0254842-A1	10-08-2009	LEACOCK ET AL.	
	A84	2009/0259972-A1	10-15-2009	KODOSKY ET AL.	
	A85	2009/0287914-A1	11-19-2009	SHAH ET AL.	
	A86	2009/0298535-A1	12-03-2009	KLEIN ET AL.	
	A87	2009/0315807-A1	12-24-2009	HSU, FAN-HSUAN	
	A88	2010/0017722-A1	01-21-2010	COHEN, RONALD	
	A89	2010/0023398-A1	01-28-2010	BROWN ET AL.	
	A90	2010/0031334-A1	02-04-2010	SHAIKH, IMRAN	
	A91	2010/0057907-A1	03-04-2010	ROSS ET AL.	
	A92	2010/0058188-A1	03-04-2010	SHAH ET AL.	
	A93	2010/0080298-A1	04-01-2010	HANG ET AL.	
	A94	2010/0083189-A1	04-01-2010	ARLEIN ET AL.	
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Sheet 4 of 6

Complete if Known	
Application Number	13/086165
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First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
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Sheet 5 of 6

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Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
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	C12	US Office Action on 098944-0108 DTD 9/7/2011	
	C13	US Office Action on 098944-0129 DTD 12/4/2012	
	C14	US Office Action on 098944-0132 DTD 12/18/2012	
	C15	US Office Action on 098944-0133 DTD 1/3/2013	
	C16	US Office Action on 098944-0138 DTD 5/8/2013	

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PATENT ABSTRACTS OF JAPAN

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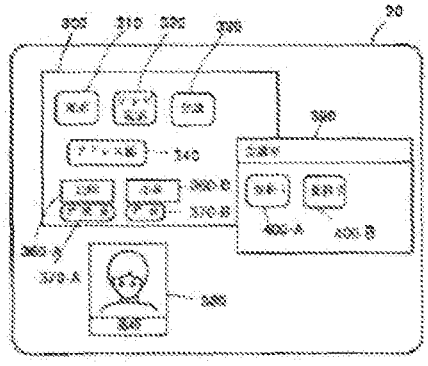
(51)Int.Cl. H04M 11/00
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(54) MULTIMEDIUM TERMINAL EQUIPMENT AND COMMUNICATION CONNECTION CONTROL SYSTEM

(57)Abstract:
PURPOSE: To improve the operability for communication connection by dynamically changing and displaying functions of plural communication control icons corresponding to cooperative work forms on a terminal and connecting a line with a communication medium corresponding to a selected function.
CONSTITUTION: In the case of tripartite cooperative work, an entry button 360 used to give a command to a specific other party is displayed on a panel window 300 for work of a work station 20 besides icons 310 to 340 of telephone, video conference, conference, and address book. Classifications of communication mediums (data system, video system, and audio system) connecting the entries are displayed in display areas 370-A and 370-B. When a communication line of the video system to a station, to which a medium of the video system is not connected, will be newly established, an entry button 360-B is selected after the



video telephone icon 320 is selected, and then, a line connection control routine indicated by the video telephone icon 320 automatically connects a communication line of the video system.

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号

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Ｇ０６Ｆ　15/40	５３０　Ｋ	7218－5L		
	Ｖ	7218－5L		
Ｈ０４Ｌ　12/18				
		8529－5K	Ｈ０４Ｌ　11/16	

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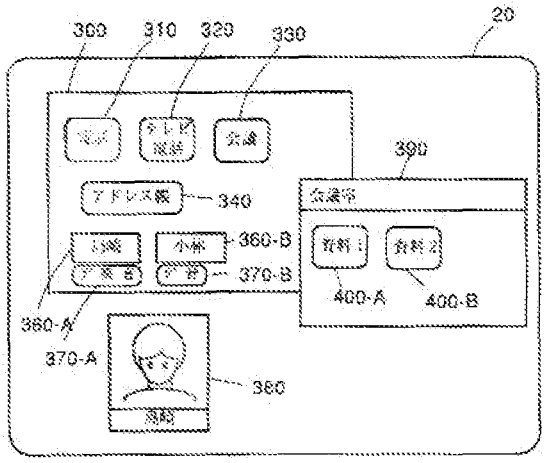
(74)代理人　弁理士　小川　勝男

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(54)【発明の名称】　マルチメディア端末装置および通信接続制御方式

(57)【要約】
【目的】本発明は、複数のワークステーションからなる共同作業システムにおいて、利用者による通信接続のための操作性を向上することを目的とする。
【構成】共同作業のための各端末装置（参加者）に対応させて、通信メディアの現在の接続状態によって機能が変化するようにしたマルチメディア通信接続用のアイコン３１０～３３０を設け、アイコンが選択された時、制御プログラム６８０が、現在状態に応じた適切なマルチメディア通信接続を行なうようにした。
【効果】マルチメディア通信路の接続操作が大幅に簡略化される。

図４



【特許請求の範囲】
【請求項１】それぞれマルチウィンドウ機能を備えた複数の端末装置からなる通信システムにおいて、各端末装置の画面に生成される１つのウィンドウに、上記端末装置を介して行なう共同作業の形態と対応する複数の通信制御アイコンを表示し、これらの通信制御アイコンの機能を他の端末装置との接続状態に応じて動的に変更し、選択された通信制御アイコンの機能に応じた通信メディアによる接続を行なうようにしたことを特徴とするマルチメディア通信接続制御方式。
【請求項２】前記通信制御アイコンの機能を接続相手となる端末装置対応に変更するようにしたことを特徴とする請求項１に記載のマルチメディア通信接続制御方式。
【請求項３】接続相手の端末装置が指定された時、該相手端末装置のアドレスを記憶しておき、その後に上記相手端末装置を対象として前記何れかの通信制御アイコンが選択された場合に、上記記憶しておいたアドレスを利用して、上記相手端末装置との間に上記アイコンの機能で特定される通信メディアによる接続を行なうことを特徴とする請求項１または２に記載のマルチメディア通信接続制御方式。
【請求項４】前記各端末装置の画面に接続相手となる端末装置と対応した相手表示アイコンを表示しておき、上記相手表示アイコンと前記通信制御アイコンとを選択することによって、接続制御すべき相手端末装置と通信メディアを指定するようにしたことを特徴とする請求項１、２または３に記載のマルチメディア通信接続制御方式。
【請求項５】前記各端末装置の画面に、接続相手となる端末装置対応に前記通信制御アイコン表示用のウィンドウを生成しておき、何れかの通信制御アイコンが選択された場合に、該アイコンが位置するウィンドウと対応した相手端末装置との間に、上記選択された通信制御アイコンの機能で特定される通信メディアによる接続を行なうことを特徴とする請求項１、２または３に記載のマルチメディア通信接続制御方式。
【請求項６】それぞれマルチウィンドウ機能を備えた複数の端末装置からなる通信システムにおいて、それぞれ１つまたは異なる複数種類の通信メディアによる接続制御用に用意された複数種類の通信接続制御アイコンを画面に表示し、上記各通信接続制御アイコン対応に実行すべき通信メディア接続制御を動的に変更し、何れかの通信接続制御アイコンが選択されたとき、他の端末装置との間に該アイコンの機能によって特定される通信メディアによる接続を形成するようにしたことを特徴とするマルチメディア通信接続制御方式。
【請求項７】ネットワークを介して少なくとも１つの他の端末装置と接続されるマルチメディア端末装置において、それぞれ１つまたは異なる複数種類の通信メディアによる接続制御用に用意された複数種類の通信接続制御アイコンを画面に表示するための手段と、上記各通信接続制御アイコン対応に実行すべき通信メディア接続制御を動的に変更するためのアイコン機能制御手段と、アイコン選択手段とを有し、上記他の端末装置との間に上記選択手段で選択された通信接続制御アイコンの機能によって特定される通信メディアによる接続を形成するようにしたことを特徴とするマルチメディア端末装置。
【請求項８】前記アイコン機能制御手段が、前記通信制御アイコンの機能を接続相手となる端末装置対応に変更することを特徴とする請求項７に記載のマルチメディア端末装置。
【請求項９】接続相手の端末装置が指定された時、該相手端末装置のアドレスを記憶するための手段を有し、その後に上記相手端末装置を対象として前記何れかの通信制御アイコンが選択された場合に、上記手段が記憶しておいたアドレスを利用して、上記相手端末装置との間に上記アイコンの機能で特定される通信メディアによる接続が形成されることを特徴とする請求項７または８に記載のマルチメディア端末装置。
【請求項１０】前記アイコン表示手段が、画面に接続相手となる端末装置と対応した相手表示アイコンを表示し、上記相手表示アイコンと前記通信制御アイコンとを選択することによって、接続制御すべき相手端末装置と通信メディアを指定するようにしたことを特徴とする請求項７、８または９に記載のマルチメディア端末装置。
【請求項１１】前記アイコン表示手段が、接続相手となる端末装置対応に前記通信制御アイコン表示用のウィンドウを生成し、通信制御アイコンが選択された場合に、該アイコンが位置するウィンドウと対応した相手端末装置との間に、上記選択された通信制御アイコンの機能で特定される通信メディアによる接続が形成されるようにしたことを特徴とする請求項７、８または９に記載のマルチメディア端末装置。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明はマルチメディア端末装置および通信接続方式に関し、更に詳しくは、複数の端末装置（あるいはワークステーション）間をマルチメディアの通信路で接続し、遠隔した複数の利用者が、各端末画面上で互いに共通の資料や相手の動画像、あるいは音声を介して会議、打合せ、資料の共同作成などの作業を行うマルチメディア通信システムのための端末装置、および通信メディアの接続制御方式に関する。
【０００２】
【従来の技術】複数のユーザが、端末あるいはワークステーション上に形成された会議室画面を通信回線を介して相互接続して実現する多地点間会議システムに関しては、端末間の接続方式やデータの送受信に関して多くの提案がなされている。例えば、特開平３－１５７０４４号公報では、テレビ会議への参加者数（端末数）を任意

に増加するための方式を提案している。また、特開昭６３－１１４０号公報では、電話回線とデータ回線とを利用して通信する複合端末の発呼、切断の操作性を向上させるため、音声回線とデータ回線を同時に制御することを提案している。

【０００３】

【発明が解決しようとする課題】上記提案は、複数の参加者が端末を利用して電子的に共同作業を行う場合の回線接続制御の操作性を改良したものであるが、接続制御の対象が電話機とコンピュータ端末に限定してあり、その他の通信メディアを含む一般的なマルチメディア通信に適用可能な柔軟な通信メディア接続制御方式を与えるものではない。

【０００４】本発明の目的は、複数の端末装置間をマルチメディアの通信路で接続した電子的対話システム、あるいは共同作業システムに有効な端末装置、および通信接続制御方式を提供することにある。

【０００５】本発明の他の目的は、通信メディアの接続状態変化に連動して装置の機能を動的に変化させることが可能な端末装置、電子的対話システム、あるいは共同作業システムを提供することにある。

【０００６】本発明の更に他の目的は、ユーザによる通信メディアの切り替え操作を容易にした通信接続制御方式を提供することにある。

【０００７】

【課題を解決するための手段】上述した目的を達成するために、本発明によるマルチメディア端末装置および通信接続制御方式は、それぞれマルチウィンドウ機能を備えた複数の端末装置からなる通信システムにおいて、各端末装置の画面に生成される１つのウィンドウに、上記端末装置を介して行なう共同作業の形態と対応する複数の通信制御アイコンを表示し、これらの通信制御アイコンの機能を他の端末装置との接続状態に応じて動的に変更し、選択された通信制御アイコンの機能に応じた通信メディアによる接続を行なうようにしたことを特徴とする。ここで言う共同作業の形態は、例えば、電話による対話、ＴＶ電話による映像を参照した対話、電話とデータ処理出力を利用した電子対話、あるいはＴＶ電話とデータ処理出力を同時に利用した対話等、利用する通信メディアを異にする作業形態を意味する。

【０００８】本発明の他の側面は、複数の端末装置（あるいはワークステーション）間の接続を制御するために、各端末装置に、それぞれ１つまたは異なる複数種類の通信メディアの接続を制御するための複数種類の通信接続制御アイコンを表示し、これらのアイコンの機能を動的に変更するようにしたことにある。上記アイコン機能の変更は、例えば、各通信接続制御アイコンの選択に応答して実行すべき通信メディア接続制御内容を定義したアイコン機能状態制御手段によって行なう。本発明の好ましい実施例では、上記アイコン機能が、接続相手装置対応に変更されるようにしている。

【０００９】また、本発明の他の側面は、接続相手が指定された時、相手装置のアドレス情報を記憶しておき、その後に相手装置との間の通信メディアの接続態様の変更指令が与えられた場合に、ユーザに相手装置アドレスを再設定操作させる必要なしに、既に記憶されているアドレス情報を利用して通信路の接続制御がなされるようにしたことにある。

【００１０】

【作用】本発明によれば、同一のアイコンが、操作時点での相手装置との間の通信メディアの接続状態に応じて異なった機能を備えたものとなる。例えば、複数種類の通信メディアＡ、Ｂを利用する制御アイコンが選択された時、既にメディアＡを介して相手装置と接続された状態で上記制御アイコンが選択された場合と、全く接続されていない状態で上記制御アイコンが選択された場合とでは、アイコン操作に応答して実行される通信メディアの接続制御の内容が異なったものとなる。前者の場合は、上記制御アイコンが１つのメディアＢの接続指令用アイコンとして機能し、後者の場合は、上記制御アイコンが２つのメディアＡ、Ｂの接続指令用アイコンとして機能する。

【００１１】本発明によれば、会議や共同作業の種類や規模を変更するために、ユーザが相手装置と接続すべき通信メディアの種類、またはそれらの接続形態を変更が必要となった場合、相手装置との間で実行したい作業形態を示す制御アイコンを指定することによって、所望の通信環境を実現できる。これは、通信メディア対応に設けられた固定機能の通信接続制御アイコンを操作して、目的に会議や共同作業に必要な複数種類の通信メディアを個別に接続制御していく従来の方式に比較して、面倒な操作の繰り返しを排除でき、操作を簡略化できるため、会議や共同作業の参加人数（端末数）や環境変化に柔軟に対処できるようになる。

【００１２】

【実施例】図１は、ＬＡＮ（Local Area Network）あるいはＩＳＤＮ（Integratedervices Digital Network）等からなる通信ネットワーク３０によって結合された３台のワークステーション４０（４０－Ａ、４０－Ｂ、４０－Ｃ）からなる電子対話システムを示す。各ワークステーション４０はマルチウィンドウ機能を有し、共同作業あるいは電子対話で用いる会議資料を表示するためのウィンドウが表示画面２０（２０－Ａ、２０－Ｂ、２０－Ｃ）に生成される。また、各ワークステーション４０には、表示画面を参照して行われる会議の進行を音声によって補助するために、電話機１０（１０－Ａ、１０－Ｂ、１０－Ｃ）が備えられている。

【００１３】図２は、ワークステーション４０の基本的な構成を示すブロック図である。図において、１４０は各種プログラムとデータを格納するための記憶装置、９

0は上記記憶装置140から読み出したプログラム命令に従ってデータ処理を実行する中央処理装置（CPU）、100は、上記CPU90の命令に従って、表示画面130に出力すべき内容をイメージデータとしてフレームメモリ110に書き込むビットマッププロセッサ（BMP）を示す。フレームメモリ110の内容は、ディスプレイコントローラ120により読み出され、表示画面（出力装置）130に表示される。

【0014】180－Aは入力装置180の1つであるキーボード、160は、上記キーボードから入力されたコードデータをレジスタ150－Aに格納するためのキーボードドライバ160、180－Bは入力装置の1つであるマウス、170は、上記マウスから入力されたコードデータをレジスタ150－Bに格納するためのマウスドライバ170を示す。

【0015】各ワークステーション40は、通信インタフェース装置80を介して、LAN，ISDNなどの通信ネットワーク30に接続される。尚、通信ネットワーク30としてISDNを適用する場合、電話機10の出力は，通信インタフェース装置80を介してネットワーク30に出力される。この実施例では、CPU90から電話機10を起動できるようになっている。

【0016】図3は、各ワークステーションのディスプレイ130の表示画面20に表示されるマルチメディア通信接続制御のための作業用パネルウィンドウ300の1例を示す。上記作業用パネルウィンドウ300は、通信制御用アイコンとして、電話アイコン310、テレビ電話アイコン320、会議アイコン330の3種類のアイコンが用意され、この他に、接続相手を指定するためのアドレス帳アイコン340が用意されている。この例では、ユーザがアドレス帳アイコン340を選択することにより、表示画面にアドレス帳ウィンドウ350が生成された状態を示している。

【0017】新規に共同作業を開始する場合、まず相手に電話をかけて確認をとる。この場合、マウス180－Bを操作することによって、先ず作業用パネルウィンドウ300上で電話アイコン310を選択し、次にアドレス帳アイコン340を選択して、アドレス帳ウィンドウ350を表示させる。但し、この選択の順序は逆にしても構わない。

【0018】アドレス帳ウィンドウ350は共同作業に呼出し可能なメンバーの一覧リストを含んでおり、利用者が上記一覧リストから参加させたいメンバー名をマウス180－Bで選択すると、予め記憶されている電話番号が自動的にダイヤルされ、相手に電話がかかる。相手が受話機を取り上げるとに、音声回線の接続が完了する。このとき、アドレス帳ウィンドウ350で選択された相手の端末アドレスが共同作業参加者として自動的に記憶され、以後、上記相手メンバーに他のメディア（データ、映像）の接続制御を行う場合は、アドレス帳ウィンドウ350で同一相手を再度指定する操作は必要はない。上記アドレス帳アイコン340は、既に開始されている共同作業環境に新たなメンバーを追加するときにも、上記と同様に利用される。

【0019】電話アイコン310、テレビ電話アイコン320、会議アイコン330は、作業用の特別なウィンドウ300に置く代わりに、図6で説明する個人作業用（ローカル作業用）のウィンドウ420－A内に配置してもよい。これらのアイコンの属性は、図7で後述するように、アイコン状態管理テーブル500によって管理され、これらのアイコンの機能はそのときどきの状況に応じて変化する。

【0020】図4は、3者での共同作業を行っている場合のワークステーション20の画面表示の1例を示す。作業用パネルウィンドウ300には、図3で示した電話アイコン310、テレビ会議アイコン320、会議アイコン330、アドレス帳アイコン340の他に、参加者ボタン360（360－A、360－B）が表示されている。

【0021】共同作業が2人でおこなわれている（相手が1人）場合は、記憶するアドレスは1個でよいが、相手が2人以上になると記憶するアドレスは2つ以上になる。複数人の相手のうちの特定の1人を指定した形で指令を与える場合は、これらの参加者ボタン360を用いて相手を特定する。

【0022】上記参加者ボタン360の近傍には、自ステーションと、各ボタンで示される参加者のステーションとの間を接続している通信メディアの種類を示す表示エリア370（370－A、370－B）が配置されている。図示した例では、参加者「島崎」360－Aのステーションに対しては、データ系（「デ」）と音声系（「映」）と映像系（「音」）の3種類の通信メディアが接続され、参加者「小林」のステーションに対しては、データ系と音声系の2種類の通信メディアが接続されていることを示している。

【0023】データ系の通信メディアは、会議室ウィンドウ390に表示されているアイコン400－Aが示す「資料1」およびアイコン400－Bが示す「資料2」のアプリケーションプログラム（AP）を連動あるいは共同利用するために、これらのAPに対する入力コマンドやデータをステーション間で通信するためのものである。音声系の通信メディアは、電話機による音声信号を各ステーションで通信することによって、共同作業を円滑に行うのを支援するためのものである。映像系の通信メディアは、各ステーションに付属するTVカメラで撮像された利用者の顔画像を他のステーションに送信し、例えばテレビ電話ウィンドウ380に示すように、互いに他の参加者の表情を観察できるようにするためのものである。上記した例では、会議室ウィンドウ390は「島崎」と「小林」と自分の3者で共同利用している

が、参加者「小林」に対しては、映像系メディアが接続されていないため、参加者「小林」用のテレビ電話ウィンドウは画面の生成されていない。この状態で、参加者「小林」の顔画像も表示したい場合、つまり「小林」のステーションとの間に映像系の通信回線を確立したい場合は、例えば、作業用パネルウィンドウ３００で、テレビ電話アイコン３２０を選択した後、参加者「小林」の参加者ボタン３６０－Ｂを選択すればよい。これに代わる操作として、例えば、テレビ電話アイコン３２０をピックし、これを参加者「小林」の参加者ボタン３６０－Ｂ上へ移動させるようにしてもよい。これらの操作に応答して、テレビ電話アイコン３２０で示される回線接続制御ルーチンが、参加者「小林」のステーションとの間に自動的に映像系通信回線を確立する。

【００２４】図５は、図４と同様に、他の２人の参加者と共同作業を行なう場合のワークステーション２０の表示画面の１例を示す。参加者の状態と参加者別の通信メディアの状態は、図４の例と同じである。

【００２５】ここでは、図４の場合の作業用パネルウィンドウ３００の変形例として、各参加者用に作業用パネルウィンドウ４１０（４１０－Ｂ、４１０Ｃ）を設けている。参加者別に作業用パネルウィンドウ４１０を設け、各パネルウィンドウにそれと対応する参加者の装置アドレスを記憶させることにより、参加者ボタン３６０を省略できる。つまり、参加者別作業用パネルウィンドウ４１０（４１０Ｂ、４１０Ｃ）上で電話アイコン３１０、テレビ電話アイコン３２０、会議アイコン３３０を選択すれば、それぞれのパネルウィンドウに対応した相手装置アドレスを獲得することができる。

【００２６】上記した参加者別に作業用パネルウィンドウを設ける方式では、マスタとなる作業用パネルウィンドウ４１０－Ａを予め用意しておき、このマスタパネルウィンドウを操作して新規参加者を設定し、その参加者に対応した参加者別の作業用パネルウィンドウ４１０を生成していく。アドレス帳アイコン３４０は、参加者別の作業用パネルウィンドウ４１０には設ける必要がなく、マスタパネルウィンドウ４１０－Ａ、あるいは個人作業用のウィンドウ４２０に設けておけばよい。新規に参加させる相手の指定は、上記アドレス帳アイコン３４０を操作してアドレス帳ウィンドウ３５０を生成し、一覧リスト上で相手を指定する。

【００２７】図４の方式は、作業用パネルウィンドウ３００が参加者の人数に関係なく１つで済むため、共同作業のために画面上に表示されるウィンドウ数を減らすことができる。この点、図５の方式では、参加者の人数が増えるに従って画面上に表示されるウィンドウ数が多くなるという問題があるが、通信メディアの接続変更の都度、参加者ボタン３６０により相手を指定する操作をしなくてもよいという利点がある。実際の応用にあたっては、上記２つの方式のいずれかを利用者が選択できるようにしてもよい。

【００２８】図６は、接続要求確認ウィンドウ４３０が生成された表示画面２０の１例を示す。接続要求確認ウィンドウ４３０は、例えば会議室接続要求のように、相手ステーションから音声系以外の通信メディアの接続要求を受けた場合、要求された側の利用者の了解を得て接続を行なうために生成される。すなわち、利用者が、個人作業ウィンドウ４２０－Ａ、４２０－Ｂでデータ処理を行っている時、相手側の操作によって、例えば会議室ウィンドウ３９０のような、共同作業のための環境がいきなりワークステーションの画面２０に形成されてしまうという事態を回避するために、一旦、接続要求確認ウィンドウ４３０に利用者への問い合わせメッセージ４４０を出力し、利用者が会議室３９０の接続を受け付け可能であれば「ＹＥＳ」ボタン４５０を選択し、もし、接続を拒否したければ「ＮＯ」ボタン４６０を選択できるようにする。電話連絡等で予め了解がとれている場合は、操作をより簡略化するため、接続要求確認ウィンドウ４３０の表示を抑制できるようにしてもよい。

【００２９】図７は、作業パネルウィンドウ３００上のメディアアイコン（電話アイコン３１０、テレビ電話アイコン３２０、会議アイコン３３０）の状態を管理するためのアイコン機能状態テーブル５００を示す。図示したテーブルは、初期時点での標準的な状態設定の１例を示している。

【００３０】メディアアイコン名称５０４に対応して、そのアイコンが選択された場合に接続または確立すべき通信メディア５０２が定義されている。初期時点では、例えば、電話アイコン３１０が選択されたば場合、状態が「ＯＮ」となっているのは音声だけであるから、音声系だけが接続状態となる。テレビ電話アイコン３２０が選択された場合は、状態が「ＯＮ」になっている音声系と映像系が接続状態となる。また、会議アイコン３３０が選択された場合、状態が「ＯＮ」になっている音声系、映像系、データ系がそれぞれ接続状態となる。

【００３１】上記アイコン機能状態テーブル５００は、参加者毎、つまり相手アドレス毎に設けられる。図４の場合、作業用パネルウィンドウ３００上の参加者ボタン３６０毎にテーブル５００が設けられる。また、図５の場合には、参加者別作業用パネルウィンドウ毎にテーブル５００が設けられる。

【００３２】アイコン機能状態テーブル５００は、メディアアイコンの選択の都度、初期状態からの設定機能が変化していく。例えば、電話アイコン３１０が一度選択された後は、既に音声系が接続済となっているため、アイコン機能状態テーブル５００は図８のように変化する。なお、テーブルの初期状態は、ユーザの操作により設定内容を変更することが可能である。

【００３３】図８は、アイコン機能状態テーブル５００において電話アイコン３１０を選択した結果、状態が変

化したアイコン機能状態テーブル５００’を示す。アイコン機能状態テーブルと対応した各参加者に対しては、電話アイコンによって既に音声が接続されているため、変化後のテーブル５００’では、電話アイコン３１０、テレビ電話アイコン３２０、会議アイコン３３０の全てにおいて、通信メディアの音声系の状態が「ＯＦＦ」になっている。従って、これらのアイコンを使ってテーブル５００’に対応する参加者に対して新たに通信路接続操作を行なった場合、例えば、テレビ電話アイコン３２０を使った場合、音声系を除く映像系のみを接続するよう接続処理が行われる。

【００３４】図９～図１３は、参加者間におけるメディア毎の論理通信路接続の様子を示している。図９では、参加者Ａ５１０とＢ５２０の２者において、作業用パネルウィンドウ３００で電話アイコン３１０を選択した後の音声系５４０の論理通信路接続の様子を示す。音声系５４０の論理通信路が接続されると、それぞれのサイトでは、次の接続指令に備えて、データ系５５０と映像系５６０の通信路が接続待ち状態になる。

【００３５】図１０は、図９に示した音声系接続状態で、作業用パネルウィンドウ３００における会議アイコン３３０の選択操作により、更にデータ系５５０と映像系５６０が接続された様子を示す。

【００３６】図１１は、参加者Ａ５１０とＢ５２０の２者間に音声系、データ系、映像系の接続がなされている状態から、新たに参加者Ｃ５３０を追加して３者間接続へ拡張される様子を示している。ここでは、参加者Ａ５１０が、作業用パネルウィンドウ３００における電話アイコン３１０の選択操作と、アドレス帳ウィンドウ３５０における相手選択操作を行なって新たな参加者Ｃ５３０を呼び出し、参加者Ｃ５３０が電話を受けた結果、３者間に環状の音声系５４０の接続が形成された状態を示している。音声系の接続が形成されると、参加者Ｃ５３０は通信路の待ち状態に入る。このとき、データ系５５０と映像系５６０は、未だ参加者Ａ５１０とＢ５２０の２者間接続の状態にある。

【００３７】図１２は、図１１において、参加者Ａ５１０が会議アイコン３３０を操作し、参加者Ｃ５３０に対してデータ系５５０と映像系５６０の接続を行う様子を示している。参加者Ａ５１０は、通信路の待ち状態にある参加者Ｃ５３０に対して、新たにデータ系と映像系の接続操作を行なった後、参加者Ｂ５２０へのデータ系５５０と映像系５６０の通信路を切断する。参加者Ｂ５２０は、これらの通信路が切断されると同時に、次の接続に備えた通信路の待ち状態になる。参加者Ｃ５３０に対しては、参加者Ｂ５２０のアドレスが通知され、参加者Ｂ５２０への通信路を接続するよう命令される。

【００３８】図１３は、図１２の状態において、参加者Ａ５１０から命令を受けた参加者Ｃ５３０が、通信路の待ち状態にある参加者Ｂ５２０に対してデータ系５５０、映像系５６０の通信路を接続した状態を示す。このようにして、参加者Ａ５１０、Ｂ５２０、Ｃ５３０の３者間に、音声系５４０、データ系５５０、映像系５６０の論理通信路が、図のように環状に形成される。

【００３９】図１４は、参加者Ａ５１０、Ｂ５２０の２者間において未だ何も接続されていない状態で、参加者Ａ５１０が、作業用パネルウィンドウ３００でテレビ電話アイコン３２０を操作した場合の処理の流れを示す。

【００４０】ステップ１（６０６）：参加者Ａ５１０による操作１（６０２）と、参加者Ｂ５２０による操作２（６０４）が行われる。参加者Ａ５１０は、操作１（６０２）として、作業用パネルウィンドウ３００でテレビ電話アイコン３２０を選択すると共に、アドレス帳アイコン３４０を選択してアドレス帳ウィンドウ３５０を表示させ、アドレス一覧から参加者Ｂ５２０を指定する。これにより、参加者Ｂ５２０への電話発信が行なわれる。参加者Ｂ５２０は、操作２（６０４）として、受話器を取り、参加者Ａからの音声接続を受け付ける。

【００４１】ステップ２（６０８）：上記操作の結果、２者間が音声で接続された状態を示す。

【００４２】ステップ３（６１０）：参加者Ａ５１０とＢ５２０が、ともに通信路の待ち状態に入った状態を示す。参加者Ａ５１０は、参加者Ｂ５２０を指定したことにより、作業用パネルウィンドウ３００に対応付けて参加者Ｂ５２０のアドレスを保持する。

【００４３】ステップ４（６１２）：上記保持したアドレスに基づいて、参加者Ａ５１０から参加者Ｂ５２０に対して映像系の接続を行った状態を示す。音声系と映像系の接続が終了した時点で、テレビ電話アイコン３２０の機能による接続動作は終了する。

【００４４】図１５は、参加者Ａ５１０、Ｂの２者間において、未だ何も接続されていない状態から、音声系を接続した後、さらに会議へと移行する過程での処理の流れを示す。

【００４５】ステップ１（６２６）：参加者Ａ５１０は、操作１（６２０）として、作業用パネルウィンドウ３００で電話アイコン３１０を選択するとともに、アドレス帳アイコン３４０を選択してアドレス帳ウィンドウ３５０を表示させ、アドレス一覧から参加者Ｂを指定する。これにより、参加者Ｂ５２０への電話が発信される。参加者Ｂ５２０、操作２（６０４）として、受話器を取り、参加者Ａからの音声接続を受け付ける。

【００４６】ステップ２（６２８）：上記操作により２者間で音声が接続された状態を示す。

【００４７】ステップ３（６３０）：参加者Ａ５１０、Ｂ５２０が共に通信路の待ち状態に入る。参加者Ａ５１０は、参加者Ｂ５２０を指定したことにより、参加者Ｂ５２０のアドレスを保持している。

【００４８】ステップ４（６３２）：参加者Ａ５１０は、操作３（６２４）として、作業用パネルウィンドウ

３００で会議アイコン３３０を選択する。この時点での会議アイコン３３０の機能は、アイコン機能状態テーブル５００を参照して決定されている。この例では、ステップ１（６２６）で既に音声系が接続されているため、会議アイコン３３０の機能は、音声「ＯＦＦ」、映像「ＯＮ」、データ「ＯＮ」となっている。

【００４９】ステップ５（６３４）：参加者Ａ５１０は、ステップ３で保持した参加者Ｂ５２０のアドレスに基づいて、参加者Ｂ５２０宛に映像接続要求とデータ接続要求を送信する。このとき、参加者Ｂ５２０のワークステーション画面上２０には、図６で示した接続要求確認ウィンドウ４３０が表示される。

【００５０】ステップ６（６３６）：ウィンドウ４３０において、参加者Ｂ５２０がＹＥＳを入力することにより、上記参加者Ａ５１０からの映像接続要求とデータ接続要求を受付ける。これによって、既にある音声系に加えて、２者間にデータ系と映像系の通信路が確立される。

【００５１】映像系５６０が接続されると、テレビ電話ウィンドウ３８０を制御しているプログラムの起動または新たな処理の実行によって、ワークステーション画面上２０にテレビ電話ウィンドウ３８０が表示される。また、データ系が接続されると、会議室ウィンドウ３９０を制御しているプログラムの起動または新たな処理の実行によって、ワークステーションが画面上２０に会議室ウィンドウ３９０が表示される。これにより、２者間で電話による音声と、テレビ電話による映像と、会議室ウィンドウ３９０におけるＡＰ出力データを利用した共同作業が可能となる。

【００５２】図１６は、参加者Ａと参加者Ｂとの２者で会議（音声系、データ系、映像系を接続）を行っている状態から、参加者Ｃを加えた３者間の議へと移行する過程での処理の流れを示す。

【００５３】ステップ１（６４６）：参加者Ａ５１０と参加者Ｂ５２０の間では、既に音声系、データ系、映像系が接続されている。

【００５４】ステップ２（６４８）：参加者Ａ５１０が、操作１（６４０）として、作業用パネルウィンドウ３００でテレビ電話アイコン３２０を選択し、アドレス帳アイコン３４０を選択してアドレス帳ウィンドウ３５０を表示させた後、アドレス一覧から参加者Ｃを指定する。これにより、参加者Ｃ５３０へ電話が発信される。

【００５５】ステップ３（６５０）：参加者Ｃ５３０が、操作２（６４２）として、受話器を取り、参加者Ａからの音声接続を受け付ける。参加者Ａ５１０は、上記ステップで参加者Ｃ５３０を指定し時点で、参加者Ｃ５３０のアドレスを保持している。

【００５６】ステップ４（６５２）：上記操作１と操作２により、参加者Ａ、Ｂ、Ｃの３者間において音声接続が達成されれる。

【００５７】ステップ５（６５４）：上記音声接続と同時に、参加者Ｃ５３０では、他の通信メディアの接続に備えて、通信路の待ち状態になる。

【００５８】ステップ６（６５６）：参加者Ａ５１０が、操作３（６４４）として、作業用パネルウィンドウ３００で会議アイコン３３０を選択し、参加者ボタン３６０で参加者Ｃを選択する。このとき、参加者Ｃ５３０に対応するアイコン機能状態テーブル５００－Ｃは、既に音声系が接続されているため、会議アイコンの３３０の機能が、通信メディアのうち映像とデータが「ＯＮ」となった状態となっている。従って、この時点で、参加者Ｃ５３０に対して会議アイコン３３０を実行させるということは、映像系とデータ系の接続を行うことを意味する。

【００５９】ステップ７（６５８）：参加者Ａ５１０が、参加者Ｂ５２０方向への映像系とデータ系の通信路を切断する。また、自分への映像系とデータ系の通信路が切断された参加者Ｂ５２０は、これらの通信路が再度接続されることに備えて、通信路の待ち状態になる。

【００６０】ステップ８（６６０）：参加者Ａ５１０は、参加者Ｃ５３０に対して、映像系とデータ系の通信路の接続要求を出す。

【００６１】ステップ９（６６２）：参加者Ｃ５３０が、接続要求ウィンドウ４３０で「ＹＥＳ」を入力する。これにより、参加者５１０Ａから参加者Ｃ５３０へのデータ系と映像系の通信路が接続される。

【００６２】ステップ１０（６６４）：参加者Ａ５１０が、参加者Ｃ５３０に対して、参加者Ｂ５２０のアドレスとともに、参加者Ｂ５２０との間に映像系とデータ系の通信路を接続するよう命令を送る。

【００６３】ステップ１１（６６８）：参加者Ｃ５３０は、上記参加者Ｂ５２０のアドレスを保持する。

【００６４】ステップ１２（６７０）：参加者Ｃ５３０が、参加者Ａ５１０から知らされた参加者Ｂ５２０のアドレスに基づいて、参加者Ｂ５２０との間に映像系とデータ系の通信路を確立する。

【００６５】このようにして、３者間で会議を行うための、音声系、データ系、映像系の通信路を環状接続するための処理が終了する。

【００６６】図１７は、本発明によるマルチメディア通信接続を実行するプログラム６８０の処理のフローチャートを示す。

【００６７】本プログラム６８０によって最初に接続されるのは通信系は、電話による音声通信路である（ステップ６８２）。音声通信路が接続されると、他の通信メディアに関して、それぞれの通信路が待ち状態にあるか否かを判定する（ステップ６８４）。もし、その通信路が待ち状態になっていなければ、状態を通信路待ち状態に変更した後（ステップ６８６）、また、通信路が待ち状態になっていれば、そのまま次のステップ６８８へ進

み、入力待ちの状態になる。

【0068】ステップ688で待つ入力としては、ユーザによる作業用パネルウィンドウ300への入力、あるいは他のサイトから送られてくる接続要求などである。何れかの入力があると、その入力が音声切断を示すものか否かを判定する（ステップ690）。音声切断は、電話機の受話器を置くことにより発生し、もし、利用者が受話器を置いた場合、その時点で音声系の通信路は切断される。音声が切断されると、先ず、他の通信メディア（データ系、映像系）が接続中か否かを判定し（ステップ692）、もし、何れかの通信メディアが接続中であれば、他の参加者に対して、その通信路の切断要求を送信する（ステップ694）と共に、未だ接続状態にある通信路を切断して（ステップ696）、処理を終了する（ステップ698）。もし、ステップ692で音声系以外の通信路が接続状態にないと判定された場合は、そこで処理を終了する（ステップ698）。また、ステップ690で入力が音声切断を示すものでないと判定された場合は、以下に説明する入力処理（ステップ700）を実行する。

【0069】図18は、入力処理700の詳細を示すフローチャートである。ここでは、図4に示した複数参加者を同時に表示する作業用パネルウィンドウ300を例にとって、上記入力処理の内容を説明する。

【0070】先ず、その入力が作業用パネルウィンドウ300のアイコン選択のためのものか否かを判定する（ステップ702）。もし、作業用パネルウィンドウ300への入力でない場合は、他サイトからの接続要求か否かを判定する（ステップ734）。他サイトからの接続要求であれば、ワークステーション画面上20に接続要求確認ウィンドウ430を表示し（ステップ736）、このウィンドウに対して、ユーザから「YES」の入力があるかどうかを判定する（ステップ738）。もし「YES」入力があれば、接続要求のあった通信路を接続した後（ステップ740）、アイコン機能状態テーブル500の内容を更新する（ステップ744）。上記ステップ738で、もし、「NO」の入力があった場合は、そこで処理を終了する。また、判定ステップ734で、その入力が他サイトからの接続要求でないと判定された場合は、その入力に対応した処理ルーチンを実行する（ステップ742）。

【0071】判定ステップ702で、入力が作業用パネルウィンドウ300に対するものと判定された場合、既に通信路で接続されている参加者の数が3人以上か否かをチェックする。参加者の人数は、このプログラムが変数（例えば、N）として記憶しており、共同作業へ新たな参加者が加わる度に、上記変数Nに1ずつ加算していく。ここでは、参加者人数が2人の場合を想定して、以下の説明を行う。

