

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAP AMERICA, INC.,
Petitioner,

v.

CYANDIA, INC.,
Patent Owner.

IPR2024-01433
U.S. Patent No. 8,751,948
Issued: June 10, 2014
Application No. 13/086,165
Filed: April 13, 2011

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

DECLARATION OF CHRISTOPHER M. SCHMANDT

SAP AMERICA, INC. EXHIBIT 1103

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I, Christopher M. Schmandt, do hereby declare as follows:

I. INTRODUCTION AND ENGAGEMENT

1. I have been retained as an independent expert on behalf of SAP America, Inc. in connection with the above-captioned Petition for *Inter Partes* Review (“IPR”) to provide my analyses and opinions on certain technical issues related to U.S. Patent No. 8,751,948 (hereinafter “the ’948 patent”).

2. Specifically, I have been asked to provide my opinions regarding whether claims 1-7, 10-11, 13, 18-19, 23, 29, and 35-36 (each a “challenged claim” and collectively the “challenged claims”) of the ’948 patent would have been obvious to a person having ordinary skill in the art (“POSITA”) as of April 13, 2011 (or any earlier date in 2009-2011). It is my opinion that each challenged claim would have been obvious to a POSITA in view of the prior art discussed herein.

II. BACKGROUND AND QUALIFICATIONS

3. I have recently retired from my position as a Principal Research Scientist at the Media Laboratory at the Massachusetts Institute of Technology (“M.I.T.”), after 40 years of employment by M.I.T. In that role, I also served as faculty for the M.I.T. Media Arts and Sciences academic program. I have more than 40 years of experience in the field of Media Technology and was a founder of the M.I.T. Media Laboratory.

4. I received my Bachelor of Science degree in Electrical Engineering and Computer Science from M.I.T. in 1978, and my Master of Science degree in Visual Studies (Computer Graphics), also from M.I.T., in January 1980. I was employed at M.I.T. since 1980, initially at the Architecture Machine Group, which was an early computer graphics research lab. In 1985, I helped found the Media Laboratory and continued to work there until my retirement. I ran a research group most recently titled “Living Mobile.” My research spanned distributed communication and collaborative systems, with an emphasis on multi-media and mobile user interfaces; I have more than 70 published conference and journal papers and one book in these fields. I have received “best paper” awards from both ACM and IEEE conferences, and am a member of the ACM CHI (Computer Human Interaction) Academy, a peer-awarded honor given to a handful of active researchers annually.

5. As reflected in my CV, attached as Appendix A, I was a Principal Research Scientist beginning in 1985, when I founded a group later named the Speech + Mobility Group, and I continued in that capacity until 2018. Appx. A, 74. My work in the Speech + Mobility group involved significant research in the area of message notifications for mobile devices such as cell phones and other types of personal communication devices. I conducted research in the field of Alerting and Mobile Messaging from 1985 to 2018. In my faculty position, I taught courses and

directly supervised student research and theses at the Bachelors, Masters, and Ph.D. levels. I oversaw the Master's and Ph.D. thesis programs for the entire Media Arts and Sciences academic program. I was the official Departmental coordinator for M.I.T.'s Undergraduate Research Opportunities Program (UROP), through which the Lab employed typically 150 undergrad research assistants, for 35 years. I also served on and at times chaired the Departmental Intellectual Property committee. Based on my experience and qualifications, I have a solid understanding of the knowledge and perspective of a person of ordinary skill in this technical field (wireless communications) since at least 1980.

6. From as early as my undergraduate days, I researched and built software systems to support graphical user interfaces. My Bachelor's thesis in 1978 is one of the earliest examples of an electronic book, complete with touchable user interfaces, page turning animations, and fonts which I engineered for robust display on what was at the time conventional NTSC