【0072】参加者が2人ということは、会議の相手は1人だけの状態にある。従って、作業用パネルウィンドウ300に参加者ボタン360を設定する必要はない。つまり、作業用パネルウィンドウ300と対応付けて保持しているアドレスは、会議相手である唯一の参加者のものだけであり、この作業用パネルウィンドウ300で電話アイコン310、テレビ電話アイコン320、または会議アイコン330を選択した時、相手のアドレスは一意的に決定される。従って、この例では、判定ステップ704から720に進み、この時点で相手のアドレスを獲得することができる。

【0073】次に、上記参加者に対応するアイコン機能状態テーブル500を参照し（ステップ722）、上記テーブルに定義された選択メディアアイコンに対応した機能を獲得し（ステップ724）、その機能を実行する（ステップ726）。次に、接続相手となるサイトに対して接続要求を送信し（ステップ728）、相手から上記接続要求に対する「YES」の応答を得たら、接続処理を完了し（ステップ732）、接続相手に対応するアイコン機能状態テーブル500の機能設定状態を更新して（ステップ744）、このルーチンを終了する。もし、ステップ730で、「NO」の返答があった場合は、接続をすることなく、このルーチンを終了する。

【0074】判定ステップ704において、もし、参加者が3人以上と判定された場合は、作業用パネルウィンドウ300で参加者ボタンが押されたか否かを判定する（ステップ706）。もし、参加者ボタンが押された場合は、上記参加者ボタンに対応した参加者のアドレスを獲得し（ステップ718）、上述したステップ722～744の処理によって、相手サイトへの接続を試みる。

【0075】判定ステップ706において、もし、参加者ボタン360が押されなかった場合、以下の処理を行う。ここで、メディアアイコン（電話アイコン310、テレビ電話アイコン320、または会議アイコン330）が選択された後、参加者ボタン360が押されなかったということは、新規参加者の呼び出しが行なわれていることを意味している。従って、この場合は、アドレス帳アイコン340が選択されるのを待ち（ステップ708）、もし、アドレス帳アイコン340が選択された場合、アドレス帳ウィンドウ350をワークステーション画面上20に表示する（ステップ710）。次に、相手アドレス選択の入力を待ち（ステップ712）、相手アドレス選択の入力があった場合は、その相手アドレスを獲得してこれを保持する（ステップ714）。これが終わると、ステップ722以下の処理を行い、相手サイトへの通信路の接続を試みる。

【0076】

【発明の効果】以上の説明から明らかなように、本発明のマルチメディア端末および通信接続制御方式によれば、通信接続制御用のアイコンが動的に変化した機能をもつため、同一のアイコンを異なった機能で動作させる

ことによって、通信メディアの接続状態の変更操作を簡略化できる。また、受信側が電話の受話器を取るだけで、あとは送信側の操作だけで簡単に目的の通信環境を達成できる。

【図面の簡単な説明】

【図１】本発明を適用する会議システムの全体構成を示す図。

【図２】会議システムを構成する端末装置（ワークステーション）のハードウェア構成を示す図。

【図３】ワークステーション画面に表示される本発明による作業用パネルウィンドウ３００の１例を示す図。

【図４】参加者が複数の場合の作業用パネルウィンドウ３００の１例を示す図。

【図５】上記作業用パネルウィンドウ３００の変型である参加者別の作業用パネルウィンドウ４１０の１例を示す図。

【図６】ワークステーション画面に表示される接続確認要求ウィンドウ４３０の１例を示す図。

【図７】マルチメディア通信接続プログラム６８０が備えるアイコン機能状態テーブル５００の１例を示す図。

【図８】アイコン操作によってアイコン機能状態テーブルの機能状態が変化したことを示すための図。

【図９】２者間の会議で音声系の論理通信路が接続された状態を示す図。

【図１０】上記図９の状態で、さらにデータ系、映像系の論理通信路が接続される様子を示すための図。

【図１１】２者間の会議に３人目の参加者が加入した場合において、音声系の論理通信路が確立した状態を示す図。

【図１２】図１１の状態で、さらにデータ系、映像系の通信路を確立するための過程を示す図。

【図１３】３者間に音声系、データ系、映像系の論理通信路が環状に接続された状態を示す図。

【図１４】２者間が接続されていない状態で、参加者Ａがテレビ電話アイコン３２０を操作した場合の処理を説明するための図。

【図１５】２者間が音声回路で接続された状態から、会議アイコン３３０を操作して映像系とデータ系を接続する過程を説明するための図。

【図１６】２者間の会議から３者間の会議へ移行する過程の処理を説明するための図。

【図１７】本発明によるマルチメディア通信接続のためのプログラム６８０を示すフローチャート。

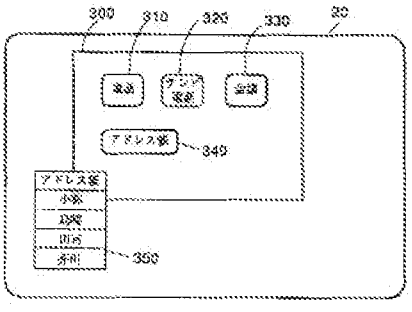
【図１８】図１７における入力処理７００の詳細を示すフローチャート。

【符号の説明】

１０…電話機、２０…ワークステーション、３０…ネットワーク、５０…電話交換網、６０…個人利用ウィンドウ、７０…共同利用ウィンドウ、１３０…出力装置、１８０…入力装置、１９０…ウィンドウシステム、３００…作業用パネルウィンドウ、３１０…電話アイコン、３２０…テレビ電話アイコン、３３０…会議アイコン、３４０…アドレス帳アイコン、３５０…アドレス帳ウィンドウ、３６０…参加者ボタン、３７０…通信メディア表示、３８０…テレビ電話ウィンドウ、３９０…会議室ウィンドウ、４００…資料アイコン、４１０…参加者別作業用パネルウィンドウ、４２０…個人作業用ウィンドウ、４３０…接続要求確認ウィンドウ、４４０…接続確認メッセージ、５００…アイコン機能状態テーブル、５０２…通信メディア、５０４…アイコン名、５４０…音声系論理通信路、５５０…データ系論理通信路、５６０…映像系論理通信路、６８０…マルチメディア通信接続プログラム、７００…マルチメディア通信接続プログラムにおける入力処理

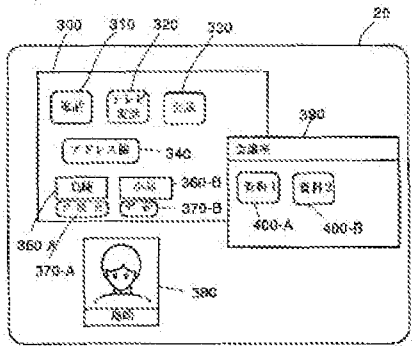
【図３】

図３



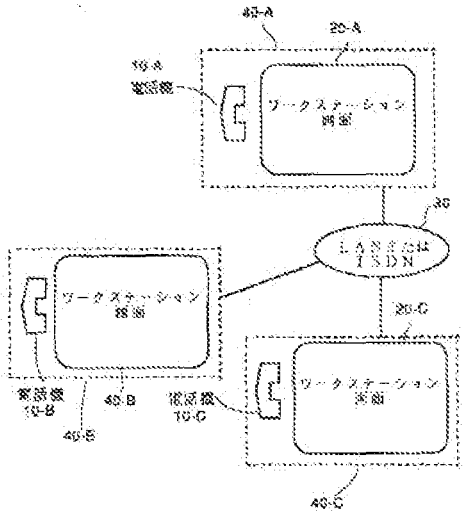
【図４】

図４



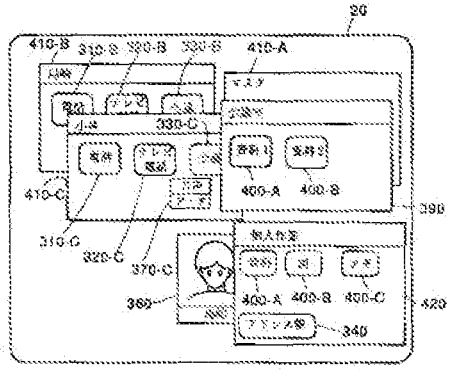
【図1】

図1



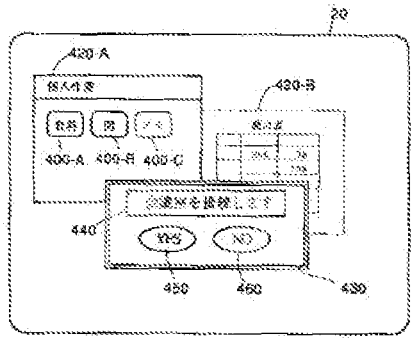
【図5】

図5



【図6】

図6



【図7】

図7

500

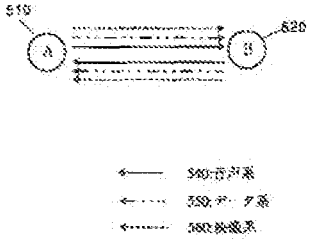
502

504

映像/データ / アイコン名	音声	映像	データ
電話	ON	OFF	OFF
テレビ電話	ON	ON	OFF
会議	ON	ON	ON

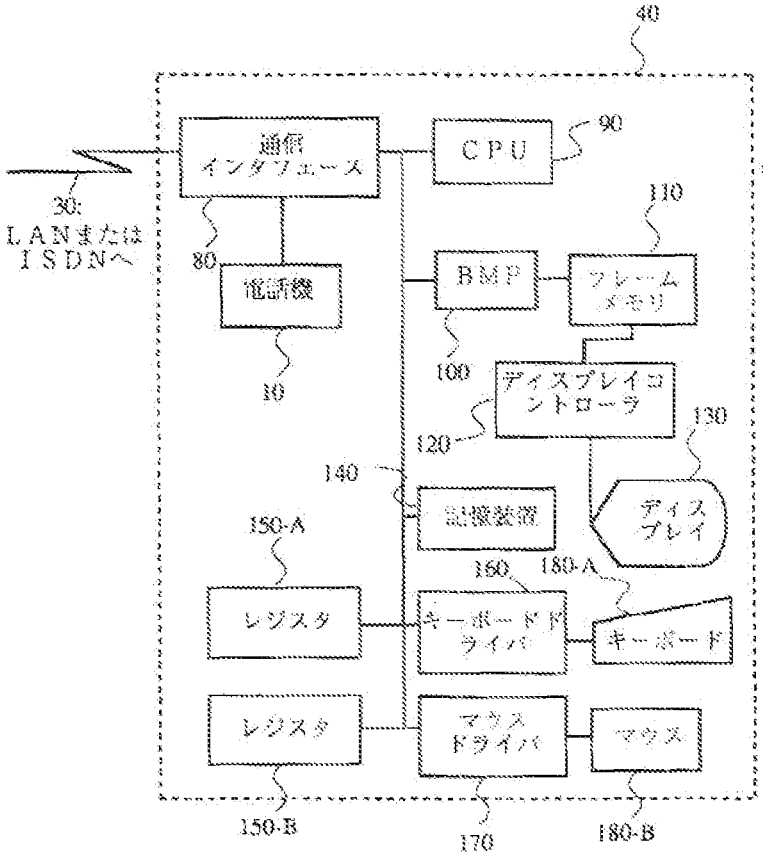
【図10】

図10



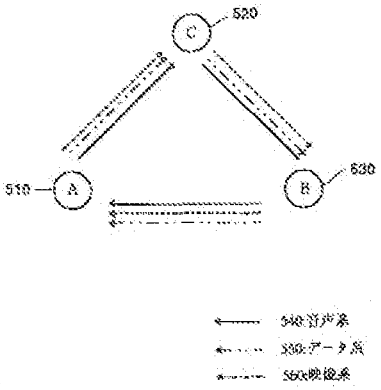
【図2】

図2



【図3】

図3



【図8】

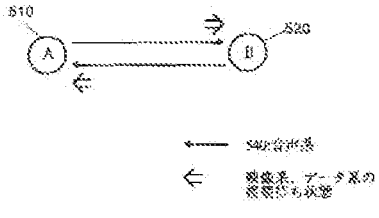
図8

通信メディア / アイコン名	音声	映像	データ
電話	OFF	OFF	OFF
テレビ電話	OFF	ON	OFF
会議	OFF	ON	ON

500'
502'
504'

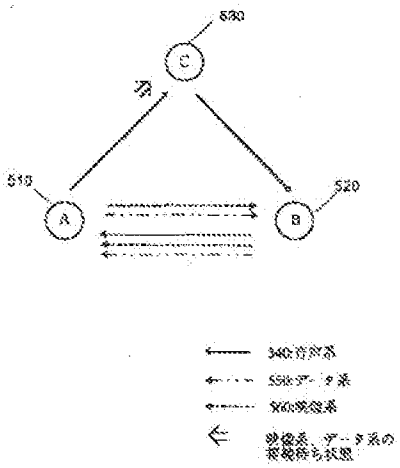
【図9】

図9



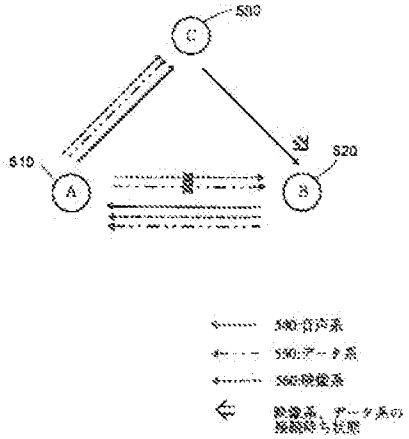
【図１１】

図１１



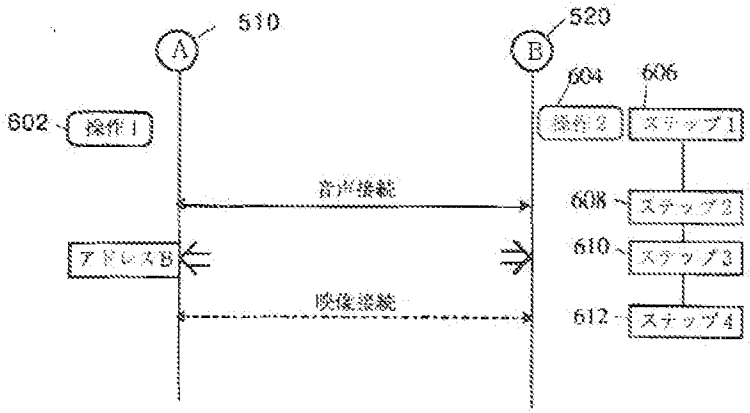
【図１２】

図１２



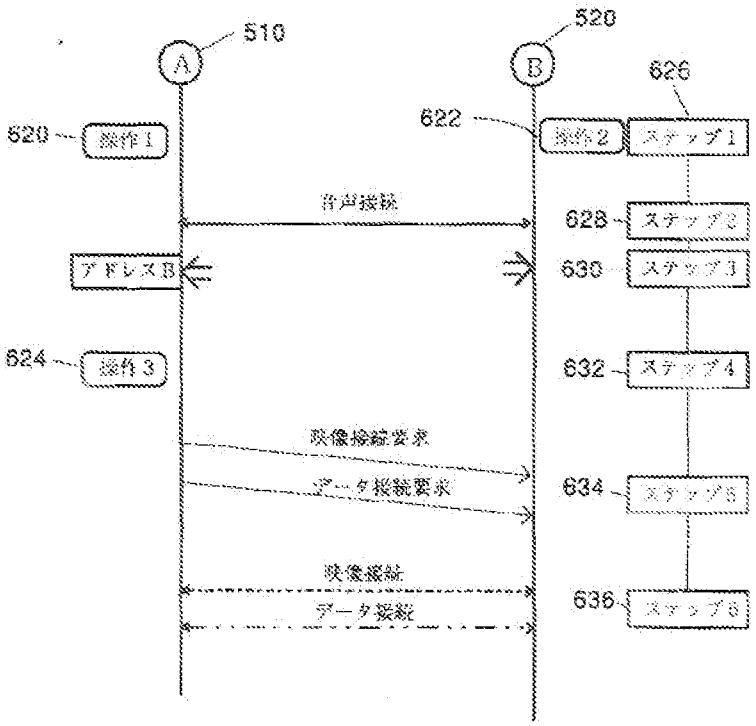
【図１４】

図１４



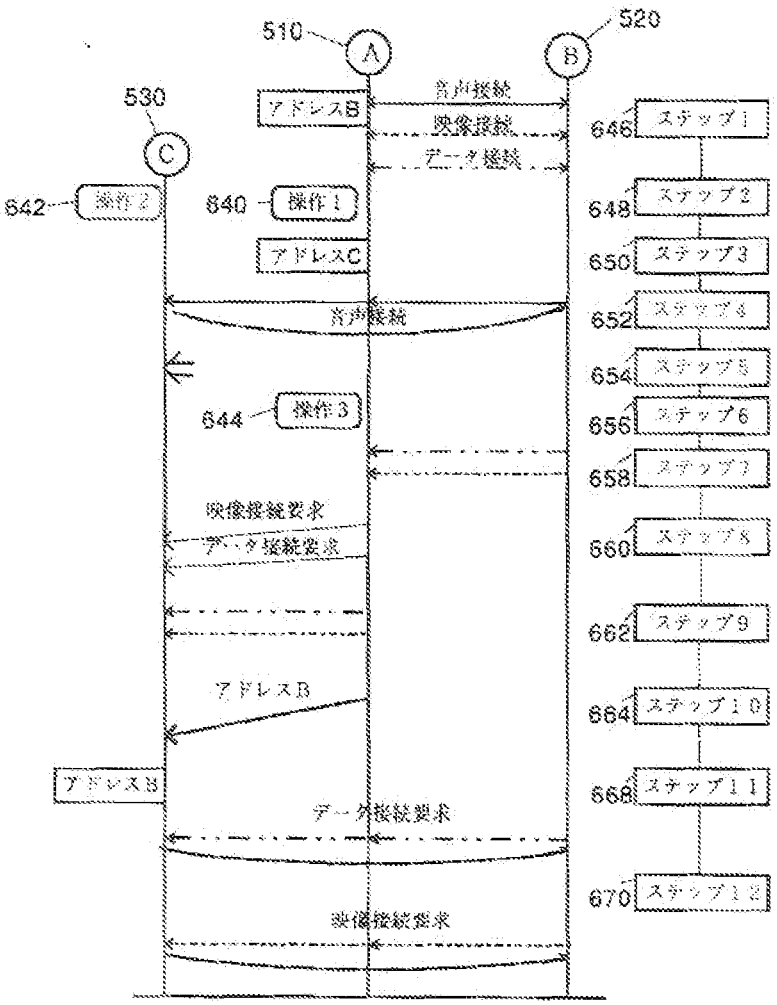
【図15】

図15


510
520
A
B
626
622
620
操作1
操作2
ステップ1
音声接続
628
ステップ2
アドレスB
630
ステップ3
624
操作3
632
ステップ4
映像接続要求
データ接続要求
634
ステップ5
映像接続
データ接続
636
ステップ6

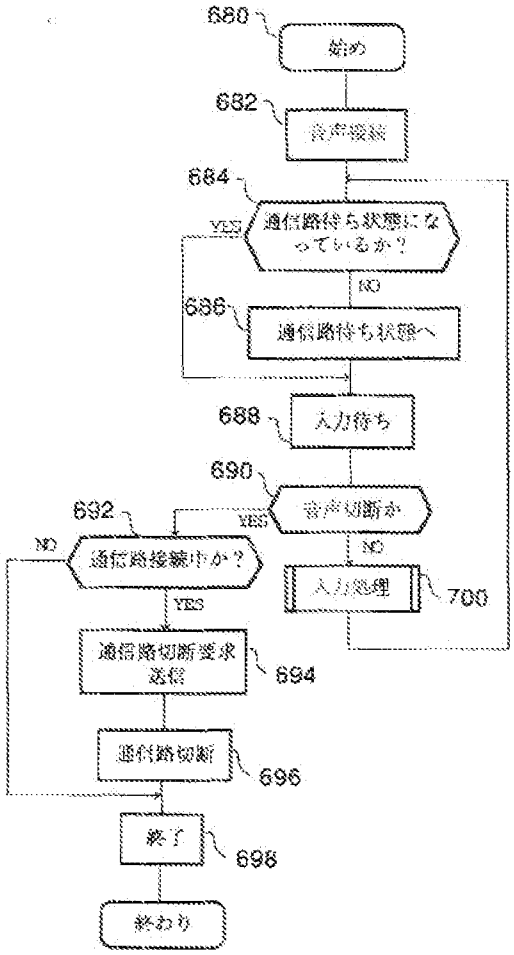
【図16】

図16


510
A
520
B
530
C
アドレスB
音声接続
映像接続
データ接続
646
ステップ1
642
操作2
640
操作1
648
ステップ2
アドレスC
650
ステップ3
音声接続
652
ステップ4
654
ステップ5
644
操作3
656
ステップ6
658
ステップ7
映像接続要求
データ接続要求
660
ステップ8
662
ステップ9
アドレスB
664
ステップ10
アドレスB
668
ステップ11
データ接続要求
670
ステップ12
映像接続要求

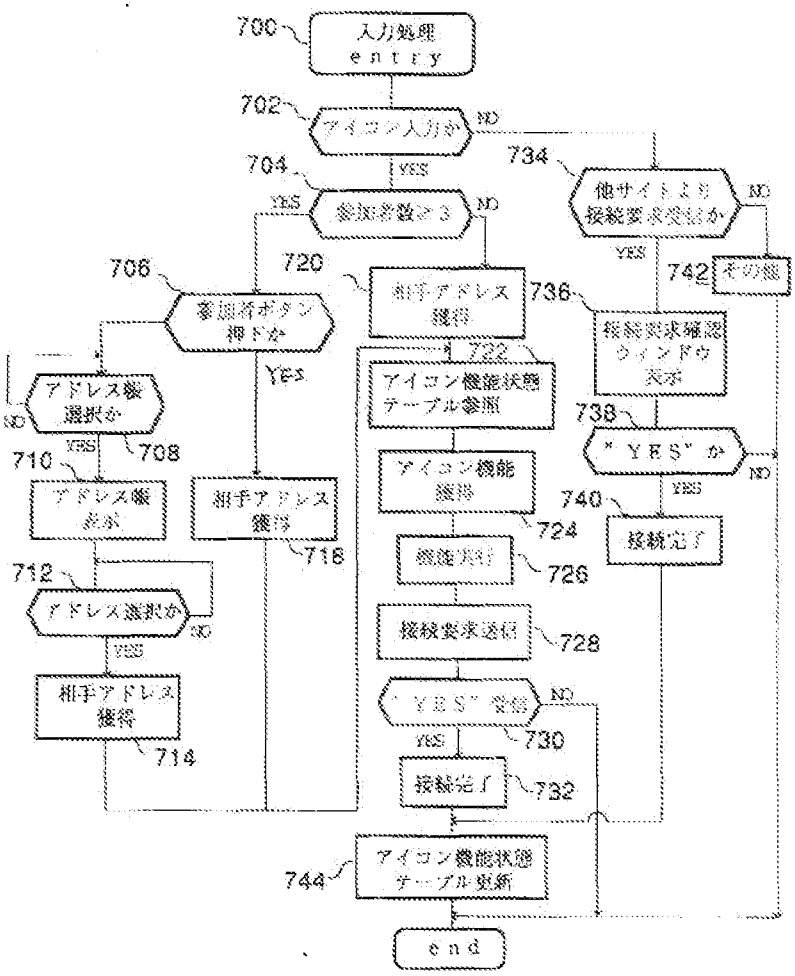
【図17】

図17


680
始め
682
音声接続
684
通信路待ち状態になっているか？
YES
NO
686
通信路待ち状態へ
688
入力待ち
690
音声切断か
YES
NO
692
通信路接続中か？
NO
YES
入力処理
700
通信路切断要求送信
694
通信路切断
696
終了
698
終わり

【図18】

図18



フロントページの続き

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Espacenet

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TERMINAL DEVICE, FIREWALL DEVICE, AND METHOD AND PROGRAM FOR CONTROLLING FIREWALL DEVICE

Inventor(s): UCHIYAMA TAKAMASA; YAMAZAKI TOSHIYUKI; MIYAKAWA SHIN; EGASHIRA TAKASHI; SUZUKI TOSHIAKI; ASAKURA HIROSHI; SAITO MAKOTO ± (UCHIYAMA TAKAMASA, ; YAMAZAKI TOSHIYUKI, ; MIYAKAWA SHIN, ; EGASHIRA TAKASHI, ; SUZUKI TOSHIAKI, ; ASAKURA HIROSHI, ; SAITO MAKOTO)

Applicant(s): NTT COMM KK ± (NTT COMMUNICATIONS KK)

Classification: **- international:** ***G06F13/00; G09C1/00; H04L12/66***
- cooperative:

Application number: JP20040235587 20040812

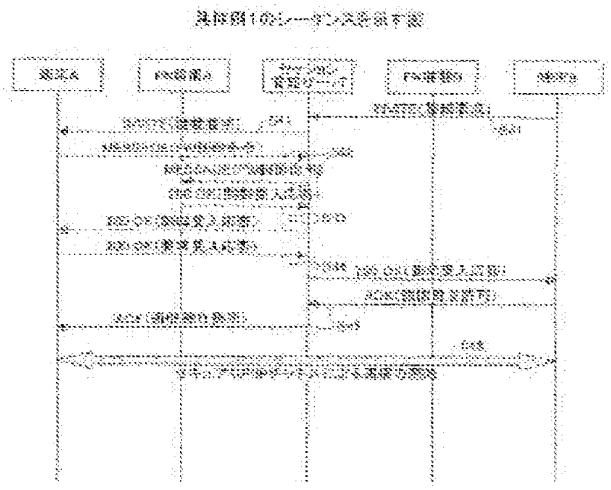
Priority number(s): JP20040235587 20040812

Also published as: JP4619059 (B2)

Abstract of JP2006053799 (A)

PROBLEM TO BE SOLVED: To provide a technique for securely performing dynamic control of a firewall device. ; SOLUTION: This firewall device sets communication determination on the basis of a control command from a terminal device. This device comprises an enciphered communication channel establishing means for establishing an enciphered communication channel with a session management device having a function of relaying signaling information by exchanging key information for an enciphered communication with the session management device and performing mutual authentication, a reception means for receiving a firewall device control command transmitted from the terminal device from the session management device via the enciphered communication channel, a determination means for determining whether or not to permit the firewall device control command, and a communication determination setting means for setting communication determination on the basis of the firewall device control command. ; COPYRIGHT: (C)2006,JPO&NCIPI

Last updated: 13.03.2013 Worldwide
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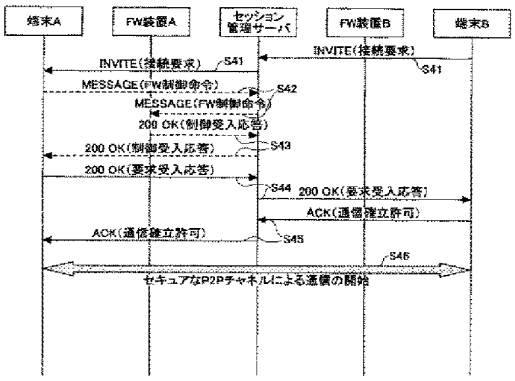
(21)出願番号　特願2004-235587 (P2004-235587)
(22)出願日　平成16年8月12日 (2004.8.12)

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(54)【発明の名称】端末装置、ファイアウォール装置、及びファイアウォール装置制御のための方法、並びにプログラム

(57)【要約】
【課題】ファイアウォール装置の動的な制御をセキュアに行うことを可能にする技術を提供する。
【解決手段】端末装置からの制御命令に基づき通信可否設定を行うファイアウォール装置において、シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手段と、前記端末装置から送信されたファイアウォール装置制御命令を、前記セッション管理装置から、前記暗号化通信チャネルを介して受信する受信手段と、前記ファイアウォール装置制御命令を許可するか否かを判定する判定手段と、前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手段とを備える。
【選択図】　図９



【特許請求の範囲】
【請求項1】
端末装置からの制御命令に基づき通信可否設定を行うファイアウォール装置であって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手段と、
前記端末装置から送信されたファイアウォール装置制御命令を、前記セッション管理装置から、前記暗号化通信チャネルを介して受信する受信手段と、
前記ファイアウォール装置制御命令を許可するか否かを判定する判定手段と、
前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手段と
を有することを特徴とするファイアウォール装置。
【請求項2】
端末装置からの制御命令に基づき通信可否設定を行うファイアウォール装置であって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手段と、
前記端末装置から送信された、暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して受信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記端末装置に向けて送信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手段と、
前記端末装置から送信されたファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して受信する受信手段と、
前記ファイアウォール装置制御命令を許可するか否かを判定する判定手段と、
前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手段と
を有することを特徴とするファイアウォール装置。
【請求項3】
前記ファイアウォール装置は、端末装置毎に、ファイアウォール装置制御命令を許可するか否かを示す情報を格納したデータベースを備え、
前記判定手段は、前記データベースを参照することにより、前記端末装置が送信したファイアウォール装置制御命令を許可するか否かを判定する請求項１又は２に記載のファイアウォール装置。
【請求項4】
ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する端末装置であって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手段と、
前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記暗号化通信チャネルを介して受信する受信手段と、
前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記暗号化通信チャネルを介して前記ファイアウォール装置に向けて送信する制御命令送信手段と
を有することを特徴とする端末装置。
【請求項5】
ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する端末装置であって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のため

の鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手段と、
　前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記第１の暗号化通信チャネルを介して受信する受信手段と、
　暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置に向けて送信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置から受信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手段と、
　前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して前記ファイアウォール装置に送信する制御命令送信手段と
　を有することを特徴とする端末装置。
【請求項6】
　前記端末装置は、前記通信相手装置との通信のために通信可否設定を必要とするファイアウォール装置の情報を格納したデータベースを有し、
　前記制御命令送信手段は、前記データベースを参照することにより検出したファイアウォール装置に対して前記ファイアウォール装置制御命令を送信する請求項４又は５に記載の端末装置。
【請求項7】
　ファイアウォール装置が、端末装置からの制御命令に基づき通信可否設定を実行するための方法であって、
　シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立ステップと、
　前記端末装置から送信されたファイアウォール装置制御命令を、前記セッション管理装置から、前記暗号化通信チャネルを介して受信する受信ステップと、
　前記ファイアウォール装置制御命令を許可するか否かを判定する判定ステップと、
　前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定ステップと
　を有することを特徴とする方法。
【請求項8】
　ファイアウォール装置が、端末装置からの制御命令に基づき通信可否設定を実行するための方法であって、
　シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立ステップと、
　前記端末装置から送信された、暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して受信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記端末装置に向けて送信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立ステップと、
　前記端末装置から送信されたファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して受信する受信ステップと、
　前記ファイアウォール装置制御命令を許可するか否かを判定する判定ステップと、
　前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定ステップと
　を有することを特徴とする方法。
【請求項9】
　ファイアウォール装置に、端末装置からの制御命令に基づき通信可否設定を行う処理を実行させるプログラムであって、

シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手順と、
前記端末装置から送信されたファイアウォール装置制御命令を、前記セッション管理装置から、前記暗号化通信チャネルを介して受信する受信手順と、
前記ファイアウォール装置制御命令を許可するか否かを判定する判定手順と、
前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手順と
をファイアウォール装置に実行させるプログラム。
【請求項10】
ファイアウォール機能に、端末装置からの制御命令に基づき通信可否設定を行う処理を実行させるプログラムであって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手順と、
前記端末装置から送信された、暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して受信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記端末装置に向けて送信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手順と、
前記端末装置から送信されたファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して受信する受信手順と、
前記ファイアウォール装置制御命令を許可するか否かを判定する判定手順と、
前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手順と
をファイアウォール装置に実行させるプログラム。
【請求項11】
端末装置に、ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する処理を実行させるプログラムであって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手順と、
前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記暗号化通信チャネルを介して受信する受信手順と、
前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記暗号化通信チャネルを介して前記ファイアウォール装置に向けて送信する制御命令送信手順と
を端末装置に実行させるプログラム。
【請求項12】
端末装置に、ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する処理を実行させるプログラムであって、
シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手順と、
前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記第１の暗号化通信チャネルを介して受信する受信手順と、
暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置に送信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置から受信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手順と、

前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して前記ファイアウォール装置に送信する制御命令送信手順と
【発明の詳細な説明】せるプログラム。
【技術分野】
【0001】
本発明は、通信ネットワーク上のファイアウォール装置を制御する技術に関する。
【背景技術】
【0002】
社内ネットワーク等のプライベートなネットワークのセキュリティを確保するためにファイアウォール装置が用いられている。ファイアウォール装置は、通常、予め定めた通信方法または、予め定めた通信方法かつ特定の通信相手からのアクセスのみを許容し、それ以外の通信は拒否する動作をするように設定をする。従って、特定の端末からのアクセスを拒否する設定がなされている場合において、当該特定の端末と、ファイアウォール装置配下の端末とが、ファイアウォール装置を介して直接通信（Ｐ２Ｐ通信：ピアツーピア通信）を行うには、その特定の端末からのアクセスを許可するようファイアウォール装置の設定を変える必要がある。
【0003】
ファイアウォール装置の設定はいわゆるネットワーク管理者が行うのが一般的であり、その場合、あるユーザが特定の通信相手とファイアウォール装置を介してすぐに通信を行うことを希望したとしても、ネットワーク管理者が設定を完了するまではそのような通信を行うことができないという不便さがある。また、ネットワーク管理者による設定によりセキュリティホールが生じる恐れがある。
【0004】
ファイアウォール装置を自動的に設定する技術として、UPnP (Universal Plug and Play)があるが、UPnPでは、ユーザ認証、制御通信の暗号化、改ざん防止等を行うことなく、ファイアウォール装置がユーザからの命令をそのまま受け入れるので、セキュリティ上問題がある。なお、ファイアウォール装置の制御に関する従来技術として、例えば特許文献１に記載された技術がある。
【特許文献1】特開平１０－７０５７６号公報
【発明の開示】
【発明が解決しようとする課題】
【0005】
本発明は上記の点に鑑みてなされたものであり、上記従来技術における利便性の低さやセキュリティ上の問題を解決し、ファイアウォール装置の動的な制御をセキュアに行うことを可能にする技術を提供することを目的とする。
【課題を解決するための手段】
【0006】
上記の課題は、端末装置からの制御命令に基づき通信可否設定を行うファイアウォール装置であって、シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手段と、前記端末装置から送信されたファイアウォール装置制御命令を、前記セッション管理装置から、前記暗号化通信チャネルを介して受信する受信手段と、前記ファイアウォール装置制御命令を許可するか否かを判定する判定手段と、前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手段とを有することを特徴とするファイアウォール装置により解決される。
【0007】
また、本発明は、端末装置からの制御命令に基づき通信可否設定を行うファイアウォール装置であって、シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置

との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手段と、前記端末装置から送信された、暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して受信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記端末装置に向けて送信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手段と、前記端末装置から送信されたファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して受信する受信手段と、前記ファイアウォール装置制御命令を許可するか否かを判定する判定手段と、前記ファイアウォール装置制御命令を許可する場合に、当該ファイアウォール装置制御命令に基づく通信可否設定を行う通信可否設定手段とを有することを特徴とするファイアウォール装置として構成することもできる。

【0008】

前記ファイアウォール装置は、端末装置毎に、ファイアウォール装置制御命令を許可するか否かを示す情報を格納したデータベースを備え、前記判定手段は、前記データベースを参照することにより、前記端末装置が送信したファイアウォール装置制御命令を許可するか否かを判定する。このように、データベースに条件を格納し、それを参照する構成をとることにより、許可の条件を柔軟に設定できる。

【0009】

また、本発明は、ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する端末装置であって、シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で暗号化通信チャネルを確立する暗号化通信チャネル確立手段と、前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記暗号化通信チャネルを介して受信する受信手段と、前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記暗号化通信チャネルを介して前記ファイアウォール装置に向けて送信する制御命令送信手段とを有することを特徴とする端末装置として構成することができる。

【0010】

更に、本発明は、ファイアウォール装置に通信可否設定を実行させるための制御命令を送信する端末装置であって、シグナリング情報を中継する機能を持つセッション管理装置との間で暗号化通信のための鍵情報を交換し、相互認証を行うことにより、前記セッション管理装置との間で第１の暗号化通信チャネルを確立する第１の暗号化通信チャネル確立手段と、前記端末装置の通信相手装置から送信された当該通信相手装置のネットワーク情報を、前記第１の暗号化通信チャネルを介して受信する受信手段と、暗号化通信のための鍵情報を含む接続要求メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置に向けて送信し、暗号化通信のための鍵情報を含む応答メッセージを、前記第１の暗号化通信チャネルを介して前記ファイアウォール装置から受信することにより、前記ファイアウォール装置と前記端末装置間で第２の暗号化通信チャネルを確立する第２の暗号化通信チャネル確立手段と、前記ネットワーク情報に基づくファイアウォール装置制御命令を、前記第２の暗号化通信チャネルを介して前記ファイアウォール装置に送信する制御命令送信手段とを有することを特徴とする端末装置として構成することもできる。

【0011】

また、前記端末装置は、前記通信相手装置との通信のために通信可否設定を必要とするファイアウォール装置の情報を格納したデータベースを有し、前記制御命令送信手段は、前記データベースを参照することにより検出したファイアウォール装置に対して前記ファイアウォール装置制御命令を送信するように構成してもよい。

【発明の効果】

【0012】

本発明によれば、暗号化通信チャネルを介して端末装置からファイアウォール装置制御

にファイアウォール装置制御命令を送信し、ファイアウォール装置では、ファイアウォール装置制御命令を許可するか否かの判定を行った上で通信可否設定を行うこととしたので、ファイアウォール装置の制御を動的にセキュアに行うことが可能となる。よって、従来技術における利便性の低さやセキュリティ上の問題が解決される。

【発明を実施するための最良の形態】

【0013】

以下、本発明の実施の形態を図を参照して説明する。まず、本発明のファイアウォール装置制御技術の前提となるセキュアデータチャネル構築技術について説明し、その後に、ファイアウォール装置制御技術について説明する。

【0014】

（セキュアデータチャネル構築技術）

図１は、セキュアデータチャネル構築技術の概要を説明するための図である。

【0015】

図１に示すように、端末１と端末２との間にセッション管理サーバ３を設置し、端末１－セッション管理サーバ３－端末２間で、端末１－端末２間のデータチャネル構築のためのシグナリング（信号手順）を実行し、データチャネル構築後はセッション管理サーバ３を介さずに端末間のみでデータ通信を行う。

【0016】

シグナリングにおいては、まず、端末１－セッション管理サーバ３間、セッション管理サーバ３－端末２間の各々で、ＩＰｓｅｃ等の暗号化通信を行うための暗号鍵情報の交換、相互認証が行われる。そして、端末１－セッション管理サーバ３間、セッション管理サーバ３－端末２間の各々で確立されたセキュアシグナリングチャネルを介して、セッション管理サーバへの名前登録、端末１－端末２間のセキュアデータチャネル確立のためのシグナリングが実行される。

【0017】

端末１－セッション管理サーバ３間、セッション管理サーバ３－端末２間でのセキュアシグナリングチャネル確立におけるシグナリングにより、セッション管理サーバ３と端末１との間、セッション管理サーバ３と端末２との間において相互認証に基づく信頼関係が確立されているため、端末１と端末２との間でも信頼関係が確立されている。

次に、端末１－セッション管理サーバ３－端末２間の通信のシーケンスを図２を参照して説明する。

【0018】

各端末は、セッション管理サーバ３との間でシグナリングを実行するシグナリング機能、セキュアデータチャネルを介してデータ通信を行うための機能、及びアプリケーションを備えている。また、セッション管理サーバ３は、シグナリングを各端末との間で実行するシグナリング機能、端末間の接続可否を判断する接続ポリシー制御機能、各端末を認証するための認証機能、端末の名前からＩＰアドレスを取得する名前解決機能、及び、認証のために用いるＩＤ、パスワードを格納するデータベース、名前とＩＰアドレスを対応付けて格納するデータベース等を備えている。

【0019】

図２に示すように、まず、端末１－セッション管理サーバ３間でＩＰｓｅｃ等の暗号通信で用いる鍵情報（暗号鍵生成用の情報）の交換を行う（ステップ１）。その後、自分のＩＤ、パスワードを含む情報を暗号化して相手側に送信することにより、相互に認証を行う（ステップ２）。認証後は、セキュアシグナリングチャネルが確立された状態となり、そのチャネルを用いて、端末１は、名前とＩＰアドレスをセッション管理サーバ３に対して送信し、セッション管理サーバ３はそれらの登録を行う（ステップ３）。端末１の通信相手となる端末２とセッション管理サーバ３間でも同様のシーケンスが実行され、端末２の名前とＩＰアドレスがセッション管理サーバ３に登録される（ステップ４、５、６）。

【0020】

その後、端末１から端末２への接続要求が、セキュアシグナリングチャネルを介して送

信される（ステップ７）。接続要求には、端末２の名前と暗号通信用の鍵情報（暗号鍵生成用の情報）が含まれる。接続要求を受信したセッション管理サーバ３は、端末１からの接続要求に関して、端末１が嘘をついていないことをチェックし（発信者詐称チェック）、更に、接続ポリシー制御機能を用いて端末１と端末２との接続が許可されているかをチェックし（ステップ８）、許可されていれば、名前解決機能を用いてデータベースを参照することにより、端末２の名前から端末２のＩＰアドレスを取得し（ステップ９）、セキュアシグナリングチャネルを介して端末２へ接続要求を転送する（ステップ１０）。このとき、端末１のＩＰアドレスも端末２に送信される。端末１と端末２の接続が許可されていなければ、端末１の接続要求は拒否される。このとき、端末２に関する情報は端末１には全く送信されない。

【0021】

接続要求を受信した端末２は、接続要求に対する応答として、暗号通信用の鍵情報を含む応答メッセージをセキュアシグナリングチャネルを介してセッション管理サーバ３に送信し（ステップ１１）、セッション管理サーバ３がその応答メッセージを端末１に送る（ステップ１２）。このとき、端末２のＩＰアドレスも端末１に送信される。

【0022】

以上の手順により、端末１と端末２との間での暗号化通信が可能となる。すなわち、セキュアデータチャネルが確立され、所望のデータ通信が行われる。

【0023】

ステップ１、２及び４、５を経てセキュアシグナリングチャネルが確立されているということは、端末－セッション管理サーバ間で相互に認証が成功しており、信頼関係が成立しているということである。端末１－セッション管理サーバ３間、及び端末２－セッション管理サーバ３間の各々でこのような関係が成立しているので、端末１と端末２との間も相互に信頼できる関係となることから、ステップ７以降は、一般の暗号化通信で用いられる鍵交換手順より簡略化した手順を用いることが可能となっている。

【0024】

上記のシーケンスを実現する手段として、ＳＩＰ（session initiation protocol）を拡張したプロトコルを用いることが可能である。すなわち、セッション管理サーバ３をＳＩＰプロキシサーバとして機能させ、ＳＩＰのメッセージに上記の手順でやり取りされる情報を含ませる。

【0025】

この場合、セキュアシグナリングチャネルの確立及び名前登録のためにＲＥＧＩＳＴＥＲメッセージを用い、端末１－端末２間のセキュアデータチャネル確立のためにＩＮＶＩＴＥメッセージを用いる。ＳＩＰを用いる場合のシーケンス例を図３に示す。

【0026】

図３に示す例は、セキュアなチャネルで接続された複数のセッション管理サーバを経由して、シグナリングを行う場合の例である。図３に示すシーケンスにおいて、端末１のＩＰアドレスが２００１：１２３４：：１０、セッション管理サーバＡのＩＰアドレスが２００１：６７８９：：５０６０、セッション管理サーバＢのＩＰアドレスが２００１：ａｂｃｄ：：５０６０、端末２のＩＰアドレスが２００１：ｃｄｅｆ：：１０である。

【0027】

各端末とセッション管理サーバ間には予め互いにＩＤ、パスワードを配布しておき、端末とセッション管理サーバの各々は、相手のＩＤ、パスワードを自分の記憶装置に格納する。また、セッション管理サーバＡとセッション管理サーバＢの間は、ＴＬＳ等のセキュアなチャネルを介して通信を行う。

【0028】

まず、端末１、２は、ＲＥＧＩＳＴＥＲメッセージを用いて、セッション管理サーバとのセキュアチャネルの確立、及び、（ＳＩＰに準拠した）名前の登録をセッション管理サーバＡ、Ｂに対して行う（ステップ２１）（図２のステップ１～６に相当する）。なお、この部分の手順については後により詳細に説明する。

【0029】
続いて、端末１が、暗号通信用の鍵情報（図の例では秘密共有鍵生成用の情報）をＳＤＰパラメータとして記述したＩＮＶＩＴＥメッセージを、端末２への接続要求として、端末１とセッション管理サーバA間のセキュアシグナリングチャネルを介して送信する（ステップ２２）。セッション管理サーバAは、ＩＮＶＩＴＥメッセージをセッション管理サーバA、B間のセキュアなチャネルを介してセッション管理サーバBに転送する（ステップ２３）。
【0030】
なお、端末１からのＩＮＶＩＴＥメッセージにはRoute-Securityヘッダが含まれる。Route-Securityヘッダが付加されている場合、そのＩＮＶＩＴＥメッセージを受信した装置は、Route-Securityヘッダ：[アドレス]で示されているアドレスから当該装置までの経路がセキュアなものであるかとうか（例えばＩＰｓｅｃによる暗号化がなされているかどうか）をチェックし、セキュアなものであればそのRoute-Securityヘッダをそのまま残してメッセージを転送する。また、転送先で経路がセキュアなものであるかとうかチェックを要する場合には、Route-Securityヘッダ：[自分のアドレス]を付加したメッセージをその転送先に転送する。応答メッセージには、これまでに付されたRoute-Securityヘッダがそのまま付されており、これにより、メッセージがセキュアな経路を介して転送されたものであることがわかる。
【0031】
セッション管理サーバBは、端末２に、端末２とセッション管理サーバB間のセキュアシグナリングチャネルを介してＩＮＶＩＴＥメッセージを送信する（ステップ２４）。なお、セッション管理サーバA及びセッション管理サーバBにおいて端末２の名前解決がなされている。ＩＮＶＩＴＥメッセージを受信した端末２は、暗号通信用の鍵情報をＳＤＰパラメータとして含む応答メッセージを端末１に向けて送信する（ステップ２５）。そして、その応答メッセージは、ＩＮＶＩＴＥメッセージと同じルート上を逆の方向に運ばれ、端末１に送信される（ステップ２６、２７）。
【0032】
その後、受信確認（ＡＣＫ）メッセージが端末１から端末２に送信され（ステップ２８～３０）、端末１と端末２との間の暗号化通信（例えばＩＰｓｅｃによる通信）が可能となる。
【0033】
図３のステップ２１におけるＲＥＧＩＳＴＥＲメッセージのシーケンスは、例えば図４に示す通りである。
【0034】
この場合、まず、暗号通信用（ＩＰｓｅｃ等）の鍵情報を含むＲＥＧＩＳＴＥＲメッセージを、端末からセッション管理サーバに送信する（ステップ２１１）。セッション管理サーバは、その応答として暗号通信用の鍵情報を含む応答メッセージを端末に返す（ステップ２１２）。続いて、端末は、セッション管理サーバが端末を認証するための認証用情報を含むＲＥＧＩＳＴＥＲメッセージをセッション管理サーバに送信する（ステップ２１３）。セッション管理サーバはその応答として、端末がセッション管理サーバを認証するために必要な認証用情報を含む応答メッセージを端末に送信する（ステップ２１４）。互いの認証が取れた後、セキュアシグナリングチャネルによる暗号化通信が可能となる。
【0035】
その後は、パケットがセキュアシグナリングチャネルを介して暗号化して送受信されるため、通常のＲＥＧＩＳＴＥＲメッセージシーケンスにより名前の登録が行われる（ステップ２１５、２１６）。
【0036】
認証用情報は、ＩＤ、パスワード等を含む情報でもよいし、証明書（Ｘ．５０９証明書等）でもよい。また、暗号通信用の鍵情報の交換のために用いるメッセージに認証用情報（証明書）を含めてもよい。

【0037】
次に、シグナリングプロトコルとしてＳＩＰを用いる場合の各装置の機能ブロックを図５を参照して説明する。
【0038】
セッション管理サーバは、呼（メッセージ）の転送のための処理を行うＳＩＰプロキシ、ＳＩＰの名前登録を行うＳＩＰレジストラ、ＩＤ、パスワード、もしくは証明書等を用いて各端末の認証を行う認証モジュール、ＩＰｓｅｃ等の暗号化通信を行うための暗号化モジュールを有している。
【0039】
また、各端末は、セキュアデータチャネル上での通信を行う機能部、ＩＮＶＩＴＥメッセージの送受信やＲＥＧＩＳＴＥＲメッセージの発行等を含むＳＩＰに基づくメッセージ通信を行うＳＩＰ機能部、ＩＤ、パスワード、もしくは証明書等を用いてセッション管理サーバの認証を行う認証モジュール、ＩＰｓｅｃ等の暗号化通信を行うための暗号化モジュールを有している。
【0040】
（ファイアウォール装置制御技術）
次に、本発明の実施の形態におけるファイアウォール装置制御技術の概要について説明する。図６（ａ）に示すように、ファイアウォール装置Ａ（１０）の配下にある端末Ａ（１１）と、ファイアウォール装置Ｂ（１２）の配下にある端末Ｂ（１３）とが通信を行う場合におけるファイアウォール装置制御を例にとり説明する。
【0041】
図６（ａ）の構成において、ファイアウォール装置Ａ、端末Ａ、ファイアウォール装置Ｂ、端末Ｂの各々は、上述した端末１、２と同様に、セキュアシグナリングチャネル及びセキュアデータチャネルを構築する機能を有しており、各々がセッション管理サーバ１５とセキュアシグナリングチャネルにより接続可能である。以下、ファイアウォール装置制御の手順について、図６（ａ）～図８を参照して説明する。
【0042】
ステップ１）図６（ａ）において、まず、ファイアウォール装置Ａ、端末Ａ、ファイアウォール装置Ｂ、端末Ｂの各々が、図２に示したステップ１～ステップ３と同様のシーケンスを実行することにより、セッション管理サーバ１５との間でセキュアシグナリングチャネルを確立し、名前とアドレスをセッション管理サーバ１５に送信する。セッション管理サーバ１５では、名前とアドレスを記憶装置に記憶する。なお、ファイアウォール装置Ａ、Ｂがセッション管理サーバ１５との間でセキュアシグナリングチャネルを確立する手順を開始するタイミングは、例えばファイアウォール装置の電源を入れたときとすることができる。
【0043】
ステップ２）続いて、図６（ｂ）に示すように、端末Ｂが、端末Ｂとセッション管理サーバ１５間のセキュアシグナリングチャネル、及びセッション管理サーバ１５と端末Ａ間のセキュアシグナリングチャネルを用いて、端末Ａに対して接続要求を送信する。この接続要求には、ファイアウォール装置制御に必要な端末Ｂのネットワーク情報（送信元ＩＰアドレス、ポート等）と、暗号化通信用の鍵情報が含まれる。なお、ファイアウォール装置Ａは、セッション管理サーバ１５からの通信を通すように設定がなされている。同様に、ファイアウォール装置Ｂも、セッション管理サーバ１５からの通信を通すように設定がなされている。
【0044】
ステップ３）次に、図７（ａ）に示すように、接続要求を受信した端末Ａは、端末Ｂのネットワーク情報に基づく制御命令を、端末Ａとセッション管理サーバ１５間及びセッション管理サーバ１５とファイアウォール装置Ａ間のセキュアシグナリングチャネルを用いてファイアウォール装置Ａに送信する。ファイアウォール装置Ａは、その制御命令を許容するか否かの判断を行い、許容する場合に端末Ｂからの通信を許可するように設定を行う

。その後、制御命令を受け入れた旨を通知する応答が、セッション管理サーバ１５を介して端末Ａに返される。なお、制御命令を許容しない場合には、ファイアウォール装置Ａの上記設定は行わず、制御命令を許容しない旨の応答が端末Ａに返される。

【0045】

ステップ４）図７（ｂ）に示すように、端末Ａは、端末Ｂからの接続要求を受け入れた旨を示す要求受入応答をセッション管理サーバ１５を介して端末Ｂに送信する。この際、端末Ａ自身のネットワーク情報と鍵情報を端末Ｂに伝える。

【0046】

なお、必要であれば、端末Ｂの側においても、ファイアウォール装置Ｂに対する端末Ａからの通信許可設定を行う。具体的には、端末Ａがファイアウォール装置Ａの設定を行う場合と同様の方法で、要求受入応答に含まれる端末Ａのネットワーク情報に基づき、端末Ｂがファイアウォール装置Ｂに対して制御命令を送信する。そして、ファイアウォール装置Ｂの設定の確認を行ってから実際の通信を開始する。

【0047】

端末Ｂがファイアウォール装置Ｂに制御命令を送信することに代えて、端末Ａがファイアウォール装置Ｂに制御命令を送信することにより、ファイアウォール装置Ｂの設定を行うこともできる。

【0048】

ステップ５）続いて、図８に示すように、互いに受信した鍵情報を用いて、端末Ａと端末Ｂとの間でセキュアなＰ２Ｐ（ピアツーピア）チャネルを確立し、通信を開始する。通信が切断した場合には、ステップ３と同様にして、端末Ｂが制御命令をファイアウォール装置Ｂに送信することによりファイアウォール装置Ｂの設定を元に戻し、端末Ａからの通信を拒否する状態にする。

【0049】

（シーケンス具体例）

次に、ＳＩＰを用いた場合のファイアウォール装置制御シーケンスの具体例について説明する。以下、セキュアシグナリングチャネルのみを用いて制御を行う例（具体例１、図６（ａ）～図８を用いて説明した例に相当する）と、端末とファイアウォール装置間でセキュアデータチャネルを確立し、そのチャネルを用いてファイアウォール制御を行う例（具体例２）について説明する。

【0050】

［具体例１］

具体例１のシーケンスを図９に示す。まず、端末Ｂが、セッション管理サーバ１５を介して接続要求を含むＩＮＶＩＴＥメッセージを端末Ａに送信する（ステップ４１）。次に、端末Ａが、ファイアウォール装置制御命令を含むＭＥＳＳＡＧＥを、セッション管理サーバ１５を介してファイアウォール装置Ａに送信する（ステップ４２）。

【0051】

ファイアウォール装置Ａは、端末Ａからの当該制御命令を受け入れる場合には、その制御命令に従って設定を行い、セッション管理サーバ１５を介して制御受入応答（２００ＯＫ）を端末Ａに返す（ステップ４３）。制御受入応答を受信した端末Ａは、ＩＮＶＩＴＥメッセージ（ステップ４１）への応答として、要求受入応答を、セッション管理サーバ１５を介して端末Ｂに送信し（ステップ４４）、端末Ｂは、ＡＣＫ（通信確立許可）を、セッション管理サーバ１５を介して端末Ａに送信する（ステップ４５）。上記の手順によって、端末Ａと端末Ｂ間のセキュアデータチャネルが確立される（ステップ４６）。

【0052】

上記のＩＮＶＩＴＥメッセージには、セキュアデータチャネル構築のための鍵情報に加え、通信プロトコル（ｔｃｐ、ｕｄｐ等）、送信元（端末Ｂ）のアドレス、送信元ポート等が含まれる。また、要求受入応答には、セキュアデータチャネル構築のための鍵情報が含まれる。また、ＭＥＳＳＡＧＥには、ファイアウォール制御命令を構成する情報として、通信プロトコル、送信元アドレス、送信元ポート、受信元（端末Ａ）アドレス、受信元

ポート、リクエストか応答かを示す情報、及びアクション（許可、拒否）等の情報が含まれる。ＭＥＳＳＡＧＥを用いた制御命令の一例を図１０に示す。これは、ＭＥＳＳＡＧＥのｂｏｄｙ部に、ＸＭＬを用いて命令を記述した例であり、２００１：１２３４：：１０から、２００１：５６７８：：２０へのｔｃｐ－８０の通信（ｈｔｔｐ通信）を許可設定するための命令を示すものである。

【0053】

具体例１の方法によれば、シグナリングチャネルだけを用いるので、簡易にファイアウォール装置制御が可能であるという利点を有する。

【0054】

［具体例２］

次に、具体例２のシーケンスを図１１に示す。まず、端末Ｂが、セッション管理サーバ１５を介し、接続要求を含むＩＮＶＩＴＥメッセージを端末Ａに送信する（ステップ５１）。次に、端末Ａが、ファイアウォール装置Ａへの接続要求を含むＩＮＶＩＴＥメッセージを、セッション管理サーバ１５を介してファイアウォール装置Ａに送信する（ステップ５２）。なお、このファイアウォール接続要求は、端末Ａとファイアウォール装置Ａ間のデータチャネルを確立するために必要な情報を含む。

【0055】

ファイアウォール装置Ａは、端末Ａからの接続要求を受け入れる場合に、セッション管理サーバ１５を介し、接続受入応答を端末Ａに送信する（ステップ５３）。端末ＡがＡＣＫをファイアウォール装置Ａに返すことにより（ステップ５４）、端末Ａとファイアウォール装置Ａ間でセキュアデータチャネルが確立される。

【0056】

そして、端末Ａはファイアウォール制御命令を上記データチャネルを用いてファイアウォール装置Ａに直接送信する（ステップ５５）。ファイアウォール装置Ａは、端末Ａからの当該制御命令を受け入れる場合には、その制御命令に従って設定を行い、制御受入応答を端末Ａに返す。制御受入応答を受信した端末Ａは、ＩＮＶＩＴＥメッセージ（ステップ５１）への応答として、要求受入応答を、セッション管理サーバ１５を介して端末Ｂに送信し（ステップ５６）、端末Ｂは、ＡＣＫ（通信確立許可）をセッション管理サーバ１５を介して端末Ａに送信する（ステップ５７）。

【0057】

上記の手順によって、端末Ａと端末Ｂ間のセキュアデータチャネルが確立される（ステップ５８）。

【0058】

上記のＩＮＶＩＴＥメッセージ（ステップ５１）には、具体例１におけるＩＮＶＩＴＥメッセージと同様の情報が含まれる。また、ファイアウォール制御命令を構成する情報は、具体例１と同様である。

【0059】

具体例２の方法によれば、データチャネルを用いて直接に情報をファイアウォール装置Ａに送信することが可能なので、任意の形式の制御命令を送ることが可能となり、ファイアウォール装置の仕様に応じた制御命令を柔軟に定めることができる。

【0060】

（端末の構成、動作）

次に、本発明のファイアウォール装置制御機能を持つ端末２０の構成と動作について説明する。図１２に、端末２０の機能ブロック図を示す。端末２０は、ユーザに対してサービスを提供するためのアプリケーション部２１（例えばＩＰ電話アプリケーション）と、セキュアシグナリングセッション（セキュアシグナリングチャネルを介したデータの送受信）を実行するためのセキュアシグナリング機能部２２と、端末２０が属するネットワークのファイアウォール装置（通信相手との通信のために制御が必要となるファイアウォール装置）の名前を格納したファイアウォールデータベース２３とを有している。また、セキュアシグナリング機能部２２は、ファイアウォール装置に対する通信及び制御を行うた

めのファイアウォール制御通信部２２１を有している。アプリケーション部２１はＡＰＩを用いてセキュアシグナリング機能部２２の機能を利用する。なお、図１２のセキュアシグナリング機能部２２は、図５に示したＳＩＰ機能部、認証モジュール、暗号化モジュールを含んでいる。更に、セキュアシグナリング機能部２２は、ファイアウォール装置や通信相手と直接通信を行う場合における、データチャネルを用いた通信を行う機能も有しているものとする。

【0061】

上記の端末２０の各機能部はプログラムにより実現されるものであるが、当該プログラムは本実施の形態で説明した処理手順をコンピュータ等に実行させるプログラムであればよく、図５、１２のモジュール構成に限定されるものではない。端末２０は、ＣＰＵ、メモリ、ハードディスク（記憶装置）、ネットワーク通信装置等を含む一般的なＰＣ等のコンピュータ、モバイル機器等であり、当該コンピュータ等に上記プログラムをインストールすることにより本実施の形態の端末の機能を実現することができる。端末２０はディジタル家電等でもよい。

【0062】

次に、図１３に示すフローチャートを参照して端末２０の動作を説明する。ここで、端末２０における処理手順は、実際の通信相手との通信の接続及び切断に係る手順と、通信を確立するために必要なファイアウォール装置制御の手順とに分類できるので、図１３では、これらを左右に分けて記載している。また、図１３に示す例は、具体例２の場合に相当する。図１３のフローチャートに示す手順において、セッション管理サーバ、ファイアウォール装置、及び通信相手との通信はセキュアシグナリング機能部２２により実現されるが、ファイアウォール装置の制御には更にファイアウォール制御通信部２２１が用いられている。

【0063】

図１３のフローチャートにおいて、まず、端末２０は、通信相手からの通信要求をセッション管理サーバから受信する（ステップ６１）。通信要求を受けた端末２０は、ファイアウォールデータベース２３から制御の対象となるファイアウォール装置の名前を取得し（ステップ６２）、そのファイアウォール装置に対する接続要求をセッション管理サーバに対して送信する（ステップ６３）。この接続要求に基づき、端末２０とファイアウォール装置間でのチャネルが確立された後、端末２０は、通信相手との通信許可を求める制御命令をファイアウォール装置に送信する（ステップ６４）。続いて、ファイアウォール装置から制御完了報告を受信する（ステップ６５）。この後、端末２０とファイアウォール装置とのデータチャネルは切断するものとする。そして、通信相手からの通信要求（ステップ６１）を受理したことを示す応答を、セッション管理サーバを介して通信相手に送信する（ステップ６６）。これにより、通信相手とセキュアデータチャネルを介して接続され、実際の通信が開始される（ステップ６７）。

【0064】

通信相手との通信が切断されると（ステップ６８）、セッション管理サーバを介して、再度ファイアウォール装置へ接続要求を送信する（ステップ６９）。ファイアウォール装置との接続が確立した後、今度は、ステップ６４において一旦設定した通信相手との通信“許可”設定を、通信“拒否”設定にすることを求める制御命令をファイアウォール装置に対して送信する（ステップ７０）。ファイアウォール装置が当該設定を行った後、端末２０は制御完了報告をファイアウォール装置から受信し（ステップ７１）、処理を終了する（ステップ７２）。このように、通信相手との通信が終了した直後にファイアウォール装置の設定を元に戻すことにより、セキュリティの向上を図ることができる。

【0065】

（ファイアウォール装置の構成、動作）

次に、ファイアウォール装置の構成と動作について説明する。図１４に、ファイアウォール装置３０の機能ブロック図を示す。ファイアウォール装置３０は、ファイアウォール本来の処理を行うためのファイアウォール部３１、セキュアシグナリング機能部３２、端

末からの制御命令を受け入れるか否かの判定を行う際に参照するデータを格納した制御許可拒否データベース３４を有している。また、ファイアウォール部３１は、セキュアシグナリング機能部３２からの制御命令を受信し、命令に基づく処理を実行するためのＡＰＩ３３を有している。端末の場合と同様に、セキュアシグナリング機能部３２は、図５に示したＳＩＰ機能部、認証モジュール、暗号化モジュールを含み、セキュアシグナリングチャネル構築、セキュアシグナリングチャネル上でのデータ送受信等の機能を有している。また、セキュアシグナリング機能部３２は、端末と直接通信を行う場合における、データチャネルを用いた通信を行う機能も有しているものとする。更に、セキュアシグナリング機能部３２は、制御許可拒否データベース３４を参照して制御命令を受け入れるか否かの判定を行う機能を有している。

【0066】

上記のファイアウォール装置３０の各機能部はプログラムにより実現されるものであるが、当該プログラムは本実施の形態で説明した処理手順をコンピュータ等に実行させるプログラムであればよく、図１４、図５のモジュール構成に限定されるものではない。ファイアウォール装置３０は、ＣＰＵ、メモリ、ハードディスク（記憶装置）、ネットワーク通信装置等を含む一般的なコンピュータや通信機器等であり、当該コンピュータ等に上記プログラムをインストールすることにより本実施の形態のファイアウォール装置の機能を実現することができる。

【0067】

制御許可拒否データベース３４の内容例を図１５に示す。図１５に示す例では、ファイアウォール装置に対して制御命令を送信するユーザ（端末）毎に、そのユーザからの要求を受け入れるか否か（ａｌｌｏｗまたはｄｅｎｙ）、制御要求のうちどのような内容であれば受け入れるか、を示すデータが格納されている。例えば、命令元のユーザａ＠ａａａ．ｃｏｍに対しては、全ての制御命令を許可することを示し、ｂ＠ａａａ．ｃｏｍに対しては、ｈｔｔｐに関する制御命令のみを許可することを示し、ｃ＠ａａａ．ｃｏｍに対しては、全ての制御命令を拒否することを示し、ｄ＠ａａａ．ｃｏｍに対しては、ｈｔｔｐに関する命令のみを拒否することを示す。また、ｅ＠ａａａ．ｃｏｍに対しては、ｅ＠ａａａ．ｃｏｍが受信するｓｓｈ通信（ｔｃｐポート：２２番）であれば、通信相手を問わず許可することを示す。また、特定の通信相手先への通信を拒否もしくは許可する設定も可能である。

【0068】

次に、図１６に示すフローチャートを参照してファイアウォール装置３０の動作を説明する。なお、図１６に示す例は、具体例２の場合に相当する。

【0069】

まず、制御を行う端末から、セッション管理サーバを介して接続要求を受信する（ステップ８１）。この接続要求に基づき、端末とファイアウォール装置３０間でのデータチャネルが確立された後、端末からファイアウォール装置制御命令を受信する（ステップ８２）。なお、接続要求を受信した後に、接続要求を送信した端末からの接続を許容するか否かのみの判定を行い、接続を許容しない場合に、その旨の応答を端末に返答するようにしてもよい。

【0070】

ファイアウォール装置３０は、制御許可拒否データベース３４を参照し、その制御命令を許可するか否かを判定する（ステップ８３）。許可する場合、制御命令に基づく設定を行い（ステップ８４）、制御完了報告を制御命令送信元の端末に送信する（ステップ８５）。端末間での通信切断後にも、ステップ８１～ステップ８５と同様の処理手順が実行される。ただし、端末間での通信切断後は、端末間の通信を拒否する設定を行うことになる。

【0071】

（セッション管理サーバでの判定等）

さて、ファイアウォール装置が図１５のような制御許可拒否データベース３４を備え、

端末からの制御命令実行可否の判定を行うことに加えて、セッション管理サーバが、その接続ポリシー制御機能を用いて、端末間の接続可否の判定を行ってもよい。

【0072】

この場合、セッション制御サーバは、図１７に示すようなデータベースを備える。そして、セッション制御サーバは、制御主体の端末から、ファイアウォール装置宛の制御命令（具体例１の場合）もしくは接続要求（具体例２の場合）をセキュアシグナリングチャネルを介して受け取ったときに、図１７のデータベースを参照して端末間の接続許可拒否の判定を行う。なお、制御命令及び接続要求は、接続端末と被接続端末の名前を含むものとする。

【0073】

図１７に示す例では、被接続端末ａ＠ａａａ．ｃｏｍは、接続端末ｂ＠ａａａ．ｃｏｍとｃ＠ａａａ．ｃｏｍからのアクセスのみを許容することを示し、ｂ＠ａａａ．ｃｏｍは、ｙ＠ａａａ．ｃｏｍとｚ＠ａａａ．ｃｏｍ以外からのアクセスであれば許容することを示している。

【0074】

セッション管理サーバで接続拒否の判定がなされれば、ファイアウォール装置へ制御命令もしくは接続要求が送られることなく、制御命令もしくは接続要求を送信した端末に、接続拒否を示す応答が返される。セッション管理サーバで接続許可の判定がなされれば、ファイアウォール装置にて、図１５のデータベースを参照したより詳細な判定がなされることになる。

【0075】

また、ファイアウォールが複数のファイアウォール装置から構成されている場合、端末のファイアウォールデータベース２３には複数のファイアウォール装置に対応する１つの名前を登録しておき、セッション管理サーバには、その名前に対応する複数のファイアウォール装置の実際の名前を登録しておいてもよい。この場合、その名前を含む制御命令もしくは接続要求を端末からセッション管理サーバに送信したときに、セッション管理サーバは、その名前に対応する複数のファイアウォール装置に制御命令もしくは接続要求を送信することが可能となり、複数のファイアウォール装置への制御を一括して行うことが可能となる。

【0076】

上述したように本実施の形態で説明したファイアウォール装置制御技術を用いることにより、ファイアウォール装置に対する動的な制御が可能となる。従来であれば、ファイアウォール装置配下にあるユーザＡが、ファイアウォール装置配下外のユーザＢとの通信を希望する場合、ユーザＡがネットワーク管理者等にユーザＢとの通信を許可するよう要求し、ネットワーク管理者が当該ファイアウォール装置の設定をするのが一般的であったところ、本ファイアウォール装置制御技術によれば、ユーザＡをファイアウォール制御権限有りとして、ファイアウォール装置のデータベースに登録しておきさえすれば、ユーザＡ及びユーザＢが意識することなくファイアウォール装置制御が実行され、ユーザＡとユーザＢ間の通信が可能となる。このように、希望する通信を実行するときだけファイアウォール装置を設定するという動的な制御が可能となる。また、セキュアシグナリングチャネルを確立できる端末及びファイアウォール装置間であれば、それらが互いに離れたネットワークにある場合でも、端末からファイアウォール装置の制御をセキュアに行うことが可能である。

【0077】

本発明は、上記の実施例に限定されることなく、特許請求の範囲内で種々変更・応用が可能である。

【図面の簡単な説明】

【0078】

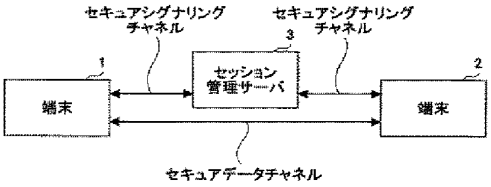
【図1】セキュアデータチャネル構築技術の概要を説明するための図。

【図2】端末１－セッション管理サーバ３－端末２間の通信のシーケンスを示す図。

【図3】ＳＩＰを用いる場合のシーケンス例。
【図4】ＲＥＧＩＳＴＥＲメッセージのシーケンス例。
【図5】ＳＩＰを用いる場合の各装置の機能ブロック図。
【図6】ファイアウォール装置制御の流れを説明するための図。
【図7】ファイアウォール装置制御の流れを説明するための図。
【図8】ファイアウォール装置制御の流れを説明するための図。
【図9】具体例１のシーケンスを示す図。
【図10】ＭＥＳＳＡＧＥを用いた制御命令の一例を示す図。
【図11】具体例２のシーケンスを示す図。
【図12】ファイアウォール装置制御機能を持つ端末の機能ブロック図。
【図13】端末の動作を示すフローチャート。
【図14】ファイアウォール装置の機能ブロック図。
【図15】制御許可拒否データベースの内容例を示す図。
【図16】ファイアウォール装置の動作を示すフローチャート。
【図17】セッション管理サーバが備える接続許可拒否リストの例。
【符号の説明】
【0079】
１、２、１１、１３、２０　端末
３、１５　セッション管理サーバ
１０、１２、３０　ファイアウォール装置
２１　アプリケーション部
２２　セキュアシグナリング機能部
２３　ファイアウォールデータベース
２２１　ファイアウォール制御通信部
３１　ファイアウォール部
３２　セキュアシグナリング機能部
３３　ＡＰＩ
３４　接続許可拒否データベース

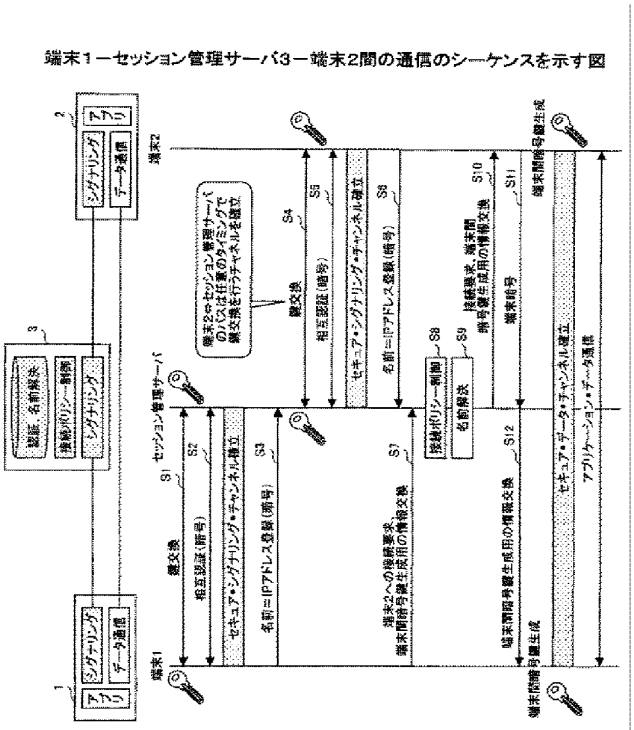
【図1】

セキュアデータチャネル構築技術の概要を説明するための図



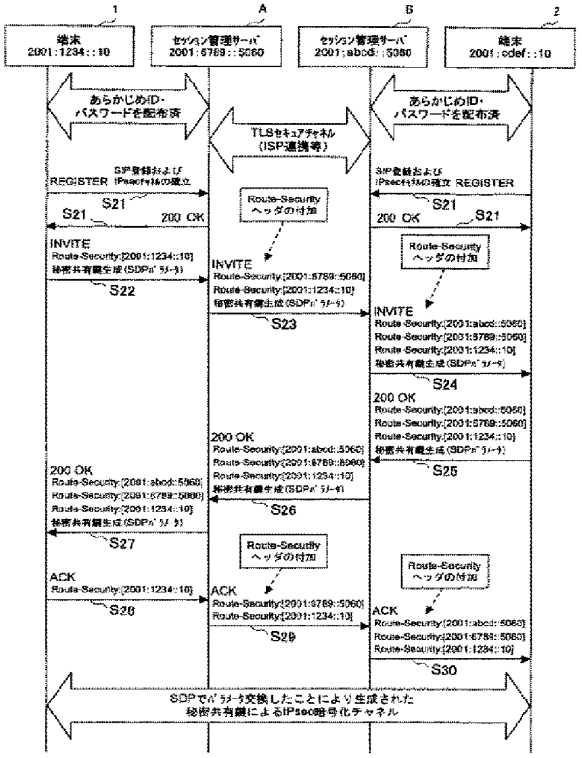
【図2】

端末1－セッション管理サーバ3－端末2間の通信のシーケンスを示す図



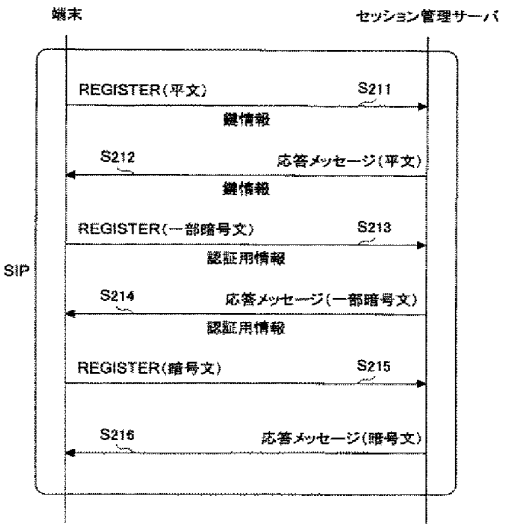
【図3】

SIPを用いる場合のシーケンス例



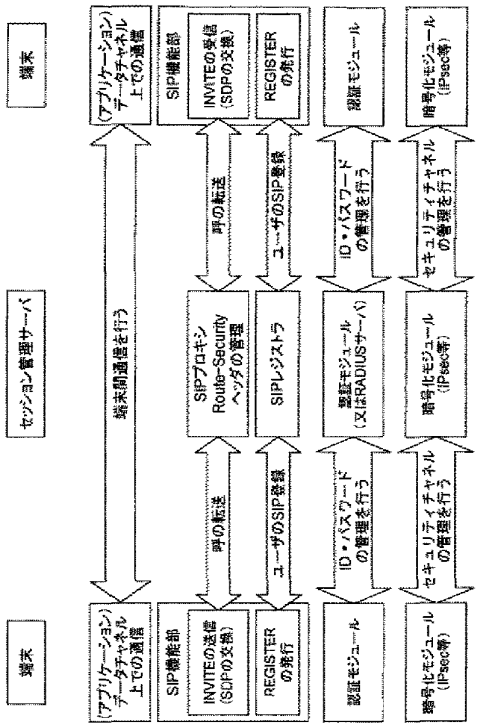
【図4】

REGISTERメッセージのシーケンス例



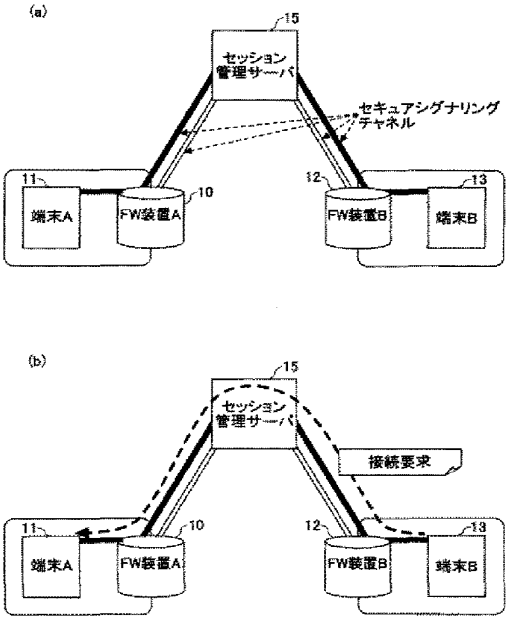
【図5】

SIPを用いる場合の各装置の機能ブロック図



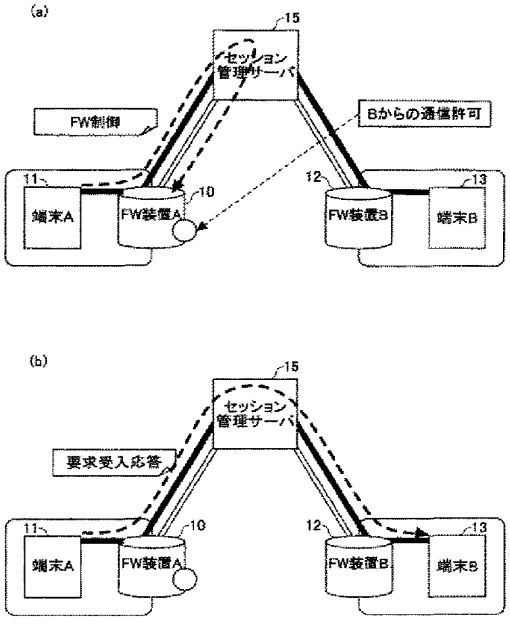
【図6】

ファイアウォール装置制御の流れを説明するための図



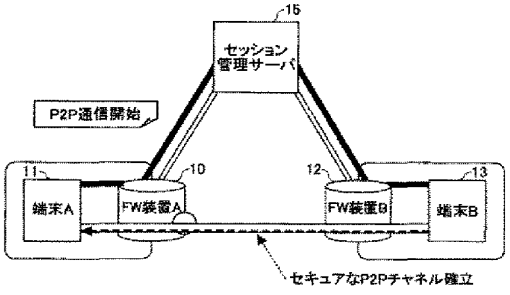
【図7】

ファイアウォール装置制御の流れを説明するための図



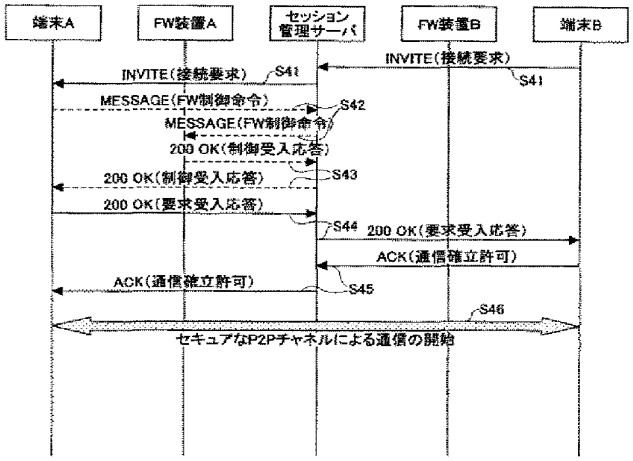
【図8】

ファイアウォール装置制御の流れを説明するための図



【図9】

具体例1のシーケンスを示す図



【図10】

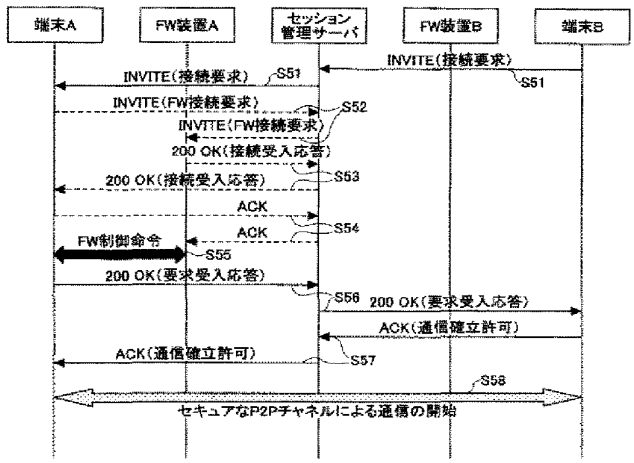
MESSAGEを用いた制御命令の一例を示す図

```
<?xml version="1.0" encoding="UTF-8"?>
<command xmlns ="http://uopf.com/fwcontrol/"
    entity="sip:firewall00abc@aaa.com">
<proto>tcp</proto>
<srcadd>2001:1234::10</srcadd>
<distadd>2001:5678::20</distadd>
<distport>80</distport>
<action>action forward</action>
</command>
```

※ 2001:1234::10 から、2001:5678::20 へのtcp-80の通信(http通信)を許可設定する

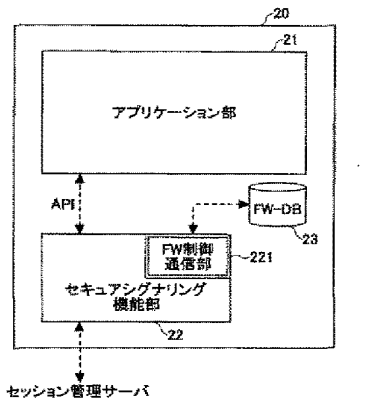
【図11】

具体例2のシーケンスを示す図



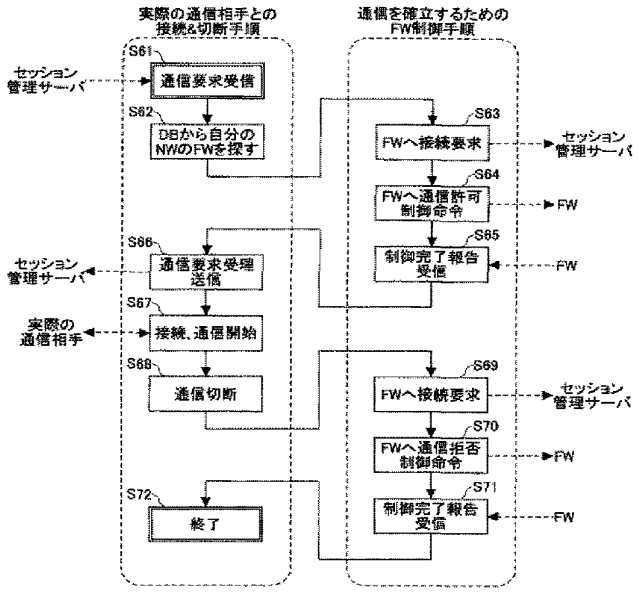
【図12】

ファイアウォール装置制御機能を持つ端末の機能ブロック図



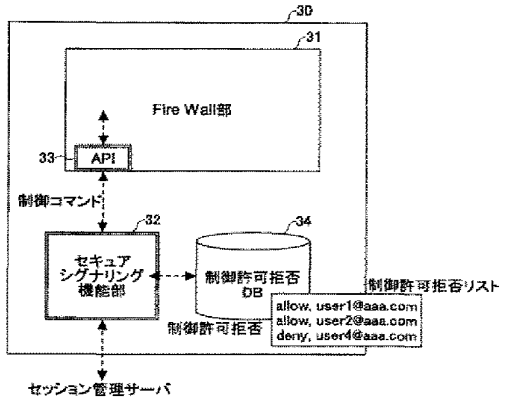
【図13】

端末の動作を示すフローチャート



【図14】

ファイアウォール装置の機能ブロック図



【図15】

制御許可拒否データベースの内容例を示す図

許可拒否区分	制御ユーザ	許可拒否設定
allow	a@aaa.com	any
allow	b@aaa.com	http
deny	c@aaa.com	any
deny	d@aaa.com	http
allow	e@aaa.com	top, any, e@aaa.com 22
⋮	⋮	

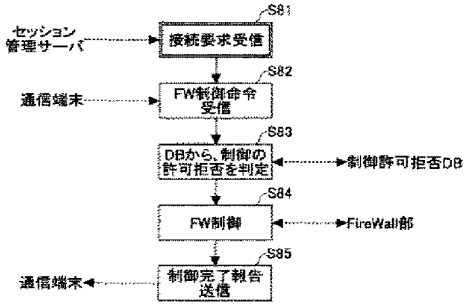
【図17】

セッション管理サーバが備える接続許可拒否リストの例

許可拒否区分	被接続者	接続者
allow	a@aaa.com	b@aaa.com
allow	a@aaa.com	c@aaa.com
deny	b@aaa.com	y@aaa.com
deny	b@aaa.com	z@aaa.com
⋮	⋮	⋮

【図16】

ファイアウォール装置の動作を示すフローチャート



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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

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(54) Title: SYSTEM AND METHOD TO MANAGE THE DISTRIBUTION OF SERVICES SOFTWARE IN A DISTRIBUTED NETWORK

(57) Abstract: A system and method for composing, configuring, deploying, and managing services in a data processing system and data processing sysetm network. This system provides deployment domains to define a logical set of business services that have similar requirements for an application infrastructure. A deployment domain is created, and a graphical user interface allows a user to compose, configure, deploy, and manage services within the deployment domain and associated hosts using a drag-and-drop interface. A system and method for distributing and updating services software in the network and configuring heterogeneous underlying web services hosting platforms is claimed.

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SYSTEM AND METHOD TO MANAGE THE DISTRIBUTION OF SERVICES SOFTWARE IN A DISTRIBUTED NETWORK

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation-in-part of U.S. Patent Application 10/350,164, filed 23 January 2003, for "System And Method For Composing, Configuring, Deploying, And Managing Services Using A Graphical User Interface," which is hereby incorporated by reference, and claims the benefit of the filing date thereof.

[0002] This application also shares at least some common text and figures with, but is otherwise unrelated to, commonly assigned U.S. Patent Applications 10/407,896 for "System And Method For Providing A Plug-And-Play Architecture For Integrating Infrastructure Services With Business Service Implementations," 10/407,849 for "System And Method For Automated Code Generation Using Language Neutral Software Code," and 10/407,812 for "System And Method For Customizing Infrastructure Services For Use In Network Services," all filed concurrently herewith, and which are hereby incorporated by reference.

TECHNICAL FIELD OF THE INVENTION

[0003] The present invention is directed, in general, to data processing system services management.

BACKGROUND OF THE INVENTION

[0004] In the area of conventional business service development, there are, in general, three major roles, each role having specific tools to address its needs.

[0005] Application architects are primarily concerned with defining the contracts of the business services to meet the business requirements. An application contract consists of one or more interface definitions, reflecting the right level of interface granularity and service behavior such as operations exposed and their inputs and outputs.

[0006] An important aspect of the architect's task here is to ensure that existing interface types are reused so that multiple interface types and messages are not reinvented to fulfill similar requirements.

[0007] Once the correct interfaces have been defined, the application developers are ready to implement those interfaces. This often involves writing code that implements business logic. The developers also have to be able to unit test the code that they have just written.

[0008] Finally, once the code has been developed, it can be given to the system administrators for configuration, deployment and management. They can then configure the runtime execution environment for the newly developed service and deploy the application. Once deployed, the application can then be managed through the means available in the environment.

[0009] In the conventional development model, the applications are developed from scratch. This allows the users to perform top-down design and leverage the full capabilities of the available technologies since no baggage needs to be carried from the past.

[0010] Currently, there are 5 major phases of the lifecycle of the business services. In the model phase, the application architects design the interfaces for the business services to be developed. Once the interfaces have been designed, the business logic is developed by the developers of the system. The system architects then configure the runtime for the business service and the administrators then deploy and manage the business services.

[0011] In many cases, the business services already exist but are not manageable. These services may be either 3rd party off-the-shelf (COTS) applications or custom applications developed in-house or by system integrators.

[0012] This style of development is bottom-up development where the interfaces are actually constructed based on existing applications. The architects first use introspection to reverse engineer metadata from the existing applications. These applications may exist in one of many supported technologies such as Java classes, CORBA, EJB's, existing web services or COTS packages such as SAP or Siebel. Introspection would result in one-to-one interface generation. However, in real world, these interfaces may need to be refactored. Refactoring involves either suppressing some of the operation in an interface, creating brand new ones, combining two or more interfaces

(contract aggregation) or splitting a contract into two or more contracts (contract dissemination).

[0013] It should be noted that the existing applications could also be web services. The process should however be no different than that for 3rd party COTS or custom applications supporting a particular technology.

[0014] Business logic generally does not change in nature. However, the underlying technologies are changing very rapidly. For example, there are a number of new standards that are being developed to address various aspects of distributed business services. Many standards do not have any sort of industry consensus and many areas have competing standards. However, the applications have to be developed today. Typically, the business services are written to provide all the other necessary functionality, such as security and others (application infrastructure services) that do not actually contribute to the business behavior itself. As the standards and technologies for these other services (application infrastructure services) evolve, the business services have to be modified and enhanced in order to take advantage of them. Furthermore, in the current state of the art, the configuration and deployment of these services is specific to a particular underlying environment and the underlying products.

[0015] There is, therefore, a need in the art for an improved system and method for distributing updated, modified, and enhanced services in a distributed network.

SUMMARY OF THE INVENTION

[0016] To address the above-discussed deficiencies of the prior art, and to provide generally improved systems and methods, it is a primary object of the present invention to provide an improved system and method for business services development and management in a data processing system and data processing system network.

[0017] The preferred embodiment provides a system and method for composing, configuring, deploying, and managing services in a data processing system and data processing system network. This system provides deployment domains to define a logical set of business services that have similar requirements for an application infrastructure. A deployment domain is created, and a graphical user interface allows a user to compose, configure, deploy, and manage services within the deployment domain and associated hosts using a drag-and-drop interface. A system and method for distributing and updating services software in the network and configuring heterogeneous underlying web services hosting platforms is claimed.

[0018] The foregoing has outlined rather broadly the features and technical advantages of the present invention so that those skilled in the art may better understand the detailed description of the invention that follows. Additional features and advantages of the invention will be described hereinafter that form the subject of the claims of the invention. Those skilled in the art will appreciate that they may readily use the conception and the specific embodiment disclosed as a basis for modifying or designing other structures for carrying out the same purposes of the

present invention. Those skilled in the art will also realize that such equivalent constructions do not depart from the spirit and scope of the invention in its broadest form.

[0019] Before undertaking the DETAILED DESCRIPTION OF THE INVENTION below, it may be advantageous to set forth definitions of certain words or phrases used throughout this patent document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or" is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term "controller" means any device, system or part thereof that controls at least one operation, whether such a device is implemented in hardware, firmware, software or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, and those of ordinary skill in the art will understand that such definitions apply in many, if not most, instances to prior as well as future uses of such defined words and phrases.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, wherein like numbers designate like objects, and in which:

[0021] **FIGURE 1** depicts a block diagram of the relationships between service layers in accordance with a preferred embodiment of the present invention;

[0022] **FIGURE 2** depicts a block diagram relating a development and deployment lifecycle with data objects and service objects in accordance with a preferred embodiment of the present invention;

[0023] **FIGURE 3** depicts a block diagram of a runtime environment in accordance with a preferred embodiment of the present invention;

[0024] **FIGURE 4** illustrates a federated metadata storage and access system in accordance with a preferred embodiment of the present invention;

[0025] **FIGURE 5** depicts a virtual composition environment in accordance with a preferred embodiment of the present invention;

[0026] **FIGURE 6** depicts a block diagram of a virtual container accordance with a preferred embodiment of the present invention;

[0027] **FIGURE 7** depicts a flowchart of a process in accordance with a preferred embodiment of the present invention; and

[0028] **FIGURE 8** depicts a flowchart of a process in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] **FIGURES 1 through 8,** discussed below, and the various embodiments used to describe the principles of the present invention in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the invention. Those skilled in the art will understand that the principles of the present invention may be implemented in any suitably arranged device. The numerous innovative teachings of the present application will be described with particular reference to the presently preferred embodiment.

[0030] Definitions: Following are short definitions of the usual meanings of some of the technical terms which are used in the present application. (However, those of ordinary skill will recognize whether the context requires a different meaning.) Additional definitions can be found in the standard technical dictionaries and journals.

[0031] **Business Service Contract** - A business service contract describes the business service exposed. This normally contains information such as operations provided by the service, their inputs and outputs.

[0032] **Business Service Implementation** - A business service implementation is the software code required strictly to implement the above mentioned business behavior. This does not include other capabilities such as providing security or managing transactions.

[0033] **Application Infrastructure Services** - Application Infrastructure Services are all those services that themselves do not contribute to the business behavior, however they are necessary for the correct operation of the business service. These services can be added, removed or replaced without changing the business behavior of the business service.

[0034] **Virtual Container** - A virtual container couples a business service implementation with one or more application infrastructure services and provides the definition for a complete business service. This definition exists in metadata and contains all the metadata that customizes the specific usage of application infrastructure services inside the said virtual container.

[0035] **Physical Business Service** - A physical business service is the platform specific programming code that can be generated according to the previously discussed definition of the virtual container. This code can then be compiled and deployed in the underlying platform specific manner.

[0036] Web Services will soon be providing complex and mission critical services to business partners and internal customers by providing a viable alternative to most application integration scenarios.

[0037] The disclosed embodiments provide a system and method for composing, configuring, deploying, and managing services in a data processing system and data processing system network. This system provides deployment domains to define a logical set of business services that have similar requirements for an application infrastructure. A deployment domain is created, and a graphical user interface allows a user to compose, configure, deploy, and manage services within the deployment domain and associated hosts using a drag-and-drop interface. A system and method for distributing and updating services software in the network and configuring heterogeneous underlying web services hosting platforms is claimed.

[0038] The metadata is managed by a federated metamodel system. A visual composition environment allows composition of a virtual container that couples the business service implementation in question with the application level infrastructure services that it needs. The code generators can then generate platform specific code for the virtual container. All this can be packaged for easy shipment. The packaged business services can then be easily deployed on any of the machines available to the system.

[0039] The disclosed embodiments include a method and system for describing the underlying application services infrastructure, a virtual execution environment for business services implementations and a system to integrate the two in a loosely coupled way through metadata so that the two can evolve independently and still stay compatible.

[0040] In the preferred embodiment, a deployment domain is created, and a graphical user interface allows a user to compose, configure, deploy, and manage services within the deployment domain and associated hosts using a drag-and-drop interface.

[0041] Furthermore, once the metadata has been defined, it becomes very easy to provide user interface based tools that allow construction of a business service by visually composing an execution environment for the already-built business service implementation. The implementation itself does not know about the kind of the environment in which it will be deployed. Because of this, the implementation can be deployed in execution environments that provide vastly different quality of service.

[0042] The preferred embodiment includes the following features:

[0043] The ability to build business service implementations without any knowledge of the underlying infrastructure environment.

[0044] The ability to describe a deployment environment without any knowledge of what kind of business services will be deployed in it.

[0045] The ability to enhance an infrastructure environment by providing custom application infrastructure services. These services, by implementing abstract interfaces, can be plugged into any supported infrastructure environment. These application infrastructure services provide discrete non-business

related services and do not make any assumptions about who is going to use them and how will they be used.

[0046] The ability to construct a virtual container, once the business service implementations have been developed, that integrates them with preexisting infrastructure services and allows for better management.

[0047] The ability to describe various components and provide plug-and-play development and deployment using a metadata foundation.

[0048] **Figure 1** illustrates these objectives further. A management framework **120** hides the underlying application server environment **140** from the business service implementation **110** and augments the underlying environment by providing the ability to add and integrate application infrastructure services. Further, an implementation framework **130** can be provided that even provides implementation services **150** such as a database management system.

[0049] The preferred embodiment provides a platform that provides a level of abstraction, much higher than the one that is provided by application servers and other web services platforms currently available. This platform brings the development, configuration, deployment and management capabilities to the business services.

[0050] The lifecycle shown in **Figure 2** relates to either doing new development or introspecting existing application for the purpose of converting them into managed business services. As described above, the lifecycle includes the model or introspection phase **205**, in which the application

architects design the interfaces for the business services to be developed or introspect an existing service. In the case of new development, once the interfaces have been designed, the skeleton of business service implementation can be generated and then developed by the developers. In case of existing service, once the existing service has been introspected, a gateway implementation can be automatically generated **210**. The system architects then configure **215** the runtime for the business service. Finally, the administrators then deploy **220** and manage **225** the business services.

[0051] One disclosed feature of the preferred embodiment is a federated meta-model **230** that stores and provides access to the metadata describing the business services themselves and their infrastructure. This metadata describes the interface of the business service itself, the metadata about those infrastructure services, and the metadata about the virtual container that couples a business service implementation with one or more infrastructure services along with their uniquely customized properties.

[0052] The preferred embodiment is designed to expose a level of abstraction higher than those provided by industry standards **240**. The standards and technologies in the web services area are changing very rapidly. As a result, the business services that leverage those standards run the risk of becoming outdated very quickly. The preferred embodiment exposes a higher level interface that can be generated by the metadata itself. This results in more stable and longer-lasting applications.

[0053] The preferred embodiment provides the horizontal platform that can be used to build the vertical solutions that are more specific to industries in the form of industry specific templates **250**. These solutions do not have to be complete themselves. In fact, most likely these solutions will be partial solutions designed to be extended for particular business problems.

[0054] Once the business services have been created, they can be orchestrated **260** using business service orchestration tools. These orchestrations themselves can be manifested as web services, thus forming a recursive relationship.

[0055] **Figure 3** describes the runtime environment for which the business services are configured and in which they are deployed. This architecture is described here at the logical level and can have one or more physical manifestations, in accordance with the disclosed or claimed embodiments.

[0056] A deployment domain **300** is a mechanism for partitioning a large IT environment into smaller logical clusters of machines and applications so that these different clusters can be configured differently from each other. In this case, these deployment domains serve to logically separate environments with different requirements domain. For example, there may be a deployment domain called internal applications. This domain may be configured with a specific security service. Another domain may be for business partners and may be configured with a different kind of security service. Additionally, this domain may also be configured with a management

service, e.g., to bill the users for usage of the business service. The deployment domain serves to define the scope of the infrastructure services that it is composed of and the business services that are deployed in it.

[0057] The deployment domain defines the logical boundaries and scope of the infrastructure and business services within it. It is a logical partition of a large computing environment which consists of many physical machines. The metadata data related to the deployment domain defines that logical partition.

[0058] One or more physical machines can be configured for a deployment domain and one or more application infrastructure services can be made part of the fabric that is a deployment domain. Each server machine, called a host, that is configured to participate in one or more deployment domains will contain a core software service.

[0059] The metadata that describes a host can include such items as host name, host's IP address, the core directory path on the host for the application, etc.

[0060] Since there is a many-to-many relationship between the hosts and deployment domains, a list of hosts can exist independently of the deployment domains. When a host is configured for a deployment domain, it has to be able to run all of the business services deployed in that domain. The application infrastructure services do not have to run on the host because they can themselves be remote.

[0061] An application infrastructure service is defined as a service that provides a discrete non-business level

service. Some examples of infrastructure services are security services, transaction services, service monitoring, load balancing, fault tolerance, and messaging service. An infrastructure may also provide some other services such as reliable delivery or asynchronous messaging. These services can also be much higher level; services such as accounting & billing services, service level agreement management services and user profile management services.

[0062] The best way to characterize an application infrastructure service or differentiate it from a business service is that business service in itself performs a business function, such as procurement or a human resource system. In contrast, an infrastructure service provides secondary functionality that is not part of the business functions itself.

[0063] The metadata of an infrastructure service consists of property sheets with each property sheet containing one or more related properties. For example, a security service may contain five sheets for general properties, authentication, authorization, message integrity, and message confidentiality. Each sheet contains properties that allow customization of the underlying infrastructure service for this specific use. Since these properties are specific to the underlying service, their interpretation is left completely up to the service itself and its plugin. Furthermore, since the property values are specific to the specific usage of this service, these properties need only be defined once a virtual service container is configured with this service.

[0064] Once an infrastructure service has been written or purchased, it has to be made part of one or more deployment domains so that it can be used. This is accomplished by defining an abstract plugin interface. This interface allows the deployment management tools and runtime software to plugin an infrastructure service into the deployment domain and allows the service to be used at runtime. The tools that allow the user to visually configure the virtual service container may allow mechanisms to "drag" the infrastructure service and "drop" it on the virtual service container on a canvass. The tools can at this time present the required set of properties to be defined for the service for this particular container. This is accomplished by requesting the plugin to provide its customizable property sheets so that they can be filled.

[0065] At runtime, the virtual container receives the requests sent to the business service and invokes plugs for all the application infrastructure services configured for this container. The plugin can then retrieve the metadata and use it to perform the work. If the actual infrastructure service is implemented as a set of libraries, then the plugin can invoke those libraries or if it represents a remote service then it can communicate with that remote service in a manner that is specific to that infrastructure service. In any case, the runtime is not aware of the details of the operation - it simply invokes the plugin and passes it the runtime invocation-related data.

[0066] Each infrastructure service is therefore required to implement the plugin interface as a precondition to it becoming part of an infrastructure. An infrastructure service may provide different plugins for different deployment domains. The location and other necessary information required to load the plugin is part of the metadata of the infrastructure service.

[0067] A business service implementation is an implementation of the business behavior that a service is expected to provide. This behavior should be implementable in a manner independent of how it is accessed. For example, it should be possible to implement the business logic for a procurement service without being specific to Jave Platform 2 Enterprise Edition (J2EE)-based access or Microsoft .NET based access. However, once the service has been constructed, it may be deployed in a virtual container **320** that is specific to the underlying platform. This virtual container then decouples the service implementation from the infrastructure in which it is deployed.

[0068] This virtual service container **320** is conceptually similar to a J2EE container to the extent in that it provides the several needed services such as transaction and database management. However, unlike J2EE like containers, these services are not fixed but can be added, removed and updated. The virtual container **320** of the preferred embodiment, is a higher level concept. It views an environment as a collection of discrete higher level services and recognizes the need for business services to be integrated with those higher level services. It limits its scope to the infrastructure level services

and does not provide those services that are needed for implementing the business logic, such as database management.

[0069] The container is called "virtual" because it itself is a platform independent definition rather than a physical implementation. It is described in terms of metadata. The metadata for the container describes the business service implementation that is it hosting. This service was built using the development tools and its definition is part of the development metadata. In an integrated system of tools, the deployment tool may retrieve this definition from the development metadata repository.

[0070] The metadata for the container also describes one or more application infrastructure services required by the virtual container. When a virtual container is created, it is created for a particular deployment domain. This deployment domain is already preconfigured with one or more infrastructure-level services. The deployment engineer can select from those infrastructure services and integrate them into the container using visual mechanisms such as dragging and dropping them on the container. At this time, the tools may invoke the plugin and bring up the set of properties necessary to correctly use the infrastructure-level service.

[0071] Once the virtual container has been defined, there is enough metadata to generate a physical implementation of the virtual container, build it, package it and transfer the required binaries to the host. Once this is done, the business service is ready to be deployed

and used. When the code is generated, it is generated according to some pre-defined mappings of the metadata to the underlying platform. So for example, the physical implementation for .NET platform may be quite different from the physical implementation for J2EE. These mappings define what elements of the metadata generate what kind of code for the underlying platform.

[0072] Many underlying platforms either need to add software code that is specific to them or require certain information in various configuration files for the applications to function properly. For example, an application infrastructure service using microsoft's implementation of WS-Security specification requires certain information to be placed into the .NET specific configuration files. Also, some application infrastructure services may need to insert specific programming code in the generated code. For example, a load balancing service may need to insert specific programming code in the generated container code as well as the generated client proxy to properly exploit its capabilities. For this reason, the code generators involve the application infrastructure service plugs in the code generation process. When code generator starts, it also loads the plugs for the infrastructure services being used by the container. All code to be generated, whether it is language code or configuration code is represented in XML. The code generator first creates XML documents for all the code that it wants to generate. It then invokes the infrastructure service plugs and provides them an opportunity to add code specific to them by passing the XML documents representing the code to be generated. Once all

the plugs have added their code, the code generator converts the XML documents back into either language specific code or configuration code, as necessary. This way, the code generation process can be kept completely independent of a particular infrastructure service while still allowing them to customize the generated code.

[0073] The separation between the business service implementation and the underlying environment provides two benefits. First, it allows the underlying application infrastructure and the business service implementation itself to evolve independent of each other. Secondly, this allows the physical manifestation of the hosted service to leverage fully the capabilities offered by various infrastructures. This is explained in more detailed below, but simply put it means that the virtual container **320**, through metadata **330** and visual tools, can be visually composed to integrate one or more services offered by the underlying infrastructure. Since this integration is performed through the virtual container and at configuration time, it does not become part of the service implementation itself. The same procurement service can then be configured and deployed in two different deployment domains providing different levels of service.

[0074] Once the container has been configured and its software code has been generated and built, a package can be created that includes all the necessary platform specific binary assemblies required for this service.This package is then placed in a master vault. At this point, a visual deployment tool can provide some mechanism such as drag-and-drop to deploy this business service on any

machine that is part of the deployment domain. If a host is then dragged and dropped on the virtual container, its package is collected from the master vault and brought over to the machine being dragged and dropped. This package is then opened up and its contents are extracted. These contents are then configured in a manner that is specific to the underlying platform.

[0075] The actual addressable and accessible service is then provided by the physical form of the virtual container **320** which can be specific to the underlying environment.

[0076] The traditional definition of management services tools **310** are network managers. The management services and tools described here have more application level context than the system level context. Some examples of management tools are business service monitoring tools, service level agreement (SLA) managament tools, fault tolerance tools, application event handling, billing and accounting services or user profile management.

[0077] Various application infrastructure services may provide their own management tools that will use the data collected by their plugins.

[0078] The most fundamental and core capability of this architecture is the metadata **330**. The metadata described here is logical metadata. Logically, each deployment domain **300** has its own instance of metadata **330**. This metadata describes the deployment domain itself in terms of the infrastructure services that it is able to offer and the virtual service containers **320** that are deployed in it.

[0079] As a general rule, the exact form that the metadata is stored in is not important. The platform can choose an XML format, a relational database or some binary form.

[0080] **Figure 4** illustrates a federated metadata storage and access system with various possible clients of the metadata. The development tools will require metadata that describes the team development environment and will allow sharing of development artifacts. One exemplary implementation of the metadata architecture is illustrated below.

[0081] The metadata has been described above as a part of other elements. It is useful to note that the two kinds of metadata that are relevant here are configuration/deployment metadata and operational metadata.

[0082] The configuration/deployment metadata is used by the configuration and deployment tools as well as by the runtime system. This data will not change often but will rather be accessed concurrently by large number of users. A configuration metadata server should preferably offer extensive caching features where the data is handed out with a time-to-live parameter indicating how long the client can use the data before being required to refresh it.

[0083] Operational metadata is used by one or more infrastructure services such as a monitoring service, load balancing service, and fault-tolerance service. This data tends to change very frequently and the tools that present

this data, for viewing and analysis, may be required to refresh based on user preferences.

[0084] The following is an exemplary case use in accordance with the preferred embodiment. Here, we look at a typical use case scenario of a large bank that serves consumer loan market. The bank has a large internal IT organization, responsible for delivering the business services to its users. The IT organization has to overcome the challenges of building applications that will survive the changing technology. Furthermore, the enterprise considers the conformance of industry standards as its strategic goal.

[0085] The two initial applications that have been identified have different needs. The first application is an Online Loan Approval System. Although the logic for credit-approval already exists in the form of many small systems, the bank wants to build a new system that uses that logic but re-implements it in a more consolidated and scalable manner. Previously, the bank employed a large loan approval department that received the loan requests either through fax or telephone and used these multiple systems to score the applicant's credit history and make the loan decisions. However, the bank wants to make this system available online so that the applicant's could themselves apply for the loan. In addition to its potential clients, the bank may also decide later on to make this system available to its smaller business partners to get credit history of clients and to provide services such as credit risk scoring. For those services, the bank

may charge those business partners on a per-transaction basis.

[0086] The second system is an application, called Customer Service Online system, that will allow bank's consumer loan clients to get the status of their accounts, directly without going through customer service. This information already exists in a legacy J2EE system that is deployed in the internal secure network. The bank wants to build a front-end web service to this system.

[0087] In order to meet its strategic technical objectives, the bank has standardized on toolkit in accordance with the preferred embodiment. The bank also has a well-structured group that runs its data centers. The data center has system architects and system administrators who collectively run the managed environment for all the bank's applications.

[0088] As is with any system, the normal steps of requirements gathering and requirements analysis are performed. These steps are no different than any other application development project. However, once the requirements have been analyzed, the application architect will transform the requirement for the Online Loan Approval System into a business interface. This business interface becomes the contract that has to be implemented. The logic that implements this business interface is termed as the business logic that has to be developed.

[0089] The application architects use a off-the-shelf modeling tool to model the service contract. This contract identifies the operations (business functions) that the

service exposes, defines a type system that defines the data required as inputs or is returned as outputs by those operations. This business interface is critical data because it defines the Contract between this business service and its users. Once the application architects have stabilized the business contract, they extract contract information from the modeling tools and generate metadata in a metadata repository, in accordance with the preferred embodiment.

[0090] The development team then takes this business contract and conducts a detailed design and develops the business logic. The development team decides to use C# as the development language and the implementation is developed as C# assembly.

[0091] The development team only focuses on implementing the business logic as required by the business contract. They do not address other key issues such as security, billing or scalability. Their efforts are strictly focused on building one or more assemblies that implement the business logic.

[0092] Once the implementation has been built and tested in stand-alone mode, an implementation package is created that contains the necessary metadata and DLLs and is handed over to the data center that is responsible for deploying and managing bank's applications.

[0093] The customer service system presents a different scenario than the first one. The bank really does not want to change the exiting system. The system works well and already has all the necessary functions required to fulfill

the task. However, this system was purchased by the bank from a 3rd party and provides no way for bank to expose it to external users and is not manageable.

[0094] The application architects have decided to use a system in accordance with the preferred embodiment to build a front-end gateway service that will expose the functionality of this system to the external users and will conform to the strategic goals of the bank in being standards compliant and be manageable.

[0095] This process is very simple. The introspection capabilities of the preferred embodiment are used to analyze the J2EE interfaces exposed by the existing applications. From these, then one or more functions are selected and system then automatically generates the required metadata, populates the metadata repository and then generates a gateway implementation that can delegate requests to the existing system. As in the previous case, this gateway implementation is then packaged in JAR files , and an implementation package is created. This implementation package is then handed over to the data center that is responsible for configuring, deploying and managing bank's applications.

[0096] Once the data center receives an implementation package, it is ready to configure the service. It is assumed that by this time the minimal metadata that describes the service interface has been defined in the metadata repository.

[0097] The data center already has several different deployment domains configured. The data center also uses

several infrastructure services such as Security. For some of its infrastructure services, the vendors provided toolkit-compatible plug-ins and for others the data center wrote its own. In either case, those infrastructure services are properly configured for the preferred embodiment and fit in its plug-and-play architecture.

[0098] Configuring a business service involves several different steps that allow a business service implementation to be transformed into a managed and hosted web service.

[0099] The business service implementation provided to the data center is an implementation package that contains one or more DLLs or JAR files that implement the business behavior. These implementations lack the appropriate environment required to make the business service addressable and hostable and they also lack the necessary infrastructure capabilities such as security.

[0100] The first step that the system architects do is to define a virtual container. This virtual container extends the metadata describing the service contract with metadata relating to the desired infrastructure services. This metadata will be used later on to create a physical web service that will provide a proper execution environment for the business logic implemented by the developers and will provide the flexible management environment required by the data center to perform its functions.

[0101] During this process, the system architects also decide what infrastructure level capabilities (security,

transactions, etc.) are required for this business service. They then use the drag-and-drop facilities available in the visual composition environment of the preferred embodiment to create this container. As new infrastructure services are dragged onto the virtual container, these infrastructure services plugs are invoked by the graphical environment and at this time, these plugs populate the metadata with a set of properties that they would like to be customized. The graphical environment then presents those properties in a property editor and lets the system architect provide unique values of those properties. They can also customize the container itself by setting its logging levels as well as choose the correct QoS parameters such as various delivery modes.

[0102] Once the virtual container has been configured, the system architects can select the target platform for this web service. For example, if the business implementation is written in Java, then the potential target platforms can be any of the J2EE environments supported by the installation. Alternatively, if the implementation was provided in DLLs, then the target platform can be Microsoft's .NET environment.

[0103] Once the target platform has been selected, the composer tool can generate the code necessary for a web service that can be physically deployed and managed and then build that code along with the provided implementation into an executable. The composer then creates a deployment package that contains all the necessary DLLs or the JAR files required for deployment.

[0104] This package is then automatically placed in a master vault that is managed by the system of the preferred embodiment. All machines that are configured in the data center have an agent service running on them. These agents cooperate with each other to transfer packages in and out of the master vault and configure particular underlying target platforms for business services.

[0105] Once a deployable package has been created for a web service, the composer tool can be used to drag different hosts on a business service. This drag-and-drop operation triggers the actual deployment process.

[0106] When a host is dragged on a business service, the SOA Agent running on that host retrieves the deployment package from the master vault, unpackages it on that machine, performs the steps necessary to configure the underlying environment and makes the web service addressable.

[0107] A web service can be undeployed from a host by selecting that host in composer tool and simply deleting it from there. This results in all traces of that package being removed from the machine.

[0108] One a service has been deployed, it can be easily managed. Whenever, a request is sent to that service, the physical container provided by the runtime environment receives it. The runtime environment then executes all the necessary infrastructure services configured for this container and then invokes the business implementation provided by the user. When it gets the response from the business service implementation, it re-invokes any

necessary infrastructure services and sends the response back to the caller.

[0109] As the technology changes, the infrastructure services can change. The system architects can use the composer tool to slowly transition the deployed business services from an old or obsolete module to a new module by simply removing the old plug from the business service and using drag-and-drop to configure the business service with new plug. The preferred embodiment automatically removes older DLLs or JARs from the physically deployed services and copies the new ones for the new plug. The business services adjust to the new infra-structure service without the typical need for interruption and modification.

[0110] To continue the bank example, after the Online Loan Approval service has been deployed, the bank decides to make that service available to its business partners for a price. An internal infrastructure level billing service is developed (along with its toolkit compatible plug) and configured. The system architects simple drag this infrastructure service on the Online Loan Approval service, without modifying the business implementation or bringing the service down. The preferred embodiment automatically modifies the metadata, reconfigures the deployed services and the runtime environment starts using this new infrastructure service when requests are sent to the business service.

[0111] One specific feature of the preferred embodiment is a visual composition environment. The preferred embodiment uses visual tools to generate metadata. These

tools can present the core metadata in a tree structure as shown in **Figure 5**.

[0112] **Figure 5** shows an exemplary user interface **500** for a visual composition environment in accordance with the preferred embodiment. GUI interface **500** is divided into multiple areas, including available objects area **510**, active object identifier **540**, related objects area **520**, and properties area **530**.

[0113] Available objects area **510** shows all objects that are available to be configured or deployed, including hosts, infrastructure services, service implementations, and deployment domains. The folder named "hosts" contains the list of all available hosts in the entire managed space. The information that is visible for each host in this list can be such as the name of the server and its machine address.

[0114] The folder named "infrastructure services" contains a list of all available infrastructure services. This information preferably does not contain anything more than the name of the service and its description and purpose. These are all the infrastructure services available to be deployed.

[0115] The folder named "implementation services" contains all the implementation packages that have been made available. Each of these contain the related metadata describing the service contract as well as the binaries that contain the actual implementation of that service contract behavior. It is also possible to further group the service implementations.

[0116] The folder named "deployment domains" contains the deployment domains underneath it. Each deployment domain can have a folder of its own. Each deployment domain furthermore has one folder for each virtual container in it. The folder for the virtual container all the infrastructure services that it is configured with and all the hosts that it is deployed on.

[0117] Active object identifier **540** shows which object is currently active. Here, "Domain 1" is the active object; this label will change to correspond to whichever object the user is acting upon. This area is actually sensitive to whether a deployment domain is selected or a virtual container is selected.

[0118] Related objects area **520** shows all objects, grouped according to type, which are currently associated with the active object. In this example, because deployment domain "Domain 1" is the active objects, the related objects area **520** shows all hosts, infrastructure services, and virtual containers for business services that are currently deployed in Domain 1. In this example, both Host 1 and Host 2 are associated with Domain 1, and the Security and Package Tracking services are deployed in Domain 1.

[0119] Note that if, for example, "Host 1" were the active object **540**, then the related objects area **520** would display all deployment domains, infrastructure services, and virtual containers related to Host 1. Whatever type of object is showing as the active object **540**, the other types of objects will be show in the related objects area **540**.

[0120] Finally, properties area **530** is used to define and modify the properties for any object. When an object is selected anywhere in the user interface **500**, any customizable properties related to that object will be shown in properties area **530**. The user may then edit these properties as appropriate.

[0121] Using interface **500**, the user can select an active object **540**, then drag and drop objects between the available objects **510** and the related objects area **520**. When an object is dragged from the available objects area **510** into the related objects area **520**, the system will then perform all necessary file generation and configuration, as defined by the appropriate properties, to actually form the logical relationship between the dropped object and the active object. This process is described in more detail elsewhere in this disclosure, and the implementation is within the abilities of one of skill in the art.

[0122] For example, if the "Online Catalog" service implementation were dragged into the related objects area **520** when the active object **540** is "Domain 1," then the system will automatically generate all necessary binaries, and transfer and install them as appropriate, to deploy the Online Catalog service in the Domain 1 deployment domain.

[0123] In the same manner, if an object is dragged out of the related objects area **520**, then the system will remove its logical relationship with the active object.

[0124] Up to this level, the elements are those that exist in global space. These are elements or pieces of metadata that are not specific to a deployment domain.

Further into the deployment domain, the metadata becomes more specific.

[0125] One or more hosts can be prepared to host a deployment domain. Similarly, a single deployment domain can span multiple hosts. All the hosts configured for a specific deployment domain appear in the folder belonging to that deployment domain. These nodes may contain data such as the working area to store different deployment packages containing different binaries and configuration files belonging to the infrastructure as well as business services in that deployment domain.

[0126] An infrastructure service can be configured in multiple deployment domains and a single deployment domain will have multiple infrastructure services. This relationship is similar to the many-to-many relationship that the hosts have to a deployment domain. When an infrastructure service is configured for a deployment domain, its related software, such as its plugins, is physically transferred to all the hosts that are configured for the domain.

[0127] When a new virtual service container is created, it is ready to be deployed to any of the physical machines. Each container has a folder of its own underneath the deployment domain folder. The list of hosts that appear here are the hosts where this container is physically deployed and the list of infrastructure services are the ones that his container is configured to use.

[0128] By organizing the information like this, a visual tool of the preferred embodiment can use drag-and-drop capabilities to compose the virtual service container.

[0129] **Figure 6** shows an exemplary virtual container represented on a canvas. In this figure, the larger outside cylinder is the virtual service container **600**. The smaller cylinders inside the larger one represent the plugins **610** for the infrastructure services. At the end of the chain is the business service implementation **620** that the virtual service container is hosting. Using this representation, the user can drag and drop infrastructure services, configured for that domain, from either the tree structure or a graphical palette. Similarly, the container can be dragged onto a host in that domain, thus triggering the physical deployment.

[0130] Another feature is the unique customization of the use of the configured infrastructure properties through a system of property sheets. When a virtual container is configured with an infrastructure service, at that time the preferred embodiment loads the plug of the infrastructure service and invokes the plug, providing it the empty collection of property sheets. The plug responds by populating this collection with property sheets that contain properties that it is interested in. The runtime system and the composition tools do not know anything about these properties. One the plug has populated the property collections with properties specific to it, the composition tools presents those properties in a property editor that allows the user to provide unique values for those properties. These properties are then saved with the other

metadata and can be changed later on. Each collection contains one or more property sheets and each property sheet contains one or more properties. This organization of properties allows for a more readable and understandable organization of the properties.

[0131] Another feature of the preferred embodiment is the code-generation capability. Once a container has been configured, its definition is complete. However, it is not yet ready to be physically deployed because it is only a definition at this point. However, since now the definition is complete, the user can select a target environment such as .NET or an EJB server. Once the target environment has been selected a code generation scheme can be selected to generate software code that maps the definition of the virtual container to the computer facilities offered by the underlying target platform. This code can then be compiled and linked with the runtime environment required by the platform and a package is created.

[0132] Various color coding schemes can be used to describe the state that the container is in. The possible stages identified include configured, packaged, and deployed.

[0133] The code generation software can additionally generate smart proxies that perform the equivalent of the virtual service container for the client. These smart proxies integrate the infrastructure services as defined by the business service for the client. For example, a business service may require the client application to authenticate itself against the security infrastructure

service and send only the authentication token to the business service. A smart proxy will retrieve the metadata for the client and invoke the infrastructures configured for the virtual container that are relevant for the client environment. These plugs can then prompt the client for any data that they might require and use the runtime environment to send that data to the virtual container along with the rest of the request data.

[0134] Just as the virtual service container can be packaged into a distributable unit, the smart proxies can also be packaged into a distributable unit. These units can then be separately provided to those who are interested in building client applications to those business services.

[0135] Another feature of the preferred embodiment is software configuration capability. Once the code for the virtual service container has been generated, compiled, and packaged, the container can be placed into a packaged state. At this point, a host can be dragged on the container. This will cause the software configuration facility to perform separate steps:

[0136] - It can transfer the deployment package that contains all the related files to the target host machine;

[0137] - These files can then be unpackaged on that machine by this facility automatically and placed into the specific directories structure required by the underlying platform;

[0138] - In the case of web services, the web server can be configured to know about the web service. Similarly in

case of an J2EE, the EJB server can be configured to know about the service; and

[0139] - The configuration files can be placed into the proper areas.

[0140] Once these steps have been performed, the virtual service container has been transformed into a physical service that can be invoked.

[0141] At a later time, when updates are made available for either the business service implementation or the infrastructure services plugs, the corresponding packages can be updated and these updates can be propagated to all the machines where the physicial business services are deployed.

[0142] **Figure 7** shows a flowchart of an exemplary process in accordance with the preferred embodiment. In this process, the user accesses a user interface and selects a deployment domain (**step 705**). The user then drags an icon representing a host system into the deployment domain area depicted on the user interface (**step 710**). In response, the host is associated with that deployment domain and any other objects in the deployment domain (labeled DD in figure, **step 715**).

[0143] The user drags an icon representing an infrastructure service (labeled IS in figure) into the deployment domain area depicted on the user interface (**step 720**). In response, the infrastructure service is associated with the deployment domain and any other objects within the deployment domain (**step 725**).

[0144] The user drags an icon representing a service implementation (labeled SI in figure) into the deployment domain area depicted on the user interface (**step 730**), thus starting the definition of a virtual container, and optionally specifies properties for the virtual container (**step 735**). In response, the service implementation is associated with the deployment domain and any other objects within the deployment domain (**step 740**).

[0145] The user then drags one or more infrastructure services from within this domain onto the virtual container (labeled VC in figure, **step 745**), and optionally specifies the properties for the infrastructure services (**step 750**). In response, the system associates this infrastructure service with the virtual container (**step 755**).

[0146] The system then evaluates any new or changed associations (**step 760**). The system generates any code necessary to implement the associations (**step 765**), and transmits and installs the generated code as necessary (**step 770**). In this way, the user is able to fully manage the deployment domain, and to deploy and manage the hosts and services within it, all using a simple and intuitive user interface.

[0147] It should be noted that in the exemplary process described above, and other processes described herein, not all steps must be performed at any given time. Furthermore, many of the process steps described above may be performed in any order, or repeated, without changing the nature of the process or the advantages it provides.

[0148] It should also be noted, as discussed above, that a similar method can be used when a host or service is first selected, then other services, hosts, or a deployment domain is then associated with that host or service using the drag-and-drop technique above. Similarly, the implementing code will then be generated and installed by the system.

Configuration Architecture

[0149] The preferred embodiment provides extensive capabilities to package software modules into packages, store packages in a master location, transfer packages in and out of that master location and configuring any supported underlying platform for a web service.

[0150] Most conventional software configuration mechanisms deal with software distribution on a desktop client. The preferred embodiment manages software distribution of web services, including the software for business service as well as the infrastructure services. It also configures the diverse underlying application server platforms such as Microsoft .NET or BEA WebLogic. Using the disclosed system and methods, the users can manage the automatic distribution of web services in a distributed network, distribute software updates remotely and transparently deploy that software on the underlying platforms.

[0151] The presently preferred system uses commonly available zip and compression algorithms to package software modules and other related files. All packages, which may include programming language specific code and

binaries or platform specific assemblies are stored in the same format.

Core Package

[0152] One component of the preferred system is the runtime framework. Any infrastructure service plugs or business service implementation, or business service containers require the binaries from the framework in order to build successfully.

[0153] This package contains the core binaries of the framework. There is one such package for each supported language or compilation system. Initially, there may be multiple such packages, e.g., one for building things in Microsoft's .NET environment, another for Java, and others for other virtual environments.

Infrastructure Service Package

[0154] The infrastructure services are integrated by writing plugs that represent them in the system environment. These plugs are then distributed to the machines from which these infrastructure services are being used. However, in addition to these plugs, the binaries associated with the infrastructure service itself also need to be distributed. This package, one for each infrastructure service and for each compilation environment, includes the binary code for the software plug itself, as well as the compilation environment specific binaries for the infrastructure service.

Business Implementation Package

[0155] A service implementation package contains all the binaries required for the implementation of business logic. In case of .NET, this may be a dynamic linking library (DLL) that contains the code for the business service implementation and one or more DLLs required for correct linking and execution of the business logic implementation. Similarly for Java based platforms, the package may contain either one or more class files or JAR files. A manifest file describes each of these binaries.

Deployment Package

[0156] A deployment package contains the code necessary for the physical implementation of the virtual container. It does not include the code for the system framework itself or the infrastructure services or the business service implementations. Those packages are not included because they already exist in the vault separately and are copied only when necessary.

Master Vault

[0157] Master vault is a machine in the entire network that serves as the designated repository to store various packages during the entire lifecycle of the services. In a sense it is the file-server for the disclosed platform. The work area for master vault is represented by a top-level directory.

[0158] Underneath the root of the work area, there is a sub-directory for all the available Hosts. There is a file for each of the hosts that describes that host.

[0159] There is also a sub-directory for Service Implementations. In this sub-directory, each service implementation has a folder. In this folder, the raw metadata for the service, its contract definition and the implementation packages are kept as files.

[0160] There is a directory for deployment domains here also. This directory contains separate directory for each deployment domain. In this deployment domain, all the software packages for the configured business services are kept.

[0161] The metadata describing each deployment domain and everything underneath resides in high performance servers that have a caching and federation architecture for high performance and scalability.

Agents

[0162] An agent is a software service that runs on each machine. On windows based systems, this service can run as a Windows service and on non-windows machines, it can run as a background process.

[0163] This service provides all the logic necessary for managing the vault and software configuration of the supported underlying platform. One machine can be designated as the Master Vault. The agent that runs on that machine assumes the role of the master agent. This dual personality of the agents allows any machine to be designated as the master vault. The master agent receives the requests for transfer of software packages into and out of the master vault. The master agent also maintains a directory structure on the master vault for organizing

various software packages. Depending upon the task to be performed, an agent may either perform the request itself or it may delegate the request to the agent running on the master vault.

Configuration Process

[0164] The agents are responsible for correct configuration of the underlying application services platform, with the least amount of input from the user.

[0165] As new infrastructure services are available, various tools are used to create or update their packages. As mentioned before, these packages are distributed throughout the network, wherever the business services that use these infrastructures are deployed. That means that the system has to be able to propagate the updates throughout the network when needed. This propagation process is coordinated by the tools provided by the environment.

[0166] **Figure 8** shows a process of this remote deployment and configuration of updated packages in accordance with a preferred embodiment of the present invention. Those of skill in the art will recognize that not all steps are required to be performed in the order described and some embodiments may combine certain steps or reorder them without departing from the invention.

[0167] The system first determines which remote systems are running an environment that requires an updated infrastructure service (**step 810**). Next, the business services running on those remote machines in the network are requested to pause their request processing (**step 815**).

Next, the remote machines are requested to and will unload the existing software package (**step 820**).

[0168] Next, the software agents are used to transfer the updated package for the infrastructure service to that machine (**step 825**). The paused business service on each machine is then requested to reload the infrastructure package (**step 830**). After they have done so, the business services on the remote systems will resume request processing using the updated infrastructure services package (**step 835**). In this way, the infrastructure services are updated with a very slight impact on the processing of the remote systems, and without having to "bring down" any systems.

[0169] Packages for business service implementations are created and propagated in similar manner.

[0170] Creation of deployment package in the system involves multiple steps. First, an administrator uses system tools to configure a virtual container for the business service. This container exists only in metadata and is platform-neutral. The administrator then provides unique property values for fine-tuning. Next, the administrator selects a specific underlying platform and generates code for the physical container (the web service). The code generators generate code for that specific container according to the pre-defined mappings of the virtual container to the physical container. This code is then built and packaged into platform-specific packages. As described, this package does not need to include the package for the business service implementation as well as

the infrastructure services, since this information is already available in the metadata.

[0171] When the administrator attempts to deploy the service to a specific host, the agents first determine the supported platforms on that machine. If multiple platforms are supported on that machine, then the user is prompted for the choice. Once the platform has been determined, the agent on the local machine collaborates with the master agent to retrieve the correct deployment package, as well the package for business service implementation and packages for all the configured infrastructure services from the mater vault. The contents of these packages are then extracted and copied to a file structure that is specific to the underlying platform. After that, the underlying platform itself is configured, e.g., Microsoft's IIS requires creation of a virtual directory while the J2EE platforms require modification of server configuration files.

[0172] Once this configuration is complete, the web service is ready to receive request.

Self Configuration & Self Healing

[0173] The preferred embodiment operates on the principal of minimum configuration and self-healing. The system is able to detect its own errors and attempt to take necessary actions to correct itself.

Infrastructure Service Integration

[0174] One particular feature of the preferred embodiment is the ability to integrate one or more

infrastructure services with a business service to provide the desired level of support required for the correct operation of the business service.

[0175] This support is provided in such a way so that the infrastructure is very flexible. This infrastructure can be continually enhanced by adding more infrastructure services, removing the outdated or deprecated services or by updating the existing services with new versions.

[0176] This kind of flexibility first of all allows a managed environment to take full advantage of the changing technologies and evolving standards and new products coming onto the marketplace. The strength of the architecture is in providing a framework for making 3rd party products play in the disclosed environment rather than having to custom write infrastructure services to do what commercially available products already might do.

[0177] The infrastructure service integration capability also allows the services to be updated. So for example, if the new version of a service becomes available and the plug for that service has to be updated, the architecture should allow that kind of update as well.

[0178] The metadata that describes an infrastructure service consists of information required to load a service plug, properties that it is interested in and information necessary to determine whether the plug has relevance to client-side, server-side or both.

[0179] The information necessary for loading the plug dynamically is somewhat specific to the platform environment. For example, .NET environment would require

the assembly that the plug is in and the name of the class that implements the plug interface.

[0180] The most important metadata for an infrastructure service, according to the presently preferred embodiment, is in the form of a property sheet collection. A property sheet collection contains one or more named property sheets. Each property sheet contains a set of related properties that the plug needs to tune its behavior for a specific usage. Each plug by default has a property sheet named "General" that contains some basic properties. These properties indicate whether the plug processes incoming messages or outgoing messages or both and whether it participates in the code generation process. Default values are assigned to these properties.

[0181] Later, when a business service virtual container is configured to use this infrastructure service, the plug for this infrastructure service is invoked and it adds specific properties to the property sheet collection.

[0182] The following table is an exemplary property sheet for a possible security service:

Sheet Name	Property Name	Property Value
General	Process Incoming Messages	true
	Process Outgoing Messages	true
	Generate Code	false
Authentication	Authentication Required	true
	Authentication Type	Service Based Authentication
	Authentication Domain	domain.com
Authorization	Authorization Required	true
	Authorization Resource	http://someresource.com

	Role Based Permission	true
	Role Namespace	corporate
	Role Property	roles
	Operation Domain	DemoOps
Encryption Properties	Encrypt Messages	false
	Encryption Type	Symmetric Encryption
	Encryption Method	
Signature Properties	Signature Required	False
	Signature Method	

[0183] This collection has 5 sheets that provide sets of properties related to each other. This allows the plug to have multiple properties with the same name but in different sheets. Various parts of the plugs runtime can retrieve these properties and use them as needed.

[0184] The metadata also describes whether a particular infrastructure service acts only on the server side or the client side or both. It further indicates whether the infrastructure service need to participate in the code generation process to provide code that is specific to it.

Plug-and-play Integration

[0185] Each infrastructure service is represented in the system environment through a system plug interface. This plug represents an infrastructure service in the environment. The preferred embodiment itself does not differentiate between a specific kind of infrastructure service (e.g. it does not differentiate a security service from the transaction service). To this system, all infrastructure services appear the same and it invokes them at the right points during the message processing. A message processing model, for example, makes it possible to write service implementations and client programs that have

absolutely zero knowledge of what infrastructure services are executing, what inputs do they require and what kind of extra information needs to be inserted in the messages or extracted from them for the correct operation. The service plugs therefore perform all that logic themselves in a completely encapsulated manner.

[0186] If an infrastructure service is a simple service and is implemented in terms of a library, the plug would wrap that service and the service would be invoked inline. However, most sophisticated infrastructure services are standalone third-party services. For example, a security service may have a separate service process that may perform authentication and authorization. For those kinds of services, the plug actually acts on behalf of the remote service inside the tool-time or runtime environment.

[0187] The system runtime defines an abstract interface known as ServiceHandler interface. A plug for an infrastructure service first has to implement this interface.

Initializing for Use

[0188] In this environment, an infrastructure service has no significance or identity until it is selected to be integrated inside a business service virtual container, and the metadata for an infrastructure service is mostly undefined until this point. However, when a user uses the composer tool to drag and drop an infrastructure service on a business service virtual container, the plug for the service is loaded in at that time and this method is

invoked on the plug and the empty metadata container is passed to it.

[0189] In response, the plug populates the metadata with a set of properties. The properties are represented generically and related properties are organized into sheets for easy organization, traverse-ability and presentation. The plugs then populate the metadata with only those properties that are required by it to provide the proper behavior at runtime when it is invoked.

[0190] There are a few general properties that all plugs have and the system provides some default values for those properties. For example, by default, a property is added to the property sheet marked "General" that indicates that this plug does not participate in the code generation process. A plug may also override such properties at this time.

[0191] In addition to manipulating this property sheets collection, the plugs may also modify other pieces of metadata. For example, by default all plugs are marked as service-side as well as client-side plugs. This means that these plugs will be loaded and invoked by the runtime, regardless of whether it is in the client-side or server-side. However, for some plugs, it does not make sense to do that on the client-side. For example, for collection of service metrics, the plug of the monitoring service only needs to be invoked on the service-side. Hence this plug does not need to be distributed, loaded and invoked on the client-side. The plug can again override these values at this time too.

[0192] Once this method has successfully modified the metadata, this metadata can then be saved in the metadata server.

Initialize For Runtime

[0193] This method is invoked by the runtime when it loads the plug into the runtime for business service virtual container. At this time the plug can initialize its internal data structures, allocate any resources that it needs to, and cache the needed metadata.

[0194] For example, if the plug represents a remote service then it would need to establish a connection with that service in order to communicate with it. Instead of opening that connection every time, the plug may need to open the connection in this method upfront and use it whenever needed.

Invoke

[0195] When the business service virtual container receives a service request, it invokes all the loaded plugs by calling this method on them. Two of the arguments to this method are the parameters that were provided with the requests, or in case of a response the response values, and the direction of the request. The direction of the request indicates whether this request is incoming or outgoing. The third parameter is the context of the request and has many pieces of information.

[0196] Since the plug interface does not differentiate methods required for client-side vs. server side and incoming vs. outgoing, the direction parameter allows

determination of the direction and the context can be type-casted to either a ServiceContext or ClientContext to determine whether the plug is being invoked on the server-side or client-side.

Generate Configuration Code

[0197] Code generation process is described explained in detail below and elsewhere in this application, to the extent necessary to enable one of skill in the art to replicate the claimed inventions. Simply put, there is a strong need to provide the plugs with the opportunity of getting involved in the code generation process. If a plug has indicated that it does want that participation then this method is invoked to let the plug modify the configuration code to be generated by possibly adding its own specific code.

Generate Server Code

[0198] This method allows the plug to insert the code that might be essential for its operation on the service-side. The programming code itself is represented in XML and the plug adds to that XML. Later, the code generator converts that XML back to the programming language specific code.

Generate Client Proxy Code

[0199] This is similar to the above method except that it augments the code that makes up the client proxy. This is invoked only for those plugs that are client-side plugs.

Service Packaging

[0200] An infrastructure plug has executable code associated with it. In addition to the actual implementation of the plug interface for this infrastructure service, the binaries associated with the remote service might also be required. All of these need to be in the appropriate directories on the machines where the business service is executing.

[0201] System administration tools allow creation of packages for these infrastructure services. These packages are then placed in the master vault so that they can be copied to any machine for correct deployment.

Business Service Virtual Container

[0202] One significant feature of the disclosed system environment is its ability to provide a very configurable and dynamic runtime execution environment that a) provides a host for the business service implementation and b) integrates it with one or more infrastructure level services that are needed for its correct operation.

[0203] The construct for accomplishing that is the Business Service Virtual Container. This container is called virtual because it exists only in metadata definition. Furthermore, this definition is independent of any underlying platform.

[0204] The system then defines mappings of this virtual container to the physical containers for all supported underlying platform environment. Once these mappings have

been defined, code can be automatically generated to produce the physical container from the virtual container.

[0205] The code for the physical container produced by the code generators is then compiled and linked with all the related binaries for the business service implementation as well as all the binaries for required infrastructure services. This is the code that can actually be deployed to an underlying platform environment and has a physical address and receive requests.

[0206] Just like the physical container generated from this metadata provides the execution environment for the service itself, physical code can also be generated for the client side proxies that are smart enough to interpret the metadata properly and can load and execute service plugs for correct usage of the infrastructure services. These are explained in more detail below.

Runtime Framework

[0207] The runtime framework is a lightweight framework that provides the mechanisms hosting a business service implementation and allowing that hosted service to also leverage capabilities offered by one or more existing infrastructure services.

[0208] On the client-side, the framework processes the request through the plugs configured for the target service. In doing this, only those plugs are processed that have relevance to the client environment. Once this processing finishes, the request is then dispatched to the actual target service via its proxy. The response is again

processed through the service plugs before it is returned back to the client implementation.

[0209] On the server-side, this framework transparently intercepts all incoming requests and processes those requests through the configured plugs for this virtual container. Once all those plugs have been processed, the service request is dispatched to the actual service implementation. Once that request finishes, the response is processed through all the necessary plugs and eventually forwarded back to the invoking client.

[0210] In addition to managing the invocation of the related service plugs, the framework also provides extensive logging capabilities. The properties related to logging levels can be modified on-the-fly without any need to stop and restart applications.

[0211] The client-side and the server-side components of the framework separate the client implementation and the service implementation from the infrastructure capabilities completely. This actually allows the framework to provide various levels of quality of service such as reliable delivery and asynchronous reliable delivery. These capabilities can be customized for each virtual container.

Deployment Domains

[0212] The preferred embodiment provides mechanisms to partition a large IT environment into smaller logical partitions so that they can be configured with a set of infrastructure capabilities. Business services are

deployed in a deployment domain. Generally, a set of related applications would be deployed in the same deployment domain. This deployment domain would be configured with a set of infrastructure services necessary for the quality of service desired.

[0213] A deployment domain consists of one or more hosts. These hosts collectively define the logical boundary of the deployment domain. Any business services that are part of this domain can be deployed on any of the hosts in that are part of that domain.

[0214] A deployment domain also consists of one or more infrastructure services that in turn come from the list of globally available infrastructure services. The significance of this subset of infrastructures services is to control visibility of the infrastructure services further and provide easy configuration of the business service containers.

[0215] Lastly, a deployment domain consists of one or more business service containers created in that domain. These container can then be configured with one or more infrastructure services, those infrastructure services can be customized, code for physical container be generated and the services can be deployed.

Service Contexts

[0216] A service context carries with it the necessary information that is required to process a request as well as general information that is common the environment. Service context in initialized once and then cached. If

the service receives notification of changed metadata, then the service context can be re-initialized.

Client Context

[0217] This context is initialized for the client's runtime. It initializes the metadata for the client, creates the pipeline for the required plugs for the client and also initializes the logging mechanism for the client.

Service Context

[0218] This context accomplishes the same for the server-side runtime environment. One of uses of these contexts are also to determine whether a particular piece of code is executing in the client environment or the server environment. While they both derive from the class Context they can be typecasted to either one of the derived class instances in order to decide.

Loading Service Plugs

[0219] When a service starts, its metadata is retrieved and processed. An important part of this processing is to load the plugs for all the infrastructure services that the business service is configured with. Once these plugs have been loaded dynamically, they are organized into a linear pipeline and all the incoming messages are processed through that pipeline. The order of the plugs in the pipeline is the same as the order in which they appear in the composition environment. This order is important because the messages need to be processed like that. For example, if a security service needs to decrypt an incoming message, it is important that this service is the first one

in the pipeline because otherwise the parameters might not make any sense to other services. Similarly, if metrics may need to collected about this service, it is important that those are taken last in the pipeline so that processing time for the other service plugs is not accounted for in the metrics for the actual business processing of the request.

[0220] These plugs are loaded in such a way so that they can be unloaded and reloaded without bringing the application down. So for example, in .NET these plugs are loaded in separate application domains. This is important because the preferred system allows dynamic configuration and reconfiguration and software updates. This is evident from the following exemplary scenarios:

[0221] 1. A business service is configured with a new infrastructure service. The Composer tool modifies the metadata, copies the package contents for the new infrastructure service into the appropriate directories of the hosts that the business service is deployed on and then informs the business service container for the change. Business service container can then load the plug for the newly configured service and insert it in the appropriate place in the pipeline.

[0222] 2. An infrastructure service is removed from the configuration of a business service. The Composer tool removes the plug from the metadata and removes the binaries from the appropriate directories from the deployed hosts. The business service is then informed

which then unloads the plug and removes it from the pipeline.

[0223] 3. A new version of the infrastructure service is made available. The Composer tool copies the new package to the appropriate hosts, the binaries are copied to the appropriate directories and the business service is informed, which then reloads the package for that service.

[0224] When a request now comes in, it is received by the business service container. This container invokes the plug for each infrastructure in the same order as they appear in the pipeline. The next plug is invoked if the previous plug is successful. The processing stops whenever a plug is unable to invoke successfully.

[0225] This kind of plug architecture allows the business service implementations to be completely devoid of any logic that relates to the infrastructure services thus making it possible to completely replace the infrastructure services and underlying products without effecting the service implementations or flow of business requests at all.

Managed Container Interface

[0226] The system container generates the shell skeleton of a business service implementation. These derive from the class ManagedContainer from the runtime framework.

This managed container provides the implementation of many of the methods that are necessary entry points into the runtime framework.

[0227] When a service starts up, an instance of this class is created. This container initializes the appropriate context. Once the metadata has been initialized, the container caches it. Some of the important methods are discussed below.

Metadata refresh

[0228] When a business service receives a request to re-initialize its metadata because it has changed, this method clears the metadata cache, unloads all the loaded plugs and then re-initializes the metadata, thus rebuilding the plug processing pipeline. By providing this method through the managed container, services can be reconfigured without the need to stop and restart them.

Logging levels

[0229] Through these tools, the logging levels of the logging mechanism can be changed. This method changes the logging level on-the-fly.

Get and Set Application Data

[0230] Most underlying web services platforms allow the applications to execute in a multi-threaded environment, processing multiple calls at the same time in separate threads. ManagedContainer allows applications to store named sets of data in a thread-safe manner instead of

saving the state information in local variables in un-safe manner.

Smart Proxies

[0231] Smart proxies provide an environment for the client-side code that performs the same kind of processing as performed by the runtime on the server-side in the virtual container. The smart proxies sit above the proxies that might be generated by tools such as Microsoft .NET platform, and uses those proxies. When a client application instantiates a smart proxy, the proxy retrieves the metadata for the target web service and for performance caches it. It then constructs a pipeline of plugs that the target service is configured with in the same manner that the server runtime does. However, only those handlers are configured that are relevant to the client.

[0232] Once this pipeline has been constructed, all requests are processed through this pipeline. This kind of processing completely separates the implementation of the actual client from the processing of the infrastructure service code. So for example, the plug for a security service may prompt the client for the necessary user credentials and package them appropriately for transmission to the server side. They may also encrypt messages or sign them as necessary. A replacement of this security with a different one would mean that their plugs are replaced and the new plug may prompt the user for different kind of information. Again, the client implementation would not rally care and know about all that.

[0233] Smart proxies may also be specialized by the intelligent code generation process. The plugs for a load-balancing service might insert code for making load-balancing decision in the smart proxy itself during the request processing.

[0234] Those skilled in the art will recognize that, for simplicity and clarity, the full structure and operation of all data processing systems suitable for use with the present invention is not being depicted or described herein. Instead, only so much of a data processing system as is unique to the present invention or necessary for an understanding of the present invention is depicted and described. The remainder of the construction and operation of data processing system may conform to any of the various current implementations and practices known in the art, and unless otherwise noted herein, those of skill in the art will recognize that any claimed features of a data processing system can be implemented using conventional data processing system and data processing system network hardware, configured and programmed to operate as claimed and described. In particular, any steps of described processes can be implemented using known data processing system means.

[0235] It is important to note that while the present invention has been described in the context of a fully functional system, those skilled in the art will appreciate that at least portions of the mechanism of the present invention are capable of being distributed in the form of instructions contained within a machine usable medium in any of a variety of forms, and that the present invention

applies equally regardless of the particular type of instruction or signal bearing medium utilized to actually carry out the distribution. Examples of machine usable mediums include: nonvolatile, hard-coded type mediums such as read only memories (ROMs) or erasable, electrically programmable read only memories (EEPROMs), user-recordable type mediums such as floppy disks, hard disk drives and compact disk read only memories (CD-ROMs) or digital versatile disks (DVDs), and transmission type mediums such as digital and analog communication links.

[0236] Although an exemplary embodiment of the present invention has been described in detail, those skilled in the art will understand that various changes, substitutions, variations, and improvements of the invention disclosed herein may be made without departing from the spirit and scope of the invention in its broadest form.

[0237] None of the description in the present application should be read as implying that any particular element, step, or function is an essential element which must be included in the claim scope: THE SCOPE OF PATENTED SUBJECT MATTER IS DEFINED ONLY BY THE ALLOWED CLAIMS. Moreover, none of these claims are intended to invoke paragraph six of 35 USC §112 unless the exact words "means for" are followed by a participle.

WHAT IS CLAIMED IS:

1. A method for managing services, comprising:
identifying at least one remote system;
sending a request to the remote system to pause processing of at least one system service;
sending an updated software package to the remote system; and
sending, to the remote system, a request to install the updated software package,
wherein the remote system thereafter resumes the processing of the system service, using the updated software package.

2. The method of claim 1, wherein the system service is an infrastructure service.

3. The method of claim 1, wherein the system service is a business service.

4. The method of claim 1, wherein the updated software package includes additional software services which are not already installed on the remote system.

5. The method of claim 1, wherein the remote system unloads an existing software package after pausing processing.

6. The method of claim 1, further comprising receiving an instruction from a user to update software packages on remote systems.

7. The method of claim 1, wherein updated software packages are sent to multiple remote systems simultaneously.

8. A data processing system having at least a processing and an accessible memory, comprising:

means for identifying at least one remote system;
means for sending a request to the remote system to pause processing of at least one system service;
means for sending an updated software package to the remote system; and
means for sending, to the remote system, a request to install the updated software package,
wherein the remote system thereafter resumes the processing of the system service, using the updated software package.

9. The data processing system of claim 8, wherein the system service is an infrastructure service.

10. The data processing system of claim 8, wherein the system service is a business service.

11. The data processing system of claim 8, wherein the updated software package includes additional software services which are not already installed on the remote system.

12. The data processing system of claim 8, wherein the remote system unloads an existing software package after pausing processing.

13. The data processing system of claim 8, further comprising means for receiving an instruction from a user to update software packages on remote systems.

14. The data processing system of claim 8, wherein updated software packages are sent to multiple remote systems simultaneously.

15. A computer program product tangibly embodied in a computer-readable medium, comprising:

instructions for identifying at least one remote system;

instructions for sending a request to the remote system to pause processing of at least one system service;

instructions for sending an updated software package to the remote system; and

instructions for sending, to the remote system, a request to install the updated software package,

wherein the remote system thereafter resumes the processing of the system service, using the updated software package.

16. The computer program product of claim 15, wherein the system service is an infrastructure service.

17. The computer program product of claim 15, wherein the system service is a business service.

18. The computer program product of claim 15, wherein the updated software package includes additional software services which are not already installed on the remote system.

19. The computer program product of claim 15, wherein the remote system unloads an existing software package after pausing processing.

20. The computer program product of claim 15, further comprising instructions for receiving an instruction from a user to update software packages on remote systems.

21. The computer program product of claim 15, wherein updated software packages are sent to multiple remote systems simultaneously.

22. A method for managing services, comprising:

identifying at least one remote system;
sending a software package to the remote system; and
sending, to the remote system, configuration information for the software package,
wherein the remote system thereafter installs and configures the software package, using the configuration information.

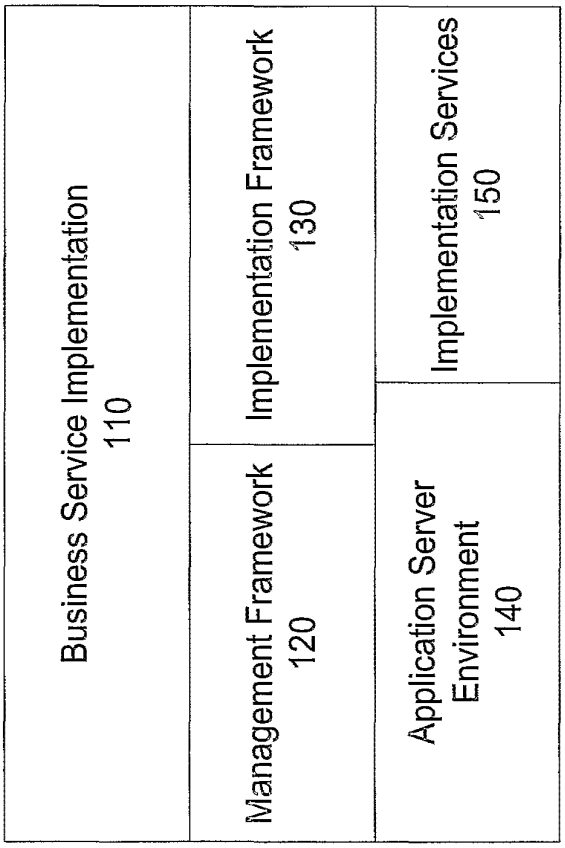

Business Service Implementation
110
Management Framework
120
Implementation Framework
130
Application Server
Environment
140
Implementation Services
150

Figure 1

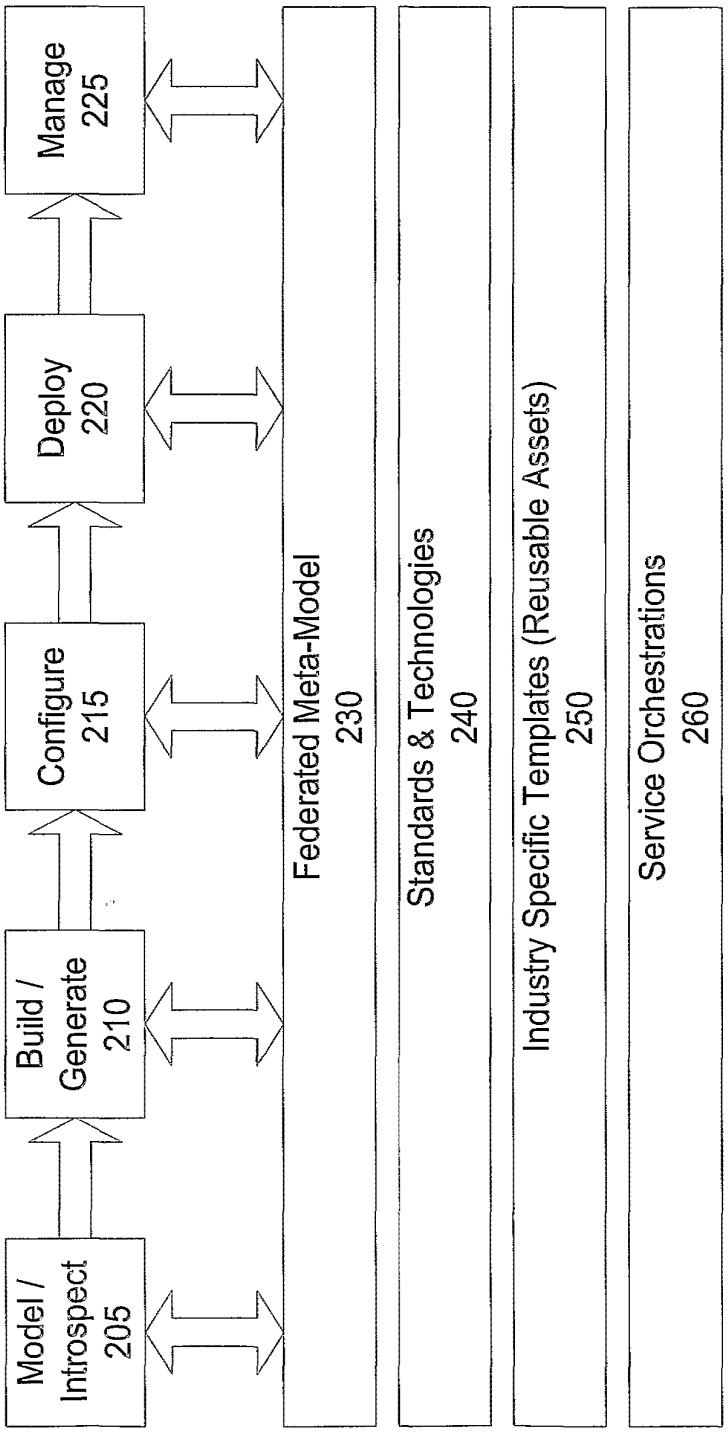

Model / Introspect 205
Build / Generate 210
Configure 215
Deploy 220
Manage 225
Federated Meta-Model 230
Standards & Technologies 240
Industry Specific Templates (Reusable Assets) 250
Service Orchestrations 260

Figure 2

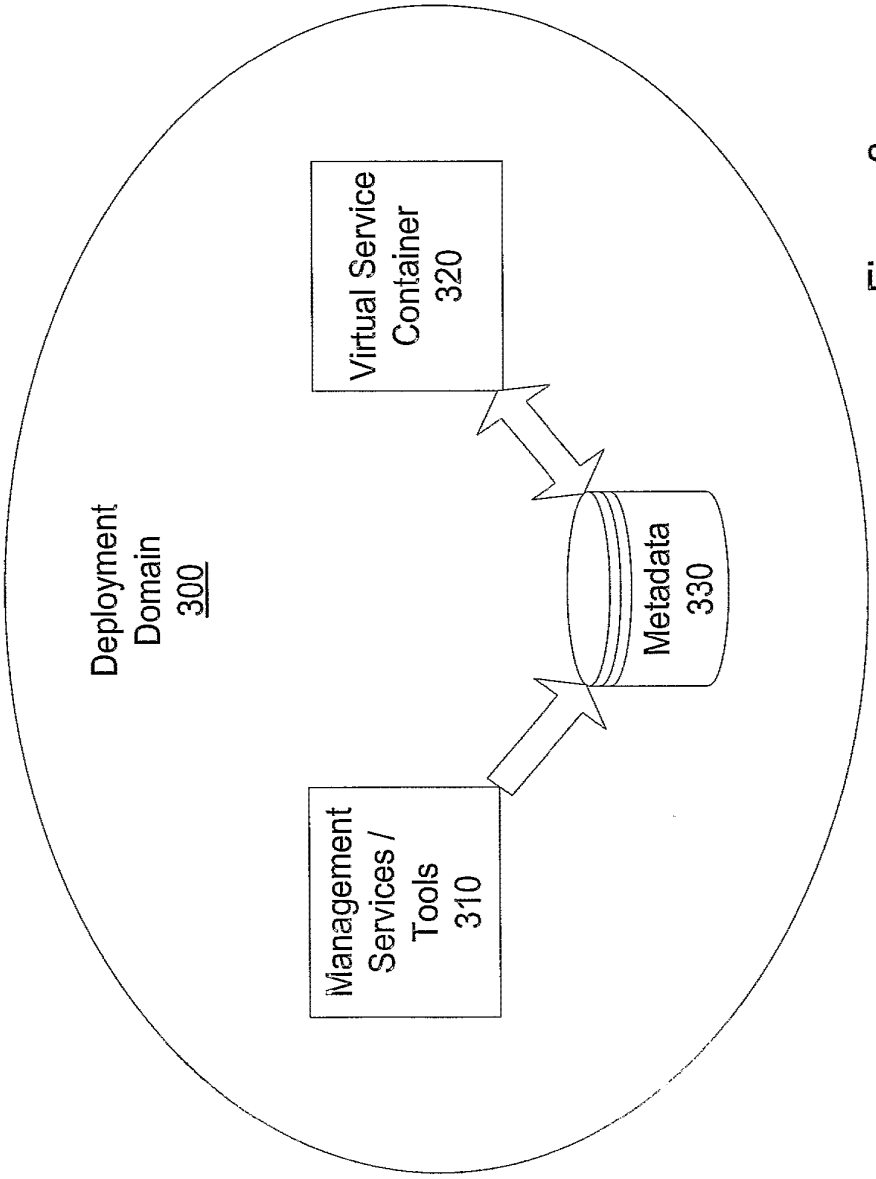

Deployment Domain 300
Virtual Service Container 320
Metadata 330
Management Services / Tools 310

Figure 3

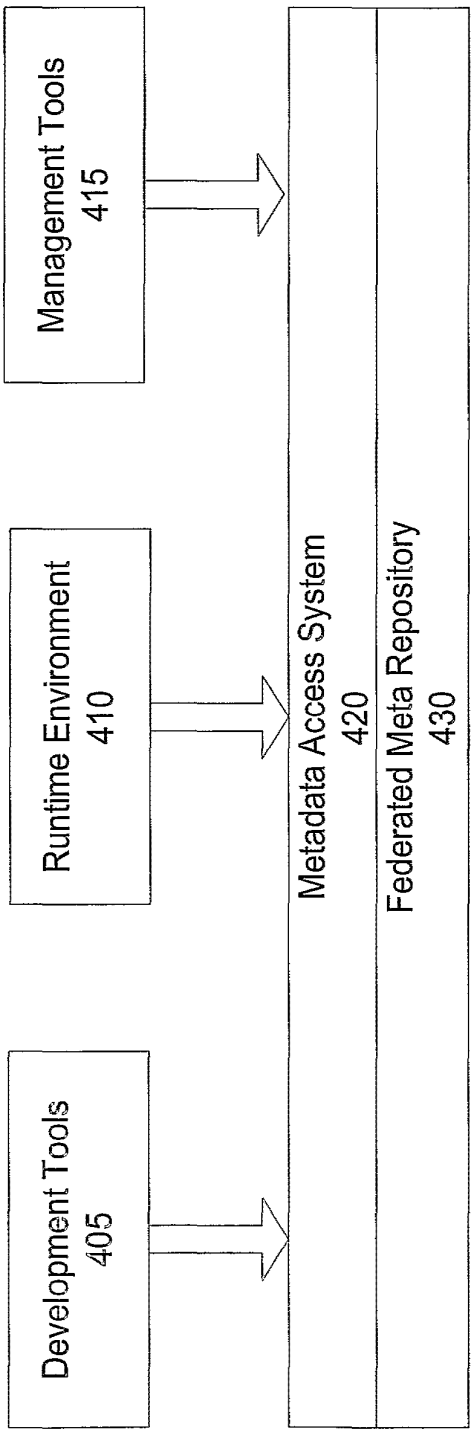
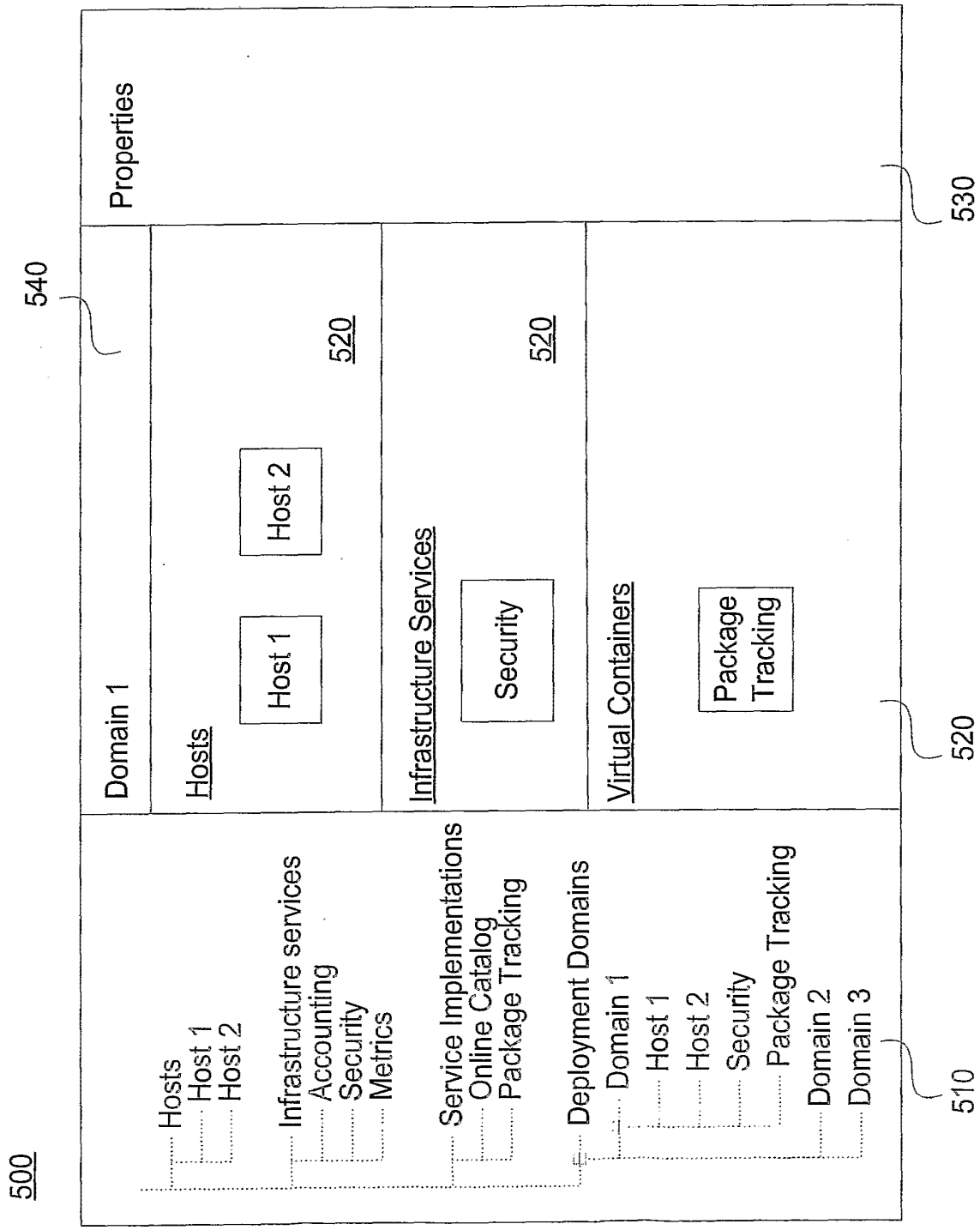

Management Tools
415
Runtime Environment
410
Development Tools
405
Metadata Access System
420
Federated Meta Repository
430

Figure 4

FIGURE 5


500
Hosts
Host 1
Host 2
Infrastructure services
Accounting
Security
Metrics
Service Implementations
Online Catalog
Package Tracking
Deployment Domains
Domain 1
Host 1
Host 2
Security
Package Tracking
Domain 2
Domain 3
510
Domain 1
Hosts
Host 1
Host 2
520
Infrastructure Services
Security
520
Virtual Containers
Package Tracking
520
Properties
530
540

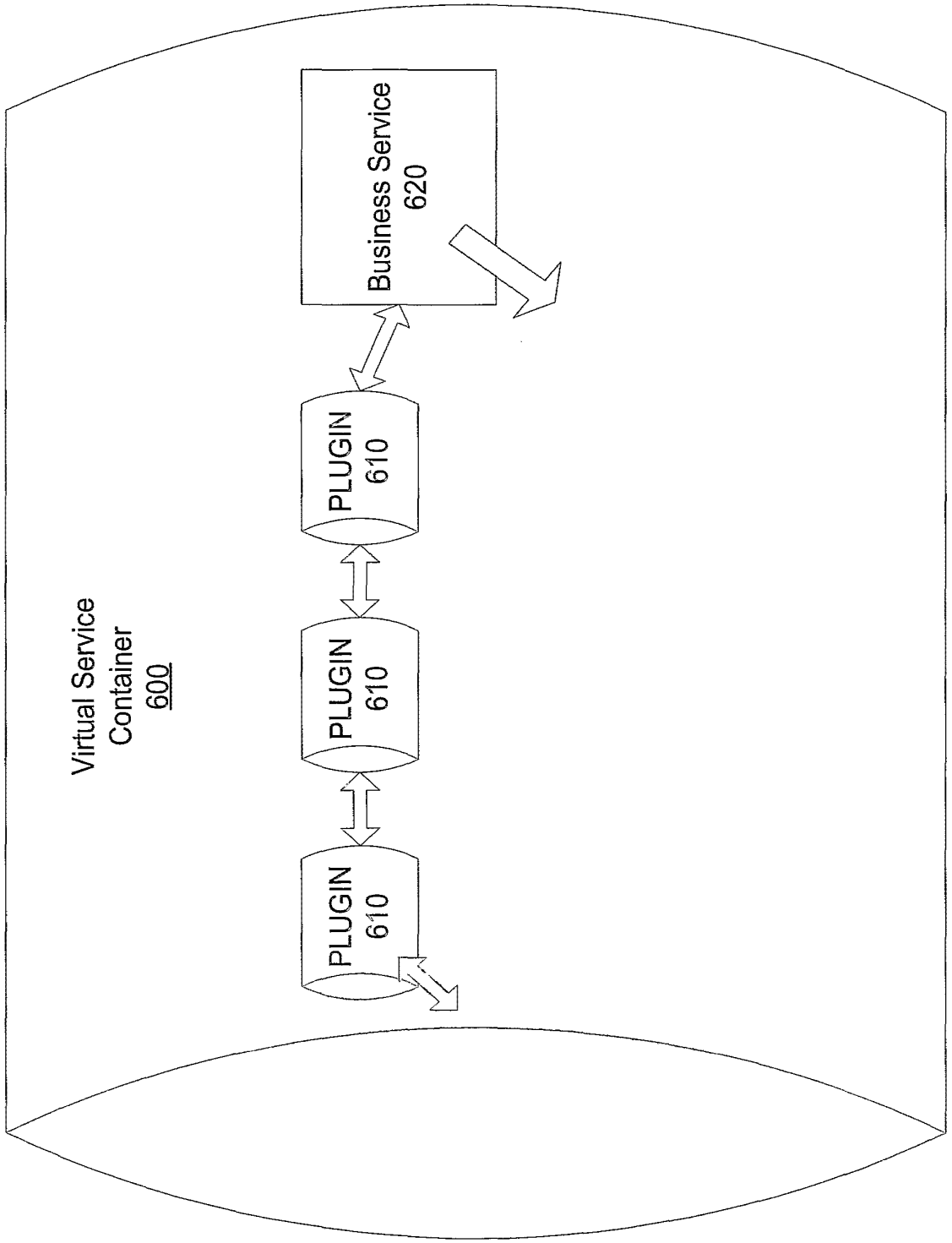

Virtual Service Container 600
PLUGIN 610
PLUGIN 610
PLUGIN 610
Business Service 620

Figure 6

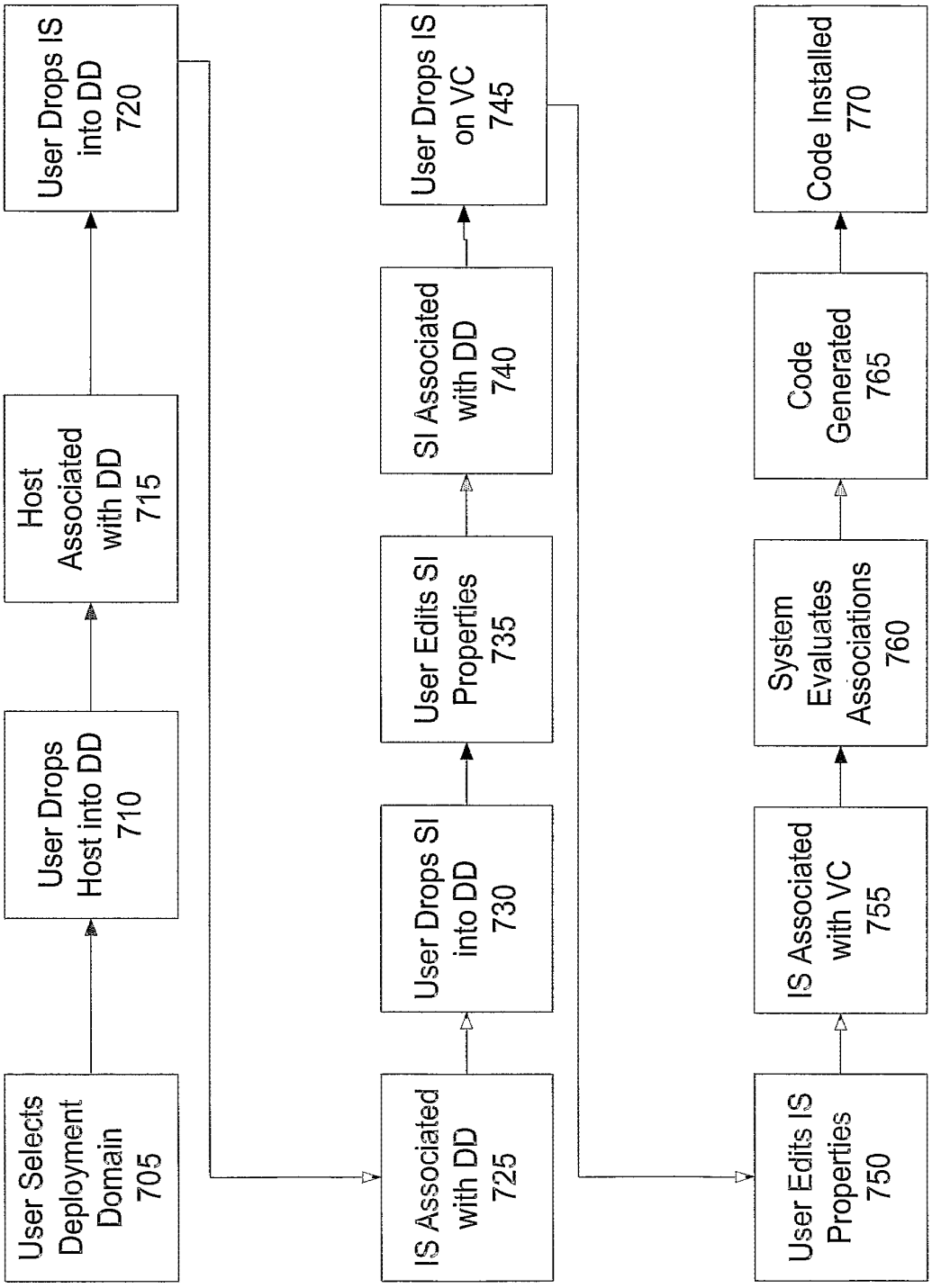

User Selects Deployment Domain 705
User Drops Host into DD 710
Host Associated with DD 715
User Drops IS into DD 720
IS Associated with DD 725
User Drops SI into DD 730
User Edits SI Properties 735
SI Associated with DD 740
User Drops IS on VC 745
User Edits IS Properties 750
IS Associated with VC 755
System Evaluates Associations 760
Code Generated 765
Code Installed 770

Figure 7

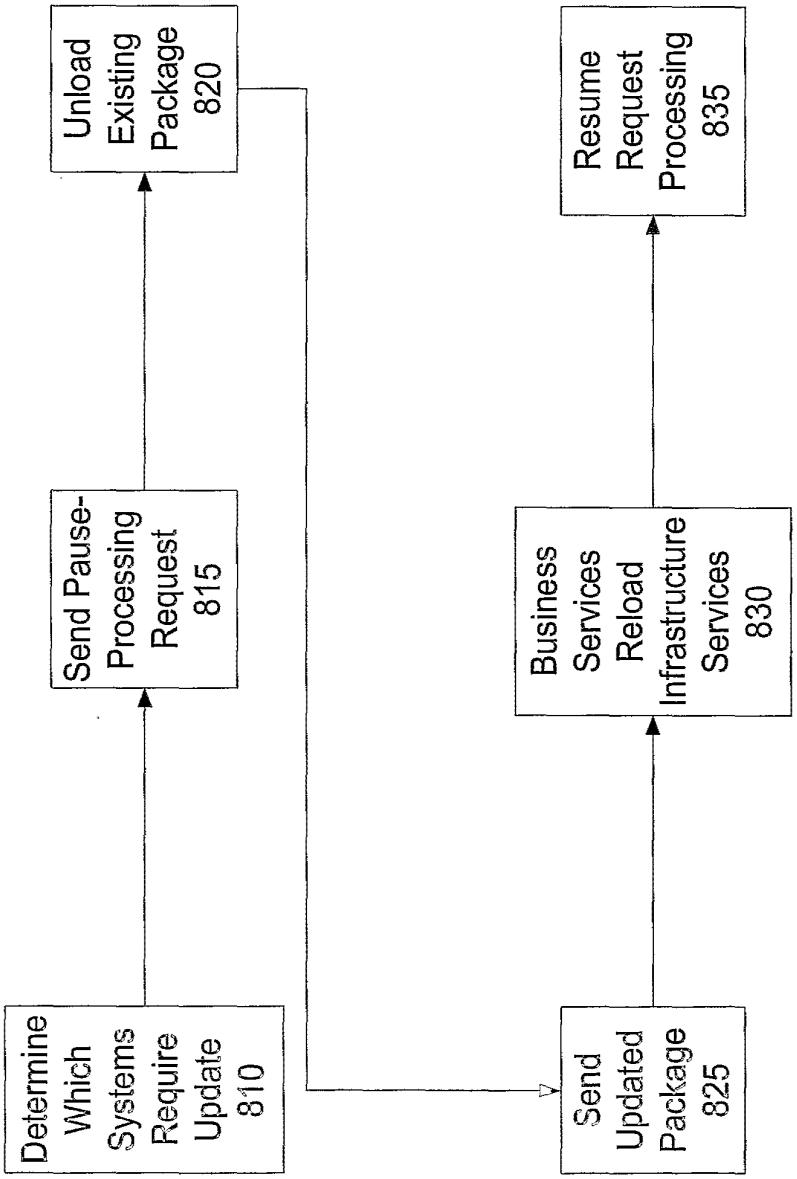

Determine Which Systems Require Update 810
Send Pause-Processing Request 815
Unload Existing Package 820
Send Updated Package 825
Business Services Reload Infrastructure Services 830
Resume Request Processing 835

Figure 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/43790

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 15/16 (2009.01)
USPC - 709/249
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): G06F 15/16 (2009.01)
USPC: 709/249

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): G06F 15/16 (2009.01) (Keyword limited - see search terms below)
USPC: 709/201, 213, 249; 700/1, 90 (Keyword limited - see search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB, USPT, EPAB, JPAB); Google Scholar
Search Terms Used: computer cross-platform channel grid gui interface desktop laptop phone twelve 4x3 application launch communicate stream poll 3d

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0278741 A1 (ROBARTS et al.) 15 December 2005 (15.12.2005), entire document, especially para [0004], [0019], [0043], [0047], [0051], [0064], [0067]-[0069], [0071], [0075]-[0076], [0080], [0083], [0085], [0095], [0099]-[0100]	1-9, 13-21, 25-33
Y		10-12, 22-24, 34-36
Y	US 2005/0086612 A1 (GETTMAN et al.) 21 April 2005 (21.04.2005), entire document, especially para [0044]-[0046], [0055], [0066], [0097], [0103], [0164]	10-12, 22-24, 34-36
A	US 2005/0246415 A1 (BELFIORE et al.) 03 November 2005 (03.11.2005), entire document	1-36
A	US 2003/0058277 A1 (BOWMAN-AMUAH) 27 March 2003 (27.03.2003), entire document	1-36

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
18 June 2009 (18.06.2009)

Date of mailing of the international search report
24 JUN 2009

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:
Lee W. Young
PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
JOSEPH A. PARISI
NIXON PEABODY LLP
401 9TH STREET, N.W.
SUITE 900
WASHINGTON, DC 20004

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	24 JUN 2009
Applicant's or agent's file reference 046573-00009	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 09/43790	13 May 2009 (13.05.2009)	13 May 2008 (13.05.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 15/16 (2009.01)
USPC - 709/249

Applicant MONTEREY GROUP ONE, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	18 June 2009 (18.06.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/43790

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/43790

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-9, 13-21, and 25-33	YES
	Claims	10-12, 22-24, and 34-26	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-36	NO
Industrial applicability (IA)	Claims	1-36	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-9, 13-21, and 25-33 lack novelty under PCT Article 33(2) as being anticipated by US 2005/0278741 A1 to Robarts et al. (hereinafter, 'Robarts').

As to claim 1, Robarts teaches a computer-readable storage media for interacting with multiple information forms across computing devices, the computer-readable storage media including computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: authenticating a user ("viewer profile," para [0080]); establishing a channel grid framework for the user on a first platform, the channel grid framework providing access to a first computer application displayed on a display device as a channel (para [0004]); deploying the channel from the channel grid framework on the first platform to a second platform in response to a user selecting the channel from the channel grid framework on the first platform and performing a copy operation of the channel to the second platform (para [0064]); and establishing a run time application of the first computer application on the second platform (para [0064]).

As to claim 2, Robarts teaches the computer-readable storage media of claim 1, wherein the user selecting the channel from the channel grid framework on the first platform and performing the copy operation of the channel to the second platform includes performing a drag and drop operation (para [0075]-[0076], [0099]).

As to claim 3, Robarts teaches the computer-readable storage media of claim 1, wherein the channel is a computer application capable of at least one of launching other computer applications, receiving data regarding other computer applications, displaying streaming data, or polling external computer applications (para [0100]).

As to claim 4, Robarts teaches the computer-readable storage media of claim 1, wherein the channel grid framework provides access to twelve channels conveying information ("Channel panel" and "program grid," para [0068]-[0069]; example displaying twelve programs, para [0095]).

As to claim 5, Robarts teaches the computer-readable storage media of claim 1, wherein the first and second platforms comprise different members from a group consisting of a server, a network of servers, a desktop computer, a laptop computer, a tablet computer, a netbook computing device, a personal digital assistant (PDA), a telephone, a cell phone device, a handheld device, a smart phone, an interactive display, a portable digital assistant (PDA), an enterprise digital assistant, a personal navigation device, a network connected device, an optical disk player, an in-vehicle device, a set-top television box, a virtual machine, and a game console (para [0019], [0047], [0067]).

As to claim 6, Robarts teaches the computer-readable storage media of claim 1, wherein deploying the channel from the channel grid framework includes: displaying an icon on the first platform, the icon instantiating a representation of the second platform (para [0085]); and identifying the selected channel from the channel grid framework on the first platform and displaying a representation of the selected channel (para [0071]); and dragging the representation of the selected channel out of the channel grid framework on the first platform and displaying a representation of the selected channel with the icon of the second platform (para [0075]-[0076], [0099]).

As to claim 7, Robarts teaches the computer-readable storage media of claim 1, wherein the first computer application displayed on the display device as a channel includes at least one of a streaming video application, an audio application, a voice-over-IP application, an environmental monitoring application, a financial services application, an enterprise resource planning application, a building information modeling application, a product lifecycle management application, a project management application, an immersive three dimensional environment application, a video conferencing application, an RSS reader application, a channel application repository application, an end-user preferences and localization application, a word processing application, a spreadsheet application, a presentation-slide show application, an email application, an address book application, an instant messaging application, an enterprise content management application, a text application, a graphics application, a picture application, a video application, a remote control-interaction application, and a three-dimensional graphic visualization of objects application (para [0043], [0051], [0067]).

As to claim 8, Robarts teaches the computer-readable storage media of claim 1 further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: interrogating the channel in the channel grid framework on the display device to evaluate content provided by the first computer application (para [0083]).

(PLEASE SEE SUPPLEMENTAL BOX)

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V.2 - Citations and explanations:

As to claim 9, Robarts teaches the computer-readable storage media of claim 8 further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: configuring the channel grid framework to provide an intelligent alert object (para [0075]); comparing the evaluated content provided by the first computer application to a predetermined intelligent alert threshold condition (para [0080]); and displaying an alert condition on the first and second platforms when the evaluated content meets the predetermined threshold condition (para [0080]).

As to claim 13, Robarts teaches a computer-implemented method for interacting with multiple information forms across computing devices, the computer- implemented method comprising: authenticating a user ("viewer profile," para [0080]); establishing a channel grid framework for the user on a first computing device platform, the channel grid framework providing access to a first computer application displayed on a display device as a channel (para [0004]); deploying the channel from the channel grid framework on the first computing device platform to a second computing device platform in response to a user selecting the channel from the channel grid framework on the first computing device platform and performing a copy operation of the channel to the second computing device platform (para [0064]); and establishing a run time application of the first computer application on the second computing device platform (para [0064]).

As to claim 14, Robarts teaches the computer-implemented method of claim 13, wherein the user selecting the channel from the channel grid framework on the first computing device platform and performing the copy operation of the channel to the second computing device platform includes performing a drag and drop operation (para [0075]-[0076], [0099]).

As to claim 15, Robarts teaches the computer-implemented method of claim 13, wherein the channel is a computer application capable of at least one of launching other computer applications, receiving data regarding other computer applications, displaying streaming data, or polling external computer applications (para [0100]).

As to claim 16, Robarts teaches the computer-implemented method of claim 13, wherein the channel grid framework provides access to twelve channels conveying information ("Channel panel" and "program grid," para [0068]-[0069]; example displaying twelve programs, para [0095]).

As to claim 17, Robarts teaches the computer-implemented method of claim 13, wherein the first and second computer device platforms comprise different members from a group consisting of a server, a network of servers, a desktop computer, a laptop computer, a tablet computer, a netbook computing device, a personal digital assistant (FDA), a telephone, a cell phone device, a handheld device, a smart phone, an interactive display, a portable digital assistant (FDA), an enterprise digital assistant, a personal navigation device, a network connected device, an optical disk player, an in-vehicle device, a set-top television box, a virtual machine, and a game console (para [0019], [0047], [0067]).

As to claim 18, Robarts teaches the computer-implemented method of claim 13, wherein deploying the channel from the channel grid framework includes: displaying an icon on the first computing device platform, the icon instantiating a representation of the second computing device platform (para [0085]); and identifying the selected channel from the channel grid framework on the first computing device platform and displaying a representation of the selected channel (para [0071]); and dragging the representation of the selected channel out of the channel grid framework on the first computing device platform and displaying a representation of the selected channel with the icon of the second computing device platform (para [0075]-[0076], [0099]).

As to claim 19, Robarts teaches the computer-implemented method of claim 13, wherein the first computer application displayed on the display device as a channel includes at least one of a streaming video application/an audio application, a voice-over-IF application, an environmental monitoring application, a financial services application, an enterprise resource planning application, a building information modeling application, a product lifecycle management application, a project management application, an immersive three dimensional environment application, a video conferencing application, an RSS reader application, a channel application repository application, an end-user preferences and localization application, a word processing application, a spreadsheet application, a presentation-slide show application, an email application, an address book application, an instant messaging application, an enterprise content management application, a text application, a graphics application, a picture application, a video application, a remote control-interaction application, and a three-dimensional graphic visualization of objects application (para [0043], [0051], [0067]).

As to claim 20, Robarts teaches the computer-implemented method of claim 13 further comprising: interrogating the channel in the channel grid framework on the display device to evaluate content provided by the first computer application (para [0083]).

As to claim 21, Robarts teaches the computer-implemented method of claim 20 further comprising: configuring the channel grid framework to provide an intelligent alert object (para [0075]); comparing the evaluated content provided by the first computer application to a predetermined intelligent alert threshold condition (para [0080]); and displaying an alert condition on the first and second computing device platforms when the evaluated content meets the predetermined threshold condition (para [0080]).

As to claim 25, Robarts teaches a system for interacting with multiple information forms across computing devices, the system comprising: an identity management server configured to authenticate a user ("viewer profile," para [0080]); a channel grid framework established for the user on a first computing device platform, the channel grid framework providing access to a first computer application displayed on a display device as a channel (para [0004]); and an application host and transfer tool configured to deploy the channel from the channel grid framework on the first computing device platform to a second computing device platform in response to a user selecting the channel from the channel grid framework on the first computing device platform and performing a copy operation of the channel to the second computing device platform and further configured to establish a run time application of the first computer application on the second computing device platform (para [0064]).

(PLEASE SEE NEXT SUPPLEMENTAL BOX)

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V.2 - Citations and explanations:

As to claim 26, Robarts teaches the system of claim 25, wherein the application host and transfer tool is further configured to receive a copy of the channel in response to the copy operation, including the user selecting the channel from the channel grid framework on the first computing device platform and performing a drag and drop copy operation of the channel to the second computing device (para [0075]-[0076], [0099]).

As to claim 27, Robarts teaches the system of claim 25 further comprising: a Web services gateway configured to integrate subordinate application functions in the channel, the subordinate applications functions including at least one of launching other computer applications, receiving data regarding other computer applications, displaying streaming data, or polling external computer applications (para [0100]).

As to claim 28, Robarts teaches the system of claim 25, wherein the channel grid framework provides access to twelve channels conveying information ("Channel panel" and "program grid," para [0068]-[0069]; example displaying twelve programs, para [0095]).

As to claim 29, Robarts teaches the system of claim 25, wherein the first and second computer device platforms comprise different members from a group consisting of a server, a network of servers, a desktop computer, a laptop computer, a tablet computer, a netbook computing device, a personal digital assistant (PDA), a telephone, a cell phone device, a handheld device, a smart phone, an interactive display, a portable digital assistant (PDA), an enterprise digital assistant, a personal navigation device, a network connected device, an optical disk player, an in-vehicle device, a set-top television box, a virtual machine, and a game console (para [0019], [0047], [0067]).

As to claim 30, Robarts teaches the system of claim 25, wherein the application host and transfer tool is further configured to: display an icon on the first computing device platform, the icon instantiating a representation of the second computing device platform (para [0085]); identify the selected channel from the channel grid framework on the first computing device platform and display a representation of the selected channel (para [0071]); and display a representation of the selected channel with the icon of the second computing device platform in response to a user dragging the representation of the selected channel out of the channel grid framework on the first computing device platform (para [0075]-[0076], [0099]).

As to claim 31, Robarts teaches the system of claim 25, wherein the first computer application displayed on the display device as a channel includes at least one of a streaming video application, an audio application, a voice-over-IF application, an environmental monitoring application, a financial services application, an enterprise resource planning application, a building information modeling application, a product lifecycle management application, a project management application, an immersive three dimensional environment application, a video conferencing application, an RSS reader application, a channel application repository application, an end-user preferences and localization application, a word processing application, a spreadsheet application, a presentation-slide show application, an email application, an address book application, an instant messaging application, an enterprise content management application, a text application, a graphics application, a picture application, a video application) a remote control-interaction application, and a three-dimensional graphic visualization of objects application (para [0043], [0051], [0067]).

As to claim 32, Robarts teaches the system of claim 27, wherein the identity management server and the web services gateway are further configured to interrogate the channel in the channel grid framework on the display device to evaluate content provided by the first computer application (para [0083]).

As to claim 33, Robarts teaches the system of claim 32 further comprising: a channel server configured to provide the first computer application displayed on the display device as the channel (para [0075]); a channel alert server configured to provide an intelligent alert object to the channel grid framework and further configured to compare the evaluated content provided by the first computer application to a predetermined intelligent alert threshold condition (para [0080]) and display an alert condition on the first and second computing device platforms when the evaluated content meets the predetermined threshold condition (para [0080]).

Claims 10-12, 22-24, and 34-36 lack an inventive step under PCT Article 33(3) as being obvious over Robarts in view of US 2005/0086612 A1 to Gettman et al. (hereinafter 'Gettman').

As to claim 10, Robarts teaches the computer-readable storage media of claim 8, but fails to explicitly teach such media further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: selecting an object from the first computer application displayed on the display device as a three-dimensional workspace; and interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace. However, Gettman teaches such media further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: selecting an object from the first computer application displayed on the display device as a three-dimensional workspace (para [0046]); and interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for three-dimensional workspaces, because such systems and methods allow for a large amount of information to be easily browsed and accurately navigated (para [0044]).

(PLEASE SEE NEXT SUPPLEMENTAL BOX)

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V.2 - Citations and explanations:

As to claim 11, Robarts teaches the computer-readable storage media of claim 8, but fails to teach such media further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: selecting an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space; interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace; and implementing a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device. However, Gettman teaches such media further comprising computer-readable instructions configured to cause one or more computer processors to execute the operations comprising: selecting an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space (para [0045]-[0046], [0066], [0103]); interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]); and implementing a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device (para [0164]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for interacting with objects in a virtual space, because such systems and methods allow for using spatial awareness to communicate relevance to a user (para [0055]).

As to claim 12, the computer-readable storage media of claim 11 is discussed above. Furthermore, Gettman teaches such media, wherein interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace includes interacting with a 3D avatar of a second user in a 3D workspace to be displayed on both the user's platform and the second user's platform (para [0097]).

As to claim 22, Robarts teaches the computer-implemented method of claim 20, but fails to explicitly teach such a method further comprising: selecting an object from the first computer application displayed on the display device as a three-dimensional workspace; and interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace. However, Gettman teaches such a method further comprising: selecting an object from the first computer application displayed on the display device as a three-dimensional workspace (para [0046]); and interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for three-dimensional workspaces, because such systems and methods allow for a large amount of information to be easily browsed and accurately navigated (para [0044]).

As to claim 23, Robarts teaches the computer-implemented method of claim 20, but fails to explicitly teach such a method further comprising: selecting an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space; interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace; and implementing a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device. However, Gettman teaches such a method further comprising: selecting an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space (para [0045]-[0046], [0066], [0103]); interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]); and implementing a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device (para [0164]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for interacting with objects in a virtual space, because such systems and methods allow for using spatial awareness to communicate relevance to a user (para [0055]).

As to claim 24, the computer-implemented method of claim 23 is discussed above. Furthermore, Gettman teaches such a method wherein interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace includes interacting with a 3D avatar of a second user in a 3D workspace to be displayed on the user's computing device platform and on the second user's computing device platform (para [0097]).

(PLEASE SEE NEXT SUPPLEMENTAL BOX)

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V.2 - Citations and explanations:

As to claim 34, Robarts teaches the system of claim 32, but fails to explicitly teach such a system further comprising: a virtual world server configured to select an object from the first computer application displayed on the display device as a three-dimensional workspace and interact spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace. However, Gettman teaches such a system further comprising: a virtual world server configured to select an object from the first computer application displayed on the display device as a three-dimensional workspace (para [0046]) and interact spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for three-dimensional workspaces, because such systems and methods allow for a large amount of information to be easily browsed and accurately navigated (para [0044]).

As to claim 35, Robarts teaches the system of claim 32, but fails to explicitly teach such a system wherein the virtual world server is further configured to: select an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space; interact spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace; and implement a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device. However, Gettman teaches such a system wherein the virtual world server is further configured to: select an object displayed by the first computer application in a three-dimensional workspace, the selected object in the three-dimensional workspace corresponding to a physical device in a physical space (para [0045]-[0046], [0066], [0103]); interact spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace (para [0045]-[0046]); and implement a virtual change in the digital instance of the selected object using the second computer application to implement a corresponding physical change in the physical device (para [0164]). It would have been obvious to one of ordinary skill in the art to combine the channel-selection system of Robarts with the support for 3-d virtual-world interfaces of Gettman, because Robarts and Gettman are directed to systems and methods for using computer technology to select, retrieve, and interface with information. Furthermore, users benefit from systems and methods adapted for interacting with objects in a virtual space, because such systems and methods allow for using spatial awareness to communicate relevance to a user (para [0055]).

As to claim 36, the system of claim 35 is discussed above. Furthermore, Gettman teaches such a system wherein interacting spatially with a digital instance of the selected object in the three-dimensional workspace to access a second computer application providing additional content related to the selected object displayed in the three-dimensional workspace includes interacting with a 3D avatar of a second user in a 3D workspace to be displayed on the user's computing device platform and on the second user's computing device platform (para [0097]).

Claims 1-36 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOSEPH TEJA JR.
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
BOSTON, MA 02199

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 10 MAY 2012
Applicant's or agent's file reference 098944-0135	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2012/022406	International filing date *(day/month/year)* 24 January 2012
Applicant CYANDIA, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. *Reminders*

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

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FOLEY & LARDNER LLP

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOSEPH TEJA JR.
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
BOSTON, MA 02199

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 10 MAY 2012
Applicant's or agent's file reference 098944-0135	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2012/022406	International filing date *(day/month/year)* 24 January 2012
Applicant CYANDIA, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46).

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis* 1 and 90*bis* 3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn. ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300
Facsimile No. 571-273-3201	Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 086944-0135	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2012/022406	International filing date *(day/month/year)* 24 January 2012	(Earliest) Priority Date *(day/month/year)* 25 January 2011
Applicant CYANDIA, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/022406

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04H 6/32 (2012.01)
USPC - 725/14
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H04H 6/32, H04N 7/16, H04N 17/00 (2012.01)
USPC - 725/9, 725/14, 725/25

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MicroPatent, Google Patents, and ACM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0114881 A1 (PHILYAW et al) 26 May 2005 (26.05.2006) entire document	1-20
Y	US 2010/0254370 A1 (JANA et al) 07 October 2010 (07.10.2010) entire document	1-20
Y	US 2010/0281107 A1 (FALLOWS et al) 04 November 2010 (04.11.2010) entire document	2-3
Y	US 2010/0031334 A1 (SHAIKH) 04 February 2010 (04.02.2010) entire document	18
A	US 2009/0025025 A1 (VLECK et al) 22 January 2009 (22.01.2009) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 April 2012	10 MAY 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOSEPH TEJA JR.
FOLEY & LARDNER LLP
111 HUNTINGTON AVENUE
BOSTON, MA 02199

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 MAY 2012
Applicant's or agent's file reference 098944-0135	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2012/022406	24 January 2012	25 January 2011

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04H 6/32 (2012.01)
USPC - 725/14

Applicant CYANDIA, INC.

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	30 April 2012	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/022406

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/022406

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-20	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 5-17, and 19-20 lack an inventive step under PCT Article 33(3) as being obvious over Philyaw et al, hereinafter Philyaw in view of Janis et al, hereinafter Janis.

Regarding Claim 1, Philyaw discloses an apparatus to provide secure user information via at least one user platform operated by a user (paragraph 39 for a user operating a both a TV or PC both are user platforms and the PC has a keyboard for providing information with paragraph 84 for having a user ID associated with the user and the PC or a means to provide secure information), the apparatus comprising: at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media (paragraph 35 element 112 for the user platform or PC having wired or wireless communication through modem element 114 (paragraph 39) for transmission of data and a wireless transmission media to communicate with user platform of the TV); at least one memory to store processor-executable instructions (paragraph 35 for using a PC and inherent to a PC is a memory means to execute instruction with paragraph 39 for loading a program or set of executable instructions on the PC to open a browser); and at least one processor communicatively coupled to the at least one communication interface and the at least one memory (paragraph 35 for using a PC therefore a processor and memory means coupled to the modem or communications interface), wherein upon execution of the processor-executable instructions by the at least one processor (paragraph 39 for opening a browser program or executing instructions on the processor are inherent to the PC), the at least one processor establishes a bidirectional (paragraph 39 for the user having a browser with keystrokes for viewing information on the browser therefore a bi-directional connection between the user's PC and the browser website, also having interactive programs or bi-directional communications), asynchronous user session to manage provision of and interaction with the secure user information (paragraph 39 for using keystrokes or asynchronous communication to access websites for interaction with information and paragraph 84 for having a User ID associated with both the user and the user platform or PC for secure information and communication) by: A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform (paragraph 39 for the user interacting with the browser or a first communication channel and also a sports program or a second channel for receiving information on the PC or user platform and paragraph 35 for using a TV as a user platform for receiving multiple channels), respective portions of the secure user information (paragraph 39 for the user receiving additional statistic or user information not regularly broadcast with the sports program and paragraph 108 for having a user profile associated with the user ID for secure user information); B) controlling the at least one communication interface to receive, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform (paragraph 39 for the user watching a preferred program and the display on the user platform of the computer and receiving a code or identity information to go to a website for product or program data, and paragraph 84 for having both a User ID and a unique bar code for the user platform or PC for communicating with the advertiser's websites); C) authenticating the user and the user platform to receive the secure user information based at least in part on the user identity and the platform identity (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC, and paragraph 108 for having the user profile data associated with both the user ID and the unique PC bar code so having secure information based on both the user identity and user's PC or platform); and D) if the user and the user platform are authenticated in C) (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC), controlling the at least one communication interface so as to cause the bidirectional, asynchronous user session to be established between the apparatus and a web browser of the at least one user platform (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information or interactive programs/data files with a web browser on the user platform of the PC) and to transmit to the at least one user platform during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A) (paragraph 39 for sending the user on web browser channel therefore a session, advertising information or datafiles, and paragraph 108 for authenticating the advertising and channels based on the user profile and the user ID as well as the platform unique bar code), wherein in D), the processor is configured to control the at least one communication interface to cause the bidirectional, asynchronous user session to be established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information with just the web browser or no separate application from the web browser). Claim 1: Continued on next page

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Claim 1 continued: Philyaw does not explicitly disclose user-centric information and communication based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform. Jana has a server operably couplable to an Internet Protocol Multimedia Subsystem network and an Interactive Television system (abstract) and discloses user-centric information (paragraph 48 for providing a user-centric context and a flexible user interface with privacy and security) and communication based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform (paragraph 48 for privacy, safety, and security of information to safeguard business and consumer integrity and protect the digital rights of content creators for connectivity for both user-centric and device-centric information between a plurality of channels belonging to TV, mobile devices and personal computers). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the security protocols as taught by Jana in the system of Philyaw in order to safeguard business and consumer integrity and protect the digital rights of content creators (Jana, paragraph 48).

Regarding Claim 2, Philyaw discloses wherein in D), the processor is configured to control the at least one communication interface so as to cause the user session to be established by transmitting a HTML file to the user platform (paragraph 39 for the processor sending an advertisement through the communications interface to the PC user platform and paragraph 37 for using HTML for a mingling of text, graphics, sound, video, and hypertext links).

Regarding Claim 5, Philyaw discloses wherein in D), the at least one authorized channel comprises a television channel (paragraph 35 for using a television program source in the form of a broadcast signal), and wherein the first authenticated channel information comprises a media program (paragraph 35 for the audio signal having the code that is combined with the TV program and paragraph 41 for appending the code from the audio signal into the web browser or authenticating the channel with an audio media program).

Regarding Claim 6, Philyaw discloses wherein the first authenticated channel information comprises at least one advertisement (paragraph 39 for using the audio code authentication to get advertising information).

Regarding Claim 7, Philyaw discloses wherein the at least one advertisement is based on a context of the media program (paragraph 39 for having the media program be the first advertisement on TV and the program launched in the web browser be a longer advertising segment so the browser launched advertising segment is based on the context of the media program or media advertisement on the TV).

Regarding Claim 8, Philyaw discloses wherein the context comprises one or more characteristics of the media program (paragraph 39 for getting additional statistical information of the sports media program).

Regarding Claim 9, Philyaw discloses wherein a product or service to which the at least one advertisement is directed is based on a subject matter of the media program (paragraph 68 for having a cola product advertisement on TV and having a trip associated with the cola company as the subject matter of the media program on the PC).

Regarding Claim 10, Philyaw discloses wherein a product or service to which the at least one advertisement is directed is based on a subject matter of an advertisement provided within the media program (paragraph 68 for having a cola product advertisement on TV and having a trip associated with the cola company as the subject matter of the media program on the PC and paragraph 71 for a sports TV program triggering a computer advertisement based on a product advertised during the sports program).

Regarding Claim 11, Philyaw discloses wherein in D): the at least one user platform comprises a first user platform and a second user platform (paragraph 35 for using a first user platform of a TV and a second user platform of a computer); the processor controls the at least one communication interface (paragraph 39 for using an audio tone to control the interface between TV and the PC) so as to cause the bidirectional, asynchronous user session to be established between the apparatus and a web browser of each of the first user platform and the second user platform (paragraph 39 for having a sports program on the TV or first user platform that has an audio tone to launch a web browser on the PC or second user platform with keyboard input or bidirectional asynchronous user web session using the web browser); the at least one advertisement comprises a first advertisement provided to the first user platform and a second advertisement provided to the second user platform (paragraph 39 for having an advertisement on the TV or first user platform give an audio tone to launch an extended advertisement on the PC or the second user platform); and the first advertisement and the second advertisement include related subject matter (paragraph 39 for having the first advertisement on the TV launch a longer version of that advertisement on the PC therefore having the same subject matter).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Regarding Claim 12, Philyaw discloses wherein: the first advertisement provided to the first user platform is a national advertisement (paragraph 102 for running an advertisement on TV or the first user platform for a large geographic area for a given wand in the United states or a national advertisement); and the second advertisement provided to the second user platform is a local advertisement related to content of the national advertisement (paragraph 102 for having advertisement information related to the wand generated relevant to a given geographic area such as the northeast or southwest states or a local advertisement based on the nationally sold wand).

Regarding Claim 13, Philyaw discloses in combination with the first user platform, wherein the first user platform comprises a television set or a set top box (paragraph 35 for the first user platform being a TV).

Regarding Claim 14, Philyaw discloses the system as shown above. Philyaw does not explicitly disclose in combination with the second user platform, wherein the second user platform comprises a mobile computing device. Jana has a server operably couplable to an Internet Protocol Multimedia Subsystem network and an Interactive Television system (abstract) and discloses in combination with the second user platform, wherein the second user platform comprises a mobile computing device (paragraph 46 for using mobile devices with the TV and PC). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the device as taught by Jana in the system of Philyaw in order to safeguard business and consumer integrity and protect the digital rights of content creators (Jana, paragraph 46).

Regarding Claim 15, Philyaw discloses the system as shown above. Philyaw does not explicitly disclose wherein the second user platform comprises a tablet device, a smartphone, or a laptop computer. Jana has a server operably couplable to an Internet Protocol Multimedia Subsystem network and an Interactive Television system (abstract) and discloses wherein the second user platform comprises a tablet device, a smartphone, or a laptop computer (paragraph 63 for using a laptop computer or a tablet device for executing a set of instructions). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the laptop as taught by Jana in the system of Philyaw in order to execute a set of instructions to perform anyone or more of the methodologies discussed herein (Jana, paragraph 63).

Regarding Claim 16, Philyaw discloses wherein the at least one advertisement comprises an interactive advertisement (paragraph 71 for launching an interactive type advertisement).

Regarding Claim 17, Philyaw discloses wherein the at least one memory stores at least one user profile to identify user preferences (paragraph 106 for having user profile information stored in the CRS database or a memory means), platform identities (paragraph 106 for having a unique bar code transmitted from the CRS to user PC), and service support instructions that determine how the secure user-centric information behaves on the user platform (paragraph 108 for having the user ID information and unique bar code passed on to the vendor website to determine user behavior on platform to target advertising), and wherein: C) comprises authenticating the user and the user platform based at least in part on the user profile (paragraph 108 for using a User ID that is linked to the user profile, the user, and a unique bar code linked to the user platform for authenticating the user); and D) comprises transmitting the first authenticated channel information to the at least one user platform based at least in part on the user profile (paragraph 106 for transmitting a target advertisement from the vendor website to the user based on the information in the user profile).

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**

Continuation of:

Regarding Claim 19, Philyaw teaches a method for providing secure user information via at least one user platform operated by a user (paragraph 39 for a user operating a both a TV or PC both are user platforms and the PC has a keyboard for providing information with paragraph 84 for having a user ID associated with the user and the PC or a means to provide secure information), the method comprising: A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform (paragraph 39 for the user interacting with the browser or a first communication channel and also a sports program or a second channel for receiving information on the PC or user platform and paragraph 85 for using a TV as a user platform for receiving multiple channels), respective portions of the secure user information (paragraph 39 for the user receiving additional statistic or user information not regularly broadcast with the sports program and paragraph 108 for having a user profile associated with the user ID for secure user information); B) receiving, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform (paragraph 39 for the user watching a preferred program and he display on the user platform of the computer and receiving a code or identity information to go to a website for product or program data, and paragraph 84 for having both a User ID and a unique bar code for the user platform or PC for communicating with the advertiser's websites); C) authenticating the user and the user platform to receive the secure user information based at least in part on the user identity and the platform identity (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC, and paragraph 108 for having the user profile data associated with both the user ID and the unique PC bar code so having secure information based on both the user identity and user's PC or platform); and D) if the user and the user platform are authenticated in C) (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC), causing a bidirectional, asynchronous user session to be established with a web browser of the at least one user platform and transmitting to the at least one user platform (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information or interactive programs/data files with a web browser on the user platform of the PC) during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A) (paragraph 39 for sending the user on web browser channel therefore a session, advertising information or datafiles, and paragraph 108 for authenticating the advertising and channels based on the user profile and the user ID as well as the platform unique bar code), wherein in D), the bidirectional, asynchronous user session is established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information with just the web browser or no separate application from the web browser). Philyaw does not explicitly teach user centric information and communications based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform. Jana has a server operably couplable to an Internet Protocol Multimedia Subsystem network and an Interactive Television system (abstract) and teaches user-centric information (paragraph 48 for providing a user-centric context and a flexible user interface with privacy and security) and communication based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform (paragraph 48 for privacy, safety, and security of information to safeguard business and consumer integrity and protect the digital rights of content creators for connectivity for both user-centric and device-centric information between a plurality of channels belonging to TV, mobile devices and personal computers). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the security protocols as taught by Jana in the method of Philyaw in order to safeguard business and consumer integrity and protect the digital rights of content creators (Jana, paragraph 48).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding Claim 20, Philyaw discloses at least one computer readable storage medium storing processor-executable instructions that (paragraph 39 for using a PC or a computer with a processor and a memory means both of which are inherent to a PC), when executed by at least one processor (paragraph 39 for using a PC or a computer with a processor), perform a method for providing secure user-centric information via at least one user platform operated by a user (paragraph 39 for a user operating a both a TV or PC both are user platforms and the PC has a keyboard for providing information with paragraph 84 for having a user ID associated with the user and the PC or a means to provide secure information), the method comprising: A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform (paragraph 39 for the user interacting with the browser or a first communication channel and also a sports program or a second channel for receiving information on the PC or user platform and paragraph 35 for using a TV as a user platform for receiving multiple channels), respective portions of the secure user information (paragraph 39 for the user receiving additional statistic or user information not regularly broadcast with the sports program and paragraph 108 for having a user profile associated with the user ID for secure user information); B) receiving, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform (paragraph 39 for the user watching a preferred program and he display on the user platform of the computer and receiving a code or identity information to go to a website for product or program data, and paragraph 84 for having both a User ID and a unique bar code for the user platform or PC for communicating with the advertiser's websites); C) authenticating the user and the user platform to receive the secure user information based at least in part on the user identity and the platform identity (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC, and paragraph 108 for having the user profile data associated with both the user ID and the unique PC bar code so having secure information based on both the user identity and user's PC or platform); and D) if the user and the user platform are authenticated in C) (paragraph 39 once the user has responded to the audio signal and code or authentication means, the user receives user preferred advertising or sports statistics information on the user platform of the PC), causing a bidirectional, asynchronous user session to be established with a web browser of the at least one user platform (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information or interactive programs/data files with a web browser on the user platform of the PC) and transmitting to the at least one user platform during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A) (paragraph 39 for sending the user on web browser channel therefore a session, advertising information or datafiles, and paragraph 108 for authenticating the advertising and channels based on the user profile and the user ID as well as the platform unique bar code), wherein in D), the bidirectional, asynchronous user session is established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session (paragraph 39 for having an audio signal or a control signal to control the communication interface between the PC and the TV, instruction are relayed from a proprietary location to the PC for bidirectional communication between the proprietary location and asynchronous communication because communication is initiated upon the audio control signal for the view to view advertiser information with just the web browser or no separate application from the web browser). Philyaw does not explicitly disclose user-centric information, and based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform. Jana has a server operably couplable to an Internet Protocol Multimedia Subsystem network and an Interactive Television system (abstract) and discloses user-centric information (paragraph 48 for providing a user-centric context and a flexible user interface with privacy and security) and communication based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform (paragraph 48 for privacy, safety, and security of information to safeguard business and consumer integrity and protect the digital rights of content creators for connectivity for both user-centric and device-centric information between a plurality of channels belonging to TV, mobile devices and personal computers). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the security protocols as taught by Jana in the system of Philyaw in order to safeguard business and consumer integrity and protect the digital rights of content creators (Jana, paragraph 48).

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Claims 3-4 lack an inventive step under PCT Article 33(3) as being obvious over Philyaw in view of Jana, and further in view of Fallows et al, hereinafter Fallows.

Regarding Claim 3, Philya and Jana disclose the system as shown above. Philya and Jana do not explicitly disclose wherein the HTML file is a HTML5 file. Fallows has a system enabling service communications in distributed web applications between servers (abstract) and discloses wherein the HTML file is a HTML5 file (paragraph 34 for establishing a HTML5 compliant connection where the web browser is fully HTML5 compliant for receiving real time information). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the browser protocols as taught by Fallows in the system of Philyaw in order to bidirectionally request and receive real-time information (Fallows, paragraph 34).

Regarding Claim 4, Philya and Jana disclose the system as shown above. Philya and Jana do not explicitly disclose the processor controls the at least one communication interface so as to cause the user session to be established using a Web Socket Secure protocol. Fallows has a system enabling service communications in distributed web applications between servers (abstract) and discloses the processor controls the at least one communication interface so as to cause the user session to be established using a Web Socket Secure protocol (paragraph 34 for using WebSockets protocol for client applications being capable of utilizing full-duplex, direct TCP communication channels). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the browser protocols as taught by Fallows in the system of Philyaw in order to bidirectionally request and receive real-time information (Fallows, paragraph 35).

Claim 18 lacks an inventive step under PCT Article 33(3) as being obvious over Philyaw in view of Jana, and further in view of Shaikh.

Regarding Claim 18, Philya and Jana disclose the system as shown above. Philya and Jana do not explicitly disclose wherein: the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform, the authentication directory includes a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and C) comprises authenticating the user and the user platform based at least in part on the plurality of user accounts and the plurality of device accounts included in the authentication directory. Shaikh has a method for controlling access to a protected network resources and discloses wherein: the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of channels (paragraph 24 for using an authentication directory to provide access to channel access points), the user, and the user platform (paragraph 23 for using an authentication director for providing user verification and storing the directory in a database or a memory means and paragraph 24 or authenticating each user device or platform); the authentication directory includes a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts (paragraph 23 for having the authentication directory be a database to identify authorized user therefore user accounts, and paragraph 24 for using the directory to authorize user devices and access control channels); and C) comprises authenticating the user and the user platform based at least in part on the plurality of user accounts and the plurality of device accounts included in the authentication directory (paragraph 24 for client-server-based access control and authentication protocol that restricts unauthorized devices from connecting to a network through publicly accessible ports by validating the credentials supplied by the user against corresponding details in the authentication directory). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the directory as taught by Shaikh in the system of Philyaw in order to challenge the user to log-in to the secure corporate network by providing credentials such as user name and password which are passed to the RADIUS server (Shaikh, paragraph 24).

Claims 1-20 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Electronic Acknowledgement Receipt

EFS ID:	16549058
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	Brett P. Belden/Monika Pychynska
Filer Authorized By:	Brett P. Belden
Attorney Docket Number:	098944-0130 (ML0003US01)
Receipt Date:	09-AUG-2013
Filing Date:	13-APR-2011
Time Stamp:	14:03:49
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	Transmittal Letter	098944-0130_IDS_Trans.pdf	139450 0df3bc2caf05effc222d59efa28b3b9843533d45	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	098944-0130_SB08.pdf	191548 74b239f07199ee3ab1b520edb018e02a0b7a3bdc	no	6
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	EP_2304584.pdf	16271 a4cfa22422532f8437286f3adfacbe5988a29000	no	1
Warnings:					
Information:					
4	Foreign Reference	JP_06_062142.pdf	3987566 7d591d7de3ea12d74ebea14ac29de95d60852b4e	no	18
Warnings:					
Information:					
5	Foreign Reference	JP_2006_053799.pdf	977725 67d3a3b7d9ec22942d0e97a51b0b514350d5b74e	no	23
Warnings:					
Information:					
6	Foreign Reference	WO_2004_066105.pdf	2732780 23c1e9edde374aec14b702c1b31c77d7101bbfde	no	80
Warnings:					
Information:					
7	Non Patent Literature	EP_Search_09747470-4.pdf	188578 fb40421a76b4cde39e7598ee703f5f3257675cd4	no	6
Warnings:					
Information:					
8	Non Patent Literature	ISR_WO_PCT-US2009-043790.pdf	593453 9463c2ce8bfff9d86f9c4c81e427c3a6b5c69ffd	no	8
Warnings:					
Information:					
9	Non Patent Literature	ISR-WO_PCT-US2012_022406.pdf	1574011 6c5f06dbca3825508a520c2c684d764cbd214956	no	12
Warnings:					
Information:					
10	Non Patent Literature	Linden_Lab.pdf	1194916 49a5c307a7919e2ca6ec81b4e8fb58d0b1efe955	no	8

Warnings:					
Information:					
11	Non Patent Literature	Premium_Agency.pdf	167630 bf4703e76fcad0f72174e1f62917d7867a4ec465	no	2
Warnings:					
Information:					
12	Non Patent Literature	Project_Darkstar.pdf	223535 c3625bdda077ed088c806f0e098c1682d696f858	no	3
Warnings:					
Information:					
13	Non Patent Literature	Project_Woderland.pdf	203935 819e8683933dac7d1db33c95ab74b9a4907749ff	no	2
Warnings:					
Information:					
14	Non Patent Literature	A156--US_Notice_of_Allowance_on_098944_0108_DT.pdf	1004935 c87117c8314e218a763bbbdc82d97f00db255bf6	no	26
Warnings:					
Information:					
15	Non Patent Literature	A157--US_Notice_of_Allowance_on_098944_0108_DT.pdf	376464 1f9428f68c2b6166f8c740269f52d5063ff8f6fd	no	7
Warnings:					
Information:					
16	Non Patent Literature	A158--US_Notice_of_Allowance_on_098944_0129_DT.pdf	1504972 e75313e2dd4e1cc9dc86a61251c04ec0f4ddc5de	no	37
Warnings:					
Information:					
17	Non Patent Literature	A159--US_Office_Action_on_098944_0108_DTD_5_23.pdf	496604 355f96a66f411018b787fe6f06cfc821583de8bc	no	15
Warnings:					
Information:					
18	Non Patent Literature	A160--US_Office_Action_on_098944_0108_DTD_9_7_.pdf	405906 722b4b699790a946cbc2457a3a8b229897fd1b3d	no	13
Warnings:					
Information:					
19	Non Patent Literature	A161--US_Office_Action_on_098944_0129_DTD_12_4.pdf	1189675 5c20cdca524c50196639230c57b521c4dfb2623d	no	35

Warnings:					
Information:					
20	Non Patent Literature	A162--US_Office_Action_on_098944_0132_DTD_12_1.pdf	1170356 a4c2664ce9d14f90eefd0fb3885ef15eb5cafdc4	no	35
Warnings:					
Information:					
21	Non Patent Literature	A163--US_Office_Action_on_098944_0133_DTD_1_3_.pdf	1202208 8795616124fff0211c694e30bd3611111c6dadae6	no	36
Warnings:					
Information:					
22	Non Patent Literature	A164--US_Office_Action_on_098944_0138_DTD_5_8_.pdf	836398 bfd66f4bbcda3f3abb3b9935bcdbe3252e1a76bd	no	23
Warnings:					
Information:					
		Total Files Size (in bytes):	20378916		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Wetzer et al.
Title:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
Appl. No.:	13/086165
Filing Date:	4/13/2011
Examiner:	Kieu D. VU
Art Unit:	2173
Confirmation Number:	3599

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

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

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Applicant requests that, in accordance with 37 CFR §1.98(d), the Examiner review all applications relied on for an earlier effective filing date under 35 U.S.C. 120, including

application no. 12/465331, filed 5/13/2009, for copies of references of record therein that are not being provided here; although Applicant would be pleased to provide copies of any such documents at the Examiner's request.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date August 9, 2013

By /Brett P. Belden/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML0003US01)	3599

48329 7590 09/17/2013

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EXAMINER	
NABI, REZA U	

ART UNIT	PAPER NUMBER
2175	

MAIL DATE	DELIVERY MODE
09/17/2013	PAPER

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.

Office Action Summary	Application No. 13/086,165	Applicant(s) WETZER ET AL.	
	Examiner REZA NABI	Art Unit 2175	AIA (First Inventor to File) Status No

-- 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 *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 *4/13/2011*.

☐ 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) *1-36* 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) *1-36* 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 *4/13/2011* 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/08) Paper No(s)/Mail Date *08/09/2013*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

This office action is in responsive to communication(s): original application filed on 04/13/2011, said application claims a priority filing date of **05/13/2008**.

Claims 1-36 are pending. Claims 1, 35 and 36 are independent.

Priority

Claimed inventions such as "*…respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels*" and "*monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and*

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) controlling the at least one communication interface to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one external device; and/or

D) controlling the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data" recited in claim 1, 35 and 36 is missing in the specification of provisional application 61/052,765. Therefore, claimed priority date 05/13/2008 has not been honored for all independent claims and its associated dependent claims. However, claimed invention gets priority date of 05/13/2009 as claimed feature is disclosed in application 12/465,331.

Claim Rejections - 35 USC § 102

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 –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 13-16, 18-22, 29-33, 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Flynt et al. (U.S. Publication 2007/0082707; hereinafter "Flynt").

In regard to independent claims 1 and 35 and 36, Flynt teaches an apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information, the apparatus comprising:

at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media (Flynt, figure 15); at least one memory to store processor-executable instructions; and at least one processor communicatively coupled to the at least one communication interface and the at least one memory (Flynt, figure 15), wherein upon execution of the processor-executable instructions by the at least one processor (Flynt, figure 15), the at least one processor provides and evaluates at least some of the secure user-centric information by:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts (Flynt, paragraph 0034, lines 9-12) with first channel information constituting a first portion of the secure user-centric information (Flynt, paragraph 0056, lines 1-3; paragraph 0055, lines 2-3);

B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) controlling the at least one communication interface to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one external device (Flynt, figure 6 and 7; "Note: upon determination of events and conditions alert is being displayed");

and/or

D) controlling the at least one memory so as to store (Flynt, figure 15; paragraph 0091, lines 17-23) trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

In regard to dependent claim 2, Flynt teaches if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs C) (Flynt, figure 6 and 7; "Note: upon determination of events and conditions alert is being displayed").

In regard to dependent claim 3, Flynt teaches if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs D) (Flynt, figure 15; paragraph 0091, lines 17-23).

In regard to dependent claim 4, Flynt teaches if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B), the at least one processor performs C) and D) (Flynt, figure 6 and 7; "Note: upon

determination of events and conditions alert is being displayed"; figure 15; paragraph 0091, lines 17-23).

In regard to dependent claim 5, Flynt teaches the first channel information includes at least one of: text information (Flynt, figure 3).

In regard to dependent claim 6, Flynt teaches the at least one threshold condition or parameter includes a numerical limit or a trend (Flynt, figure 3 and 4; paragraph 0078, lines 8-11;"Note: time of the day or giving alert on lunch time or how many minutes remaining is based on numerical limit").

In regard to dependent claims 7 and 8, Flynt teaches B) comprises:
B 1) making a comparison of the monitored first channel information and the at least one threshold condition or parameter based at least in part on at least one criterion for the comparison; and B2) establishing a trigger, based at least in part on B1), if the at least one criterion is met (Flynt, figure 3 and 4; paragraph 0078, lines 8-11;"Note: current time is compared with the threshold time such as time of the day or the time parking meter will expire etc.").
In regards to dependent claim 9, Flynt teaches the at least one processor performs D), and wherein the trigger information includes at least one of:
one or more values or other information content associated with the monitored first channel information that resulted in the trigger; one or more date stamps and/or time

stamps associated with the one or more values or the other information content associated with the monitored first channel information that resulted in the trigger; an identifier for one or more content sources providing at least some of the monitored first channel information that resulted in the trigger; the at least one criterion for the comparison that resulted in the trigger (Flynt, paragraph 0078, lines 9-12; "Note: time of the day is associated with what type of content will be rendered").

In regards to dependent claim 10, Flynt teaches the at least one processor performs C), and wherein the at least one alert includes at least one of: at least one visual alert (Flynt, figure 3).

In regards to dependent claim 13, Flynt teaches the at least one processor performs C), and wherein: C) comprises transmitting data so as to generate the at least one alert on at least one external device (Flynt, figure 15);

the at least one processor further provides the at least some of the secure user-centric information by: E) controlling the at least one communication interface so as to transmit to the at least one external device channel information relating to at least one authorized channel of the plurality of authorized channels implemented in A); and the data transmitted in C) causes an appearance of the at least one authorized channel, as represented on the at least one external device, to change so as to generate the at least one alert on the at least one external device (Flynt, paragraph 0061, lines 13-15; "Note: alerts are related with the channel and changes appearance").

In regards to dependent claims 14, Flynt teaches the at least one external device includes the at least one user platform (Flynt, figure 15).

In regards to dependent claim 15, Flynt teaches the at least one authorized channel includes the first channel (Flynt, figure 3).

In regards to dependent claim 16, Flynt teaches the data transmitted in C) causes the at least one authorized channel, as represented on the at least one external device, to expand into additional channels represented on the at least one external device so as to generate the at least one alert on the at least one external device (Flynt, paragraph 0047, lines 8-10; paragraph 0049, lines 7-13).

In regards to dependent claim 18, Flynt teaches the at least one processor performs C), and wherein in C), the at least one external device includes at least one of a mobile device, a television, and a Blu-ray player (Flynt, paragraph 0089).

In regards to dependent claim 19, Flynt teaches the at least one processor further provides and evaluates at least some of the secure user-centric information by:
E) controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform (Flynt, figure 15).

In regards to dependent claim 20, Flynt teaches the at least one processor performs C), and wherein in C), the at least one external device includes the at least one user platform (Flynt, figure 15).

In regards to dependent claim 21, Flynt teaches the at least one user platform includes a plurality of user platforms; E) comprises controlling the at least one communication interface to transmit the at least some of the first channel information to the plurality of user platforms; and C) comprises controlling the at least one

communication interface to transmit data so as to generate at least one alert on the plurality of user platforms (Flynt, paragraph 0089; figure 15).

In regards to dependent claim 22, Flynt teaches the plurality of user platforms include multiple different types of computing devices and/or multiple different types of communication devices (Flynt, paragraph 0089).

In regards to dependent claim 29, Flynt teaches wherein in A), the at least one processer implements a channel server that defines one or more visual characterizations, one or more functions or features, and/or one or more information types provided by respective channels of the plurality of channels through which the user receives and/or interacts with the respective portions of the secure user- centric information, wherein the channel server implements at least the first channel, and wherein the at least one processor further provides and evaluates at least some of the secure user- centric information by:

D) controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform (Flynt, figure 15; 1504 being the channel server").

In regards to dependent claim 30, Flynt teaches the at least one memory further stores at least one database including registries to one or more services and/or applications used by the channel server to implement at least the first channel and provide the first channel information (Flynt, figure 15, element 1508 and 1510 being the database").

In regards to dependent claim 31, Flynt teaches wherein in B) and C), the at least one processor implements a channel alert server, communicatively coupled to the channel server, to monitor at least the first channel information so as to determine the one or more events, conditions, logical workflows, discrete information values or signal data based on the at least one threshold condition or parameter, and to generate at least one alert in response to the one or more determined events, conditions, logical workflows, discrete information values or signal data relating to the first channel information (Flynt, figure 15, element 1504 being the alert server").

In regards to dependent claim 32, Flynt teaches the at least one processor further provides and evaluates at least some of the secure user-centric information by:

implementing at least one other server, communicatively coupled to the channel server and the channel alert server, to provide the one or more services and/or applications registered in the at least one database and used by the channel server to implement the first channel and provide the first channel information, wherein the at least one other server includes at least one of:

a portal server to facilitate Internet-based function access by the at least one communication interface of the user platform (Flynt, figure 6, paragraph 0057, lines 3-6).

In regards to dependent claim 33, Flynt teaches at least a portion of one or more of the first channel information, the video information, the audio information, the streaming or real-time information from a machine or device, the events, the conditions, the logical workflows, the discrete information values, and the signal data are stored in the at least

one database (Flynt, paragraph 0052, lines 17-20; "Note: real-time information is displayed").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-12, 17, 23-28 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flynt et al. (U.S. Publication 2007/0082707; hereinafter "Flynt") in view of Jones et al (U.S. Publication 2008/0256643; hereinafter "Jones").

In regard to dependent claims 23 and 25, Flynt teaches an apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information, the apparatus comprising: at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media (Flynt, figure 15); at least one memory to store processor-executable instructions; and at least one processor communicatively coupled to the at least one communication interface and the at least one memory (Flynt, figure 15), wherein upon execution of the processor-

executable instructions by the at least one processor (Flynt, figure 15), the at least one processor provides and evaluates at least some of the secure user-centric information by:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts (Flynt, paragraph 0034, lines 9-12) with first channel information constituting a first portion of the secure user-centric information (Flynt, paragraph 0056, lines 1-3; paragraph 0055, lines 2-3);

B) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in B):

C) controlling the at least one communication interface to transmit at least one alert to, or transmit data so as to generate at least one alert on, at least one external device (Flynt, figure 6 and 7; “Note: upon determination of events and conditions alert is being displayed”);

and/or

D) controlling the at least one memory so as to store (Flynt, figure 15; paragraph 0091, lines 17-23) trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.

Flynt teaches displaying channel and/or alert information based on user's access rights which is based on the subscription (Flynt, paragraph 0056, lines 1-3; paragraph 0055, lines 2-3).

However, Flynt is silent on authenticating user and platform; and the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the user platform platform; the authentication directory including a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and wherein E) comprises authenticating the user and the at least one user platform to receive at least the first channel information based at least in part on the authentication directory.

Jones teaches a system and apparatus displaying authorized channel information authenticating user and platform wherein the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the user platform platform (Jones, paragraph 0043, lines 3-4; paragraph 0021, lines 1-3; "*Just for clarification: having an accounts in order to do the authentication is well-known in the art; practical example would be user needs to have*

an account in order to have authenticated by the system"); the authentication directory including a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and wherein E) comprises authenticating the user and the at least one user platform to receive at least the first channel information based at least in part on the authentication directory (Jones, paragraph 0043, lines 3-4; "*Just for clarification: database or repository that holds information on user, application and device is interpreted as directory*").

Flynt and Jones are analogous art because they are from similar field of endeavor, graphical user interface displaying channel (application) information based on the access rights.

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the teaching of Jones, having access rights associated with user, channel (application) and user device, to Santoro. Motivation for doing so would have been to have to improve the system making the system more secure avoiding any potential problem which may arise by rogue application (Jones, paragraph 003, lines 28-31).

In regard to dependent claims 24, Flynt as modified by Jones as applied to claims 23 and 25 above, teaches the at least one memory stores a user profile to identify user preferences, platform identities (Jones, paragraph 043, lines 3-4), and service support instructions that determine how the secure user-centric information behaves on the at least one user platform, and wherein E) comprises authenticating the user and the at

least one user platform based at least in part on the user profile (Flynt, paragraph 0040, lines 1-9; "Note: time of the day, day of the week, user context etc that governs how to behave on the platform being the service support instruction").

In regards to dependent claim 26, Flynt teaches the at least one processor performs C), and wherein in C), the at least one external device includes the at least one user platform (Flynt, figure 15).

In regard to dependent claim 27, Flynt teaches providing channels based on the access rights which is based on the user's subscription to the channels (Flynt, paragraph 0056, lines 1-3) wherein determining active device of the subscriber and providing a confirmation about the subscription is obvious to one skilled in the art to avoid any unintentional subscription by the user.

In regards to dependent claim 28, Flynt teaches the at least one processor performs C), and wherein in C), the at least one external device includes the one or more devices of the at least one subscriber to the at least one alert (Flynt, figure 15, figure 6).

In regard to dependent claims 34, Flynt as modified by Jones as applied to claims 23 and 25 above, teaches the at least one processor establishes a service- oriented architecture (SOA) including an enterprise service bus, wherein the channel server, the channel alert server, and the at least one other server are implemented as logical components that are communicatively coupled to each other and the at least one database via the enterprise service bus (Jones, paragraph 0019, lines 1-3; Flynt, paragraph 0035, lines 10-14; "Note: sending query, data, data request and results using XML implies using web methods and web services").

In regard to dependent claim 11, Flynt teaches providing channels based on the access rights which is based on the user's subscription to the channels (Flynt, paragraph 0056, lines 1-3) wherein subscription to new channel and proving an activation alert is obvious to one skilled in the art to avoid any unintentional subscription by the user.

In regard to dependent claim 12, Flynt teaches providing alerts using devices such as cellular phone, smart phones (Flynt, paragraph 0032, lines 7-11) based on the determined events, conditions etc (Flynt, paragraph 0040, lines 1-9) wherein it is well practiced in the art that from a cellular phone when pressing 9-1-1 button events is occurs it gives alert to law enforcement agency.

In regard to dependent claim 17, Flynt teaches the at least one other server includes: hosting internet sites (Flynt, paragraph 0057) wherein rendering three-dimensional visualization within internet site is well known and obvious to a skilled artisan.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nielsen et al., U.S. Publication 2010/0313146 - Teaches remotely controlling real-world devices in virtual world and display status of real object.

Helfman et al., U.S. Patent 6,396,513 - Teaches intelligent alert object in outlook application displaying alert based on predetermined threshold.

Feyereisen et al., U.S. Publication 2007/0018887 - Teaches giving alert to user based on the status on a real object.

Fortnow et al., U.S. Publication 2009/0013263 - Teaches a virtual world interacting with avatars simulating a real live event.

Leacock et al., U.S. Publication 2009/0254842 - Teaches a navigating documents and application in virtual world and communicate with avatars.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REZA NABI whose telephone number is (571)270-7592. The examiner can normally be reached on 7:30 to 5:00 PM [Off every alternate Friday].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Bashore can be reached on 571-272-4088. 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.

/R. N./

Examiner, Art Unit 2175

/William Bashore/

Supervisory Patent Examiner, Art Unit 2175

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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	29	((MICHAEL) near2 (WETZER)).INV.	US-PGPUB; USPAT	OR	OFF	2013/08/28 22:55
L2	19	((THOMAS) near2 (THERIAULT)).INV.	US-PGPUB; USPAT	OR	OFF	2013/08/28 22:55
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

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Sheet 1 of 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

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Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

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Sheet 2 of 6

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Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

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Sheet 3 of 6

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Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP . if possible. and . 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 . This collection is estimated to take 2 hours 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, 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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4824-6196-4821.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.N./

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

(use as many sheets as necessary)

Sheet 4 of 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

U.S. PATENT DOCUMENTS

Examiner	Cite No.[1]	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant
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UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*)	Filing Date of Cited Document MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	B1	JP-06-062142	04-03-1994	HITACHI LTD		
	B2	WO-2004/066105	08-05-2004	ELECTRONIC DATA SYSTEMS CORP.		
	B3	JP-2006-053799	02-23-2006	NTT COMM KK		

Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

(use as many sheets as necessary)

Sheet 5 of 6

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
Attorney Docket Number	098944-0130 (ML0003US01)

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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	B4	EP-2 304 584	04-06-2011	MONTEREY GROUP ONE LLC		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C1	Extended European Search Report for EP Application No. 09747470.4, dated October 12, 2011, 6 pages.	
	C2	International Search Report and Written Opinion for International Application No. PCT/US2009/043790, mailed June 24, 2009, 8 pages.	
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	C11	US Office Action on 098944-0108 DTD 5/23/2012	

Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: August 9, 2013

(use as many sheets as necessary)

Sheet 6 of 6

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Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2173
Examiner Name	Kieu D. VU
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	C12	US Office Action on 098944-0108 DTD 9/7/2011	
	C13	US Office Action on 098944-0129 DTD 12/4/2012	
	C14	US Office Action on 098944-0132 DTD 12/18/2012	
	C15	US Office Action on 098944-0133 DTD 1/3/2013	
	C16	US Office Action on 098944-0138 DTD 5/8/2013	

Examiner Signature	/Reza Nabi/	Date Considered	08/28/2013

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4824-6196-4821.1

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	Art Unit
	REZA NABI	2175

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/28/2013								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	35	✓								
	36	✓								

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BIB DATA SHEET

CONFIRMATION NO. 3599

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/086,165	04/13/2011	715	2175	098944-0130 (ML0003US01)

APPLICANTS

Michael Wetzer, Fayetteville, NY;
Thomas Theriault, Baldwinsville, NY;

**** CONTINUING DATA ***************************

This appln claims benefit of 61/474,942 04/13/2011
and claims benefit of 61/435,976 01/25/2011
and is a CIP of 12/465,331 05/13/2009 PAT 8499250
which claims benefit of 61/052,765 05/13/2008

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/22/2011

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /REZA U NABI/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		NY	26	36	3

ADDRESS

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109
UNITED STATES

TITLE

METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

FILING FEE RECEIVED		
943	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	Art Unit
	REZA NABI	2175

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
715	769	8/28/2013	RN

SEARCH NOTES		
Search Notes	Date	Examiner
Conducted EAST text search.	8/28/2013	RN
Conducted an inventor name search.	8/28/2013	RN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor Name:	Michael Wetzer
Title:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
Appl. No.:	13/086165
Filing Date:	4/13/2011
Examiner:	Nabi, Reza U.
Art Unit:	2175
Confirmation Number:	3599

AMENDMENT AND REPLY UNDER 37 CFR 1.111

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

Commissioner:

This communication is responsive to the Non-Final Office Action dated September 17, 2013, concerning the above-referenced patent application.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this document.

Remarks/Arguments begin on page 14 of this document.

Please amend the application as follows:

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information, the apparatus comprising:

at least one communication interface facilitating wired and/or wireless communications with the at least one user platform via one or more transmission media;

at least one memory storing processor-executable instructions; and

at least one processor communicatively coupled to the at least one communication interface and the at least one memory, retrieving processor-exectuable instructions from the at least one memory, and executing the processor-executable instructions to provide and evaluate at least some of the secure user-centric information by:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel;

C) receiving session data indicating a current state of at least one external device of the user;

D) [[B)]] monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel

information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]]:

E) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

F) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

G) [[C)]] controlling the at least one communication interface to transmit ~~at least one alert to, or transmit~~ the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel.~~; and/or~~

~~D) controlling the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

2. (Currently Amended) The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]], the at least one processor performs G) [[C)]].

3. (Currently Amended) The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]], the at least one processor controls the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data ~~performs D)~~.

4. (Currently Amended) The apparatus of claim 3 [[1]], wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]], the at least one processor further performs G) [[C)]] ~~and D)~~.

5. (Original) The apparatus of claim 1, wherein the first channel information includes at least one of:

text information;

graphic information;

one or more pictures;

one or more videos;

audio or digital sound;

streaming data, audio or video;

content associated with an executing computer application;

voice-over-IP communication;

instant messaging/SMS information;

video-conferencing information;

environmental monitoring information;

financial services information;

enterprise resource planning information;

enterprise content management information;

building information;

project management information;

product lifecycle management information;

RSS (Really Simple Syndication) reader information;

remote device control/interaction information;

a three-dimensional graphic visualization of one or more objects and/or immersive environments;

one or more word processing documents;

one or more spreadsheets;

one or more presentation/slide shows;

email; and

address book information.

6. (Original) The apparatus of claim 1, wherein the at least one threshold condition or parameter includes a numerical limit or a trend.

7. (Currently Amended) The apparatus of claim 1, wherein D) [[B)]] comprises:

D1) [[B1)]] making a comparison of the monitored first channel information and the at least one threshold condition or parameter based at least in part on at least one criterion for the comparison; and

D2) [[B2)]] establishing a trigger, based at least in part on D1) [[B1)]], if the at least one criterion is met.

8. (Original) The apparatus of claim 7, wherein the at least one criterion for the comparison includes at least one of:

exceeding a quantified numerical limit; and

multiple similar events trending in a certain direction.

9. (Currently Amended) The apparatus of claim 7, wherein the at least one processor controls the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data ~~performs D)~~, and wherein the trigger information includes at least one of:

one or more values or other information content associated with the monitored first channel information that resulted in the trigger;

one or more date stamps and/or time stamps associated with the one or more values or the other information content associated with the monitored first channel information that resulted in the trigger;

an identifier for one or more content sources providing at least some of the monitored first channel information that resulted in the trigger;

the at least one criterion for the comparison that resulted in the trigger.

10. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs G) [[C)]], and wherein the at least one alert includes at least one of:

at least one visual alert;

at least one auditory alert;

at least one email message; and

at least one SMS text message.

11. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs G) [[C)]], and wherein the at least one alert includes activation of at least one channel of the plurality of channels.

12. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs G) [[C)]], and wherein the at least one alert includes a notification to a law enforcement agency.

13. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs G) [[C)]], and wherein:

G) [[C)]] comprises transmitting the notification data so as to generate the at least one alert on at least one external device;

the at least one processor further provides the at least some of the secure user-centric information by:

H) [[E)]] controlling the at least one communication interface so as to transmit to the at least one external device channel information relating to at least one authorized channel of the plurality of authorized channels implemented in A); and

the notification data transmitted in G) [[C)]] causes an appearance of the at least one authorized channel, as represented on the at least one external device, to change so as to generate the at least one alert on the at least one external device.

14. (Original) The apparatus of claim 13, wherein the at least one external device includes the at least one user platform.

15. (Original) The apparatus of claim 13, wherein the at least one authorized channel includes the first channel.

16. (Currently Amended) The apparatus of claim 13, wherein the notification data transmitted in G) [[C)]] causes the at least one authorized channel, as represented on the at least one external device, to expand into additional channels represented on the at least one external device so as to generate the at least one alert on the at least one external device.

17. (Currently Amended) The apparatus of claim 13, wherein the notification data transmitted in G) [[C)]] renders the at least one authorized channel, as represented on the at least one external device, as a simulated three-dimensional representation of the channel information relating to the at least one authorized channel, so as to generate the at least one alert on the at least one external device.

18. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs G) [[C)]], and wherein in G) [[C)]], the at least one external device includes at least one of a mobile device, a television, and a Blu-ray player.

19. (Currently Amended) The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

H) [[E)]] controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

20. (Currently Amended) The apparatus of claim 19, wherein the at least one processor performs G) [[C)]], and wherein in G) [[C)]], the at least one external device includes the at least one user platform.

21. (Currently Amended) The apparatus of claim 20, wherein:

the at least one user platform includes a plurality of user platforms;

H) [[E)]] comprises controlling the at least one communication interface to transmit the at least some of the first channel information to the plurality of user platforms; and

G) [[C)]] comprises controlling the at least one communication interface to transmit the notification data so as to generate at least one alert on the plurality of user platforms.

22. (Original) The apparatus of claim 21, wherein:

the plurality of user platforms include multiple different types of computing devices and/or multiple different types of communication devices.

23. (Currently Amended) The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

H) [[E)]] authenticating the user and the at least one user platform to receive at least the first channel information and/or the at least one alert.

24. (Currently Amended) The apparatus of claim 23, wherein the at least one memory stores a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform, and wherein H) [[E)]] comprises authenticating the user and the at least one user platform based at least in part on the user profile.

25. (Currently Amended) The apparatus of claim 23, wherein the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the user platform, the authentication directory including a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and wherein H) [[E)]] comprises authenticating the user and the at least one user platform to receive at least the first channel information based at least in part on the authentication directory.

26. (Currently Amended) The apparatus of claim 23, wherein the at least one processor performs G) [[C)]], and wherein in G) [[C)]], the at least one external device includes the at least one user platform.

27. (Currently Amended) The apparatus of claim 23, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

I) [[F)]] confirming at least one subscriber to the at least one alert; and

J) [[G)]] determining one or more active devices of the at least one subscriber to the at least one alert.

28. (Original) The apparatus of claim 27, wherein the at least one processor performs G) [[C)]], and wherein in G) [[C)]], the at least one external device includes the one or more devices of the at least one subscriber to the at least one alert.

29. (Currently Amended) The apparatus of claim 1, wherein in A), the at least one processer implements a channel server that defines one or more visual characterizations, one or more functions or features, and/or one or more information types provided by respective channels of the plurality of channels through which the user receives and/or interacts with the respective portions of the secure user-centric information, wherein the channel server implements at least the first channel, and wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

H) [[D)]] controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

30. (Original) The apparatus of claim 29, wherein the at least one memory further stores at least one database including registries to one or more services and/or applications used by the channel server to implement at least the first channel and provide the first channel information.

31. (Currently Amended) The apparatus of claim 30, wherein in D) [[B)]] and G) [[C)]], the at least one processor implements a channel alert server, communicatively coupled to the channel server, to monitor at least the first channel information so as to determine the one or more events, conditions, logical workflows, discrete information values or signal data based on the at least one threshold condition or parameter, and to generate at least one alert in response to

the one or more determined events, conditions, logical workflows, discrete information values or signal data relating to the first channel information.

32. (Original) The apparatus of claim 31, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

implementing at least one other server, communicatively coupled to the channel server and the channel alert server, to provide the one or more services and/or applications registered in the at least one database and used by the channel server to implement the first channel and provide the first channel information, wherein the at least one other server includes at least one of:

a video server to transform, transmit, and/or support delivery of video information and/or audio information included in the first channel information;

an enterprise content management server to provide configuration, templates, visual content, user interface controls and management control for the first channel information;

a device integration server to manage streaming or real-time information from a machine or device, which streaming or real-time information is included in the first channel information;

a portal server to facilitate Internet-based function access by the at least one communication interface of the user platform; and

a virtual world server to provide a three-dimensional visualization of, and/or interaction with, the first channel information.

33. (Original) The apparatus of claim 32, wherein at least a portion of one or more of the first channel information, the video information, the audio information, the streaming or real-time information from a machine or device, the events, the conditions, the logical workflows, the discrete information values, and the signal data are stored in the at least one database.

34. (Original) The apparatus of claim 32, wherein the at least one processor establishes a service-oriented architecture (SOA) including an enterprise service bus, wherein the channel

server, the channel alert server, and the at least one other server are implemented as logical components that are communicatively coupled to each other and the at least one database via the enterprise service bus.

35. (Currently Amended) A computer-implemented method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) electronically implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel;

C) receiving session data indicating a current state of at least one external device of the user;

D) [[B)]] electronically monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]]:

E) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

F) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

G) [[C)]] electronically transmitting at least one alert to, or transmitting the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel.~~; and/or~~

~~D) electronically storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

36. (Currently Amended) At least one non-transitory computer readable storage medium encoded with processor-executable instructions that, when executed by at least one processor, perform a method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) implementing, at least in part, a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel;

C) receiving session data indicating a current state of at least one external device of the user;

D) [[B)]] monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D) [[B)]]:

E) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

F) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

G) [[C)]] transmitting at least one alert to, or transmitting the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel.~~; and/or~~

~~D) storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 1-4, 7, 9-13, 16-21, 23-27, 29, 31, 35, and 36 are currently being amended. No new matter is added. Support for the amendments can be found throughout the specification as originally filed, such as in paragraphs 41, 62, 92, 95, 96, 112, 113, 130, 145, 155, and 160, as well as various other passages. After amending the claims as set forth above, claims 1-36 remain pending in this application.

PRIORITY

On page 3 of the Office Action, the Examiner stated the claimed priority date of May 13, 2008 has not been honored for all claims. Applicants do not concede the assertions made in the Office Action. Applicants respectfully reserve the right to assert a right of priority to May 13, 2008 and demonstrate how the various claim features are supported by U.S. Provisional Application No. 61/052,765 in future responses and/or in other proceedings.

CLAIM REJECTIONS – 35 U.S.C. § 102

On page 3 of the Office Action, claims 1-10, 13-16, 18-22, 29-33, 35 and 36 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent Publication No. 2007/0082707 to Flynt et al. ("Flynt"). While Applicants do not concede the propriety of the rejections, independent claims 1, 35, and 36 have been amended in the interest of furthering prosecution. Applicants respectfully submit that amended independent claims 1, 35, and 36, as well as their respective dependent claims, are allowable over Flynt.

Amended independent claim 1 recites, in combination with other features, the following combination of features:

> B) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel;

C) receiving session data indicating a current state of at least one external device of the user;

D) monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in D):

E) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

F) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

G) controlling the at least one communication interface to transmit the notification data to the at least one external device via the first channel.

Applicants respectfully submit that Flynt fails to teach or suggest this combination of features as recited in amended independent claim 1. Flynt discusses alerts at paragraph 61:

[0061] Referring now to FIG. 7, an exemplary display 700 including a background tile 702 and an active tile 704, including alerts or notifications, is illustrated. A notification or alert, as used herein, is an indicator of a change in state, such as updated or additional content. Notifications can include changes to text, text color, font, background or other visual cues utilized to make users aware of changes associated with a tile. A tile can include an alert or notification in either summary or thumbnail views. For example, the border color of background tile 702 can be modified to indicate change. A user can obtain additional information by navigating to the background tile 702 and observing the summary view of the tile. Active tile 704 can also include one or more alerts or

> notifications of change to associated content. For example, the active tile 704 includes icons representing telephone messages and email messages. Alerts can be represented as text, shown here as parenthetical numbers adjacent to the icons. The text alerts can indicate newly received voicemail and email messages. Notifications and alerts are not limited to the examples illustrated herein. Alerts and notifications can include any audio, visual or tactile indicia, or any combination thereof.

Flynt teaches that "[n]otifications can include changes to text, text color, font, background or other visual cues utilized to make users aware of changes associated with a tile." (Flynt, ¶ 61). However, Flynt does not teach or suggest the combination of features recited in claim 1 as identified above, including, for example, "determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data," and "generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device."

Amended independent claims 35 and 36 recite similar features as amended independent claim 1, and are allowable over Flynt for at least the same reasons as claim 1. Claims 2-10, 13-16, 18-22, 29-33 depend from amended independent claim 1, and are also allowable over Flynt for at least the same reasons as claim 1. Applicants respectfully request withdrawal of the rejections of claims 1-10, 13-16, 18-22, 29-33, 35, and 36.

CLAIM REJECTIONS – 35 U.S.C. § 103

On page 11 of the Office Action, claims 11, 12, 17, 23-28 and 34 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Flynt in view of U.S. Patent Publication No. 2008/0256643 to Jones et al. ("Jones"). Claims 11, 12, 17, 23-28, and 34 depend from amended independent claim 1, and are allowable over Flynt for at least the same reasons as claim 1.

Jones does not cure the deficiencies of Flynt regarding the above-referenced combination of features recited in amended independent claim 1. Jones teaches an authorization framework, described in the abstract of Flynt as follows:

> An authorization framework is provided that protects data records in a platform, such as a service-based platform, by requiring multiple level entities to be authorized with respect to the data records. For example, the data records can have an associated owner user that can grant access to other users with respect to the data. Additionally, however, the user can also grant access to certain applications that access the platform such that the data records can be initially closed for a user requiring the user to explicitly grant desired access to applications and/or users. In this regard, applications can be forbidden from accessing the data, even on behalf of the user, unless expressly authorized to do so by the user. Thus, the user can make informed decisions regarding who is to have access to its data.

Accordingly, Jones is directed to data access authorization. Jones does not appear to teach or suggest features related to notifications, and, in particular, does not teach or suggest the combination of features recited in claim 1 and noted above. Applicants respectfully request withdrawal of the rejections of claims 11, 12, 17, 23-28, and 34.

CONCLUSION

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date December 17, 2013

By /John D. Lanza/

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John D. Lanza
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor Name:	Michael Wetzer
Title:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
Appl. No.:	13/086165
Filing Date:	4/13/2011
Examiner:	Nabi, Reza U.
Art Unit:	2175
Confirmation Number:	3599

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

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

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Applicant requests that, in accordance with 37 CFR §1.98(d), the Examiner review all applications relied on for an earlier effective filing date under 35 U.S.C. 120, including application no. 12/465331, filed 5/13/2009, for copies of references of record therein that are not

being provided here; although Applicant would be pleased to provide copies of any such documents at the Examiner's request.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

STATEMENT UNDER 37 CFR §1.704(d)

The undersigned hereby states in accordance with 37 CFR §1.704(d) that each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE

Fees in the amount of $90.00 to cover the fee associated with an information disclosure statement under 37 CFR §1.97(c) are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this submission under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or

incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date December 17, 2013

By /John D. Lanza/

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PTO/SB/08 (09-06)
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Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	13/086165
Date Submitted: December 17, 2013				**Filing Date**	4/13/2011
				First Named Inventor	Michael Wetzer
				Art Unit	2175
(use as many sheets as necessary)				Examiner Name	Nabi, Reza U.
Sheet	1	of	2	Attorney Docket Number	098944-0130 (ML0003US01)

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	2006/0027953-A1	02-09-2006	NAKASHIMA, MITSUKANE	
	A2	2009/0025025-A1	01-22-2009	VLECK ET AL.	
	A3	2009/0094118-A1	04-09-2009	ANTONUCCI ET AL.	
	A4	2010/0031334-A1	02-04-2010	SHAIKH, IMRAN	
	A5	5,960,411-A	09-28-1999	HARTMAN ET AL.	

UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*)	Filing Date of Cited Document MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP . if possible. and . 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 . This collection is estimated to take 2 hours 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, 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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Substitute for form 1449/PTO				***Complete if Known***	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	13/086165
				Filing Date	4/13/2011
Date Submitted: December 17, 2013				**First Named Inventor**	Michael Wetzer
				Art Unit	2175
(use as many sheets as necessary)				Examiner Name	Nabi, Reza U.
Sheet	2	of	2	Attorney Docket Number	098944-0130 (ML0003US01)

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C1	US Notice of Allowance on 098944-0133 DTD 9/17/2013	
	C2	US Office Action on 098944-0132 DTD 10/1/2013	
	C3	US Office Action on 098944-0138 DTD 11/15/2013	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP . if possible. and . 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 . This collection is estimated to take 2 hours 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, 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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Electronic Patent Application Fee Transmittal

Application Number:	13086165
Filing Date:	13-Apr-2011
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Filer:	John D. Lanza/Monika Pychynska
Attorney Docket Number:	098944-0130 (ML0003US01)

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

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($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt

EFS ID:	17682226
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	John D. Lanza/Monika Pychynska
Filer Authorized By:	John D. Lanza
Attorney Docket Number:	098944-0130 (ML0003US01)
Receipt Date:	17-DEC-2013
Filing Date:	13-APR-2011
Time Stamp:	15:03:06
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		ML0003US01_098944-0130_Response.pdf	136262 15ee567196be75a725d8cf712fcf75a2b66491b1	yes	18

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	13
Applicant Arguments/Remarks Made in an Amendment	14	18

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Information:

2	Transmittal Letter	ML0003US01_098944-0130_IDS.pdf	103062 42e1d435ded59fb5618d7db15f11f0a9b0a9a6d8	no	3

Warnings:

Information:

3	Information Disclosure Statement (IDS) Form (SB08)	ML0003US01_098944-0130_SB08.pdf	104609 11af1d64a498b8870b318f61a3841e48e82a2446	no	2

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4	Non Patent Literature	098944-0132_Office_Action_10-1-2013.pdf	1193218 c8ee81b0548f17294f62e9284408094a97f93955	no	28

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Information:

5	Non Patent Literature	098944-0133_Notice_Allowance_9-17-2013.pdf	1789608 d7cbf63cb998f9c6ea55c66b06a0b1929dfdaa22	no	44

Warnings:

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6	Non Patent Literature	098944-0138_Office_Action_11-15-2013.pdf	1691365 dea5e627dea8e4334b49da583d47d7d8dc63dcd3	no	35

Warnings:

Information:

7	Fee Worksheet (SB06)	fee-info.pdf	30855 df4cefdbe7efa5cb7d594076460e3b862cb79afe	no	2

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Information:

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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/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/086,165	Filing Date 04/13/2011	☐ 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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ 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	12/17/2013	(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))	* 36	Minus	** 36	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	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 $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ 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.

** 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 number found in the appropriate box in column 1.

LIE
/JOSEPHINE DOUGLAS/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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NOTICE OF ALLOWANCE AND FEE(S) DUE

48329 7590 01/30/2014

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

EXAMINER
NABI, REZA U

ART UNIT	PAPER NUMBER
2175	

DATE MAILED: 01/30/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML 0003US01)	3599

TITLE OF INVENTION: METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/30/2014

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 and an extra copy of the form should be submitted. 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: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (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)

48329 7590 01/30/2014
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML 0003US01)	3599

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APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/30/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NABI, REZA U	2175	715-769000

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 03-02 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 has been filed for recordation as set forth in 37 CFR 3.11. 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. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in 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 to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee 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.
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML0003US01)	3599

48329 7590 01/30/2014

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

EXAMINER	
NABI, REZA U	

ART UNIT	PAPER NUMBER
2175	

DATE MAILED: 01/30/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 461 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 461 day(s).

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 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 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, 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. 13/086,165	Applicant(s) WETZER ET AL.	
	Examiner REZA NABI	Art Unit 2175	AIA (First Inventor to File) Status No

-- 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 *12/17/2013*.
   ☐ 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 *1-36*. 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 12/17/2013
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 _____.

/REZA NABI/ Examiner, Art Unit 2175	/William Bashore/ Supervisory Patent Examiner, Art Unit 2175

EXAMINER'S AMENDMENT

The present application is being examined under the pre-AIA first to invent provisions.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brett Belden on 01/22/2014.

The application has been amended as follows:

Please replace all claims with the following claims.

1. (Currently Amended) An apparatus to provide secure user-centric information on at least one user platform operated by a user, and to evaluate at least some of the secure user-centric information, the apparatus comprising:

at least one communication interface facilitating wired and/or wireless communications with the at least one user platform via one or more transmission media;

at least one memory storing processor-executable instructions; and

at least one processor communicatively coupled to the at least one communication interface and the at least one memory, retrieving processor-exectuable instructions from the at least one memory, and executing the processor-executable instructions to provide and evaluate at least some of the secure user-centric information by:

A) implementing~~, at least in part,~~ a channel grid framework including a matrix of a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) establishing a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform;

C) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel based on the user profile;

D) receiving session data indicating a current state of at least one external device of the user;

E) [[B)]] monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]]:

F) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

G) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

H) [[C)]] controlling the at least one communication interface to transmit ~~at least one alert to, or transmit~~ the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel without being requested by the user, wherein the transmission of the notification data to the at least one external device is based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the at least one user platform.~~; and/or~~

~~D) controlling the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

2. (Currently Amended) The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]], the at least one processor performs H) [[C)]].

3. (Currently Amended) The apparatus of claim 1, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]], the at least one processor controls the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data ~~performs D)~~.

4. (Currently Amended) The apparatus of claim 3 [[1]], wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]], the at least one processor further performs H) [[C)]]~~ and D)~~.

5. (Original) The apparatus of claim 1, wherein the first channel information includes at least one of:

text information;

graphic information;

one or more pictures;

one or more videos;

audio or digital sound;

streaming data, audio or video;

content associated with an executing computer application;

voice-over-IP communication;

instant messaging/SMS information;

video-conferencing information;

environmental monitoring information;

financial services information;

enterprise resource planning information;

enterprise content management information;

building information;

project management information;

product lifecycle management information;

RSS (Really Simple Syndication) reader information;

remote device control/interaction information;

a three-dimensional graphic visualization of one or more objects and/or immersive environments;

one or more word processing documents;

one or more spreadsheets;

one or more presentation/slide shows;

email; and

address book information.

6. (Original) The apparatus of claim 1, wherein the at least one threshold condition or parameter includes a numerical limit or a trend.

7. (Currently Amended) The apparatus of claim 1, wherein E) [[B)]] comprises:

E1) [[B1)]] making a comparison of the monitored first channel information and the at least one threshold condition or parameter based at least in part on at least one criterion for the comparison; and

E2) [[B2)]] establishing a trigger, based at least in part on E1) [[B1)]], if the at least one criterion is met.

8. (Original) The apparatus of claim 7, wherein the at least one criterion for the comparison includes at least one of:

exceeding a quantified numerical limit; and

multiple similar events trending in a certain direction.

9. (Currently Amended) The apparatus of claim 7, wherein the at least one processor controls the at least one memory so as to store trigger information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data ~~performs D)~~, and wherein the trigger information includes at least one of:

one or more values or other information content associated with the monitored first channel information that resulted in the trigger;

one or more date stamps and/or time stamps associated with the one or more values or the other information content associated with the monitored first channel information that resulted in the trigger;

an identifier for one or more content sources providing at least some of the monitored first channel information that resulted in the trigger;

the at least one criterion for the comparison that resulted in the trigger.

10. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs H) [[C)]], and wherein the at least one alert includes at least one of:

at least one visual alert;

at least one auditory alert;

at least one email message; and

at least one SMS text message.

11. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs H) [[C)]], and wherein the at least one alert includes activation of at least one channel of the plurality of channels.

12. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs H) [[C)]], and wherein the at least one alert includes a notification to a law enforcement agency.

13. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs H) [[C)]], and wherein:

H) [[C)]] comprises transmitting the notification data so as to generate the at least one alert on at least one external device;

the at least one processor further provides the at least some of the secure user-centric information by:

I) [[E)]] controlling the at least one communication interface so as to transmit to the at least one external device channel information relating to at least one authorized channel of the plurality of authorized channels implemented in A); and

the notification data transmitted in H) [[C)]] causes an appearance of the at least one authorized channel, as represented on the at least one external device, to change so as to generate the at least one alert on the at least one external device.

14. (Original) The apparatus of claim 13, wherein the at least one external device includes the at least one user platform.

15. (Original) The apparatus of claim 13, wherein the at least one authorized channel includes the first channel.

16. (Currently Amended) The apparatus of claim 13, wherein the notification data transmitted in H) [[C)]] causes the at least one authorized channel, as represented on the at least one external device, to expand into additional channels represented on the

at least one external device so as to generate the at least one alert on the at least one external device.

17. (Currently Amended) The apparatus of claim 13, wherein the notification data transmitted in H) [[C)]] renders the at least one authorized channel, as represented on the at least one external device, as a simulated three-dimensional representation of the channel information relating to the at least one authorized channel, so as to generate the at least one alert on the at least one external device.

18. (Currently Amended) The apparatus of claim 1, wherein the at least one processor performs H) [[C)]], and wherein in H) [[C)]], the at least one external device includes at least one of a mobile device, a television, and a Blu-ray player.

19. (Currently Amended) The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

I) [[E)]] controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

20. (Currently Amended) The apparatus of claim 19, wherein the at least one processor performs H) [[C)]], and wherein in H) [[C)]], the at least one external device includes the at least one user platform.

21. (Currently Amended) The apparatus of claim 20, wherein:

the at least one user platform includes a plurality of user platforms;

I) [[E)]] comprises controlling the at least one communication interface to transmit the at least some of the first channel information to the plurality of user platforms; and

H) [[C)]] comprises controlling the at least one communication interface to transmit the notification data so as to generate at least one alert on the plurality of user platforms.

22. (Original) The apparatus of claim 21, wherein:

the plurality of user platforms include multiple different types of computing devices and/or multiple different types of communication devices.

23. (Currently Amended) The apparatus of claim 1, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

I) [[E)]] authenticating the user and the at least one user platform to receive at least the first channel information and/or the at least one alert.

24. (Currently Amended) The apparatus of claim 23, ~~wherein the at least one memory stores a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform, and~~ wherein I) [[E)]] comprises authenticating the user and the at least one user platform based at least in part on the user profile.

25. (Currently Amended) The apparatus of claim 23, wherein the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the user platform, the authentication directory including a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts, and wherein I) [[E)]] comprises authenticating the user and the at least one user platform to receive at least the first channel information based at least in part on the authentication directory.

26. (Currently Amended) The apparatus of claim 23, wherein the at least one processor performs H) [[C)]], and wherein in H) [[C)]], the at least one external device includes the at least one user platform.

27. (Currently Amended) The apparatus of claim 23, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

J) [[F)]] confirming at least one subscriber to the at least one alert; and

K) [[G)]] determining one or more active devices of the at least one subscriber to the at least one alert.

28. (Original) The apparatus of claim 27, wherein the at least one processor performs H) [[C)]], and wherein in H) [[C)]], the at least one external device includes the one or more devices of the at least one subscriber to the at least one alert.

29. (Currently Amended) The apparatus of claim 1, wherein in A), the at least one processer implements a channel server that defines one or more visual characterizations, one or more functions or features, and/or one or more information types provided by respective channels of the plurality of channels through which the user receives and/or interacts with the respective portions of the secure user-centric information, wherein the channel server implements at least the first channel, and wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

I) [[D)]] controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

30. (Original) The apparatus of claim 29, wherein the at least one memory further stores at least one database including registries to one or more services and/or applications used by the channel server to implement at least the first channel and provide the first channel information.

31. (Currently Amended) The apparatus of claim 30, wherein in E) [[B)]] and H) [[C)]], the at least one processor implements a channel alert server, communicatively coupled to the channel server, to monitor at least the first channel information so as to determine the one or more events, conditions, logical workflows, discrete information values or signal data based on the at least one threshold condition or parameter, and to generate at least one alert in response to the one or more determined events,

conditions, logical workflows, discrete information values or signal data relating to the first channel information.

32. (Original) The apparatus of claim 31, wherein the at least one processor further provides and evaluates at least some of the secure user-centric information by:

implementing at least one other server, communicatively coupled to the channel server and the channel alert server, to provide the one or more services and/or applications registered in the at least one database and used by the channel server to implement the first channel and provide the first channel information, wherein the at least one other server includes at least one of:

a video server to transform, transmit, and/or support delivery of video information and/or audio information included in the first channel information;

an enterprise content management server to provide configuration, templates, visual content, user interface controls and management control for the first channel information;

a device integration server to manage streaming or real-time information from a machine or device, which streaming or real-time information is included in the first channel information;

a portal server to facilitate Internet-based function access by the at least one communication interface of the user platform; and

a virtual world server to provide a three-dimensional visualization of, and/or interaction with, the first channel information.

33. (Original) The apparatus of claim 32, wherein at least a portion of one or more of the first channel information, the video information, the audio information, the streaming or real-time information from a machine or device, the events, the conditions, the logical workflows, the discrete information values, and the signal data are stored in the at least one database.

34. (Original) The apparatus of claim 32, wherein the at least one processor establishes a service-oriented architecture (SOA) including an enterprise service bus,

wherein the channel server, the channel alert server, and the at least one other server are implemented as logical components that are communicatively coupled to each other and the at least one database via the enterprise service bus.

35. (Currently Amended) A computer-implemented method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) electronically implementing~~, at least in part,~~ a channel grid framework including a matrix of a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) establishing a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform;

C) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel based on the user profile;

D) receiving session data indicating a current state of at least one external device of the user;

E) [[B)]] electronically monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]]:

F) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

G) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

H) [[C)]] electronically transmitting at least one alert to, or transmitting the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel without being requested by the user, wherein the transmission of the at least one alert or notification data to the at least one external device is based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the at least one user platform.~~; and/or~~

~~D) electronically storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

36. (Currently Amended) At least one non-transitory computer readable storage medium encoded with processor-executable instructions that, when executed by at least one processor, perform a method for evaluating secure user-centric information to be provided on at least one user platform operated by a user, the method comprising:

A) implementing~~, at least in part,~~ a channel grid framework including a matrix of a plurality of authorized channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information based at least in part on information access rights and/or security protocols respectively associated with the plurality of authorized channels, the plurality of authorized channels including at least a first channel through which the user receives and/or interacts with first channel information constituting a first portion of the secure user-centric information;

B) establishing a user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the at least one user platform;

C) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel based on the user profile;

D) receiving session data indicating a current state of at least one external device of the user;

E) [[B)]] monitoring at least the first channel information so as to determine one or more events, conditions, logical workflows, discrete information values or signal data, based on at least one threshold condition or parameter relating to the first channel information and determined based on the user preferences indicated by the configuration data; and

if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E) [[B)]]:

F) determining a notification method by which to provide at least one alert on the at least one external device based on the current state of the at least one external device indicated by the session data;

G) generating notification data according to the determined notification method, wherein the notification data is configured to cause the at least one external device to provide the at least one alert on the at least one external device; and

H) [[C)]] transmitting at least one alert to, or transmitting the notification data to the ~~so as to generate at least one alert on,~~ at least one external device via the first channel without being requested by the user, wherein the transmission of the at least one alert or notification data to the at least one external device is based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of authorized channels, the user, and the at least one user platform.~~; and/or~~

~~D) storing event information relating to the one or more determined events, conditions, logical workflows, discrete information values or signal data.~~

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REZA NABI whose telephone number is (571)270-7592. The examiner can normally be reached on 7:30 to 5:00 PM [Off every alternate Friday].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Bashore can be reached on 571-272-4088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/R. N./
Examiner, Art Unit 2175

/William Bashore/

Supervisory Patent Examiner, Art Unit 2175

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	Examiner REZA NABI	Art Unit 2175	Page 1 of 2

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Notice of References Cited	Application/Control No. 13/086,165	Applicant(s)/Patent Under Reexamination WETZER ET AL.	
	Examiner REZA NABI	Art Unit 2175	Page 2 of 2

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Date Submitted: December 17, 2013

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Sheet 1 of 2

Complete if Known	
Application Number	13/086165
Filing Date	4/13/2011
First Named Inventor	Michael Wetzer
Art Unit	2175
Examiner Name	Nabi, Reza U.
Attorney Docket Number	098944-0130 (ML0003US01)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	13/086165
				Filing Date	4/13/2011
Date Submitted: December 17, 2013				**First Named Inventor**	Michael Wetzer
				Art Unit	2175
(use as many sheets as necessary)				Examiner Name	Nabi, Reza U.
Sheet	2	of	2	Attorney Docket Number	098944-0130 (ML0003US01)

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	C1	US Notice of Allowance on 098944-0133 DTD 9/17/2013	
	C2	US Office Action on 098944-0132 DTD 10/1/2013	
	C3	US Office Action on 098944-0138 DTD 11/15/2013	

Examiner Signature	/Reza Nabi/	Date Considered	01/26/2014

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	6265	(G06F3/0486 OR G 06F 3/0481 OR G06F3/0482).CPC.	US-PGPUB; USPAT	OR	OFF	2014/01/26 12:08
L6	218	l1 and ((alert$4 or notify$5 or inform$5) same (monitor$4 or trigger$4 or event) same (channel or tile or grid))	US-PGPUB; USPAT; USOCR	OR	OFF	2014/01/26 12:10
L7	322	l1 and ((alert$4 or notify$5 or inform$5) same (monitor$4 or trigger$4 or event) same (external or remote or outer))	US-PGPUB; USPAT; USOCR	OR	OFF	2014/01/26 12:11
L8	55	l1 and ((alert$4 or notify$5 or inform$5) same (monitor$4 or trigger$4 or event) same (external or remote or outer) same (channel or grid or tile))	US-PGPUB; USPAT; USOCR	OR	OFF	2014/01/26 12:11
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S2	1255	715/769.ccls.	US-PGPUB; USPAT	OR	OFF	2013/08/22 14:58
S3	16	("20020116256" | "20040025174" | "20070186103" | "20070266400" | "20080134256" | "20080319828" | "20090233542" | "20090298535" | "20090315807" | "20100023397" | "20110283259" | "20120210349" | "6807675" | "7546276" | "7711475" | "8276196").PN.	US-PGPUB; USPAT	OR	OFF	2013/08/22 14:58
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EAST Search History (Interference)

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	**Art Unit**
	REZA NABI	2175

CPC

Symbol	Type	Version
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CPC Combination Sets

Symbol	Type	Set	Ranking	Version
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/REZA NABI/ Examiner.Art Unit 2175 (Assistant Examiner)	01/26/2014 (Date)	**Total Claims Allowed:** 36	
/WILLIAM BASHORE/ Supervisory Patent Examiner.Art Unit 2175 (Primary Examiner)	01/27/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	**Art Unit**
	REZA NABI	2175

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
715	769	G 0 6 F 3 / 0482 (2013.0)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
715	810	835	757	864	
726	4				
455	414.2				
725	30	46			

/REZA NABI/ Examiner.Art Unit 2175	01/26/2014	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	36	
/WILLIAM BASHORE/ Supervisory Patent Examiner.Art Unit 2175	01/27/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	**Art Unit**
	REZA NABI	2175

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

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/REZA NABI/ Examiner.Art Unit 2175 (Assistant Examiner)	01/26/2014 (Date)	**Total Claims Allowed:** 36	
/WILLIAM BASHORE/ Supervisory Patent Examiner.Art Unit 2175 (Primary Examiner)	01/27/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 6

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	Art Unit
	REZA NABI	2175

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13086165	WETZER ET AL.
	Examiner	Art Unit
	REZA NABI	2175

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/0482	1/26/2014	RN
G06F3/0481	1/26/2014	RN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
715	769	8/28/2013	RN

SEARCH NOTES		
Search Notes	Date	Examiner
Conducted EAST text search.	8/28/2013	RN
Conducted an inventor name search.	8/28/2013	RN
Conducted an updated search.	1/26/2014	RN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
715	769	1/26/2014	RN

/REZA NABI/ Examiner.Art Unit 2175	

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (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)

48329 7590 01/30/2014
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/086,165	04/13/2011	Michael Wetzer	098944-0130 (ML0003US01)	3599

TITLE OF INVENTION: METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/30/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NABI, REZA U	2175	715-769000

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 03-02 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 John D. Lanza
2 Foley & Lardner LLP
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 has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: CYANDIA, INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): SYRACUSE, NEW YORK

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies .....

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 XXXXXXXXXXXXXXXX
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 19-0741 (enclose an extra copy of this form).

5. **Change in 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 to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee 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 /Brett P. Belden/ Date April 29, 2014

Typed or printed name Brett P. Belden Registration No. 57,705

Electronic Patent Application Fee Transmittal

Application Number:	13086165
Filing Date:	13-Apr-2011
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Filer:	Brett P. Belden/Monika Pychynska
Attorney Docket Number:	098944-0130 (ML0003US01)

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

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	480	480
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	18893337
Application Number:	13086165
International Application Number:	
Confirmation Number:	3599
Title of Invention:	METHODS, APPARATUS AND SYSTEMS FOR PROVIDING AND MONITORING SECURE INFORMATION VIA MULTIPLE AUTHORIZED CHANNELS AND GENERATING ALERTS RELATING TO SAME
First Named Inventor/Applicant Name:	Michael Wetzer
Customer Number:	48329
Filer:	Brett P. Belden/Monika Pychynska
Filer Authorized By:	Brett P. Belden
Attorney Docket Number:	098944-0130 (ML0003US01)
Receipt Date:	29-APR-2014
Filing Date:	13-APR-2011
Time Stamp:	16:45:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$480
RAM confirmation Number	4089
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

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Warnings:					
Information:					
			Total Files Size (in bytes):	835607	

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.

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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 519 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 Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

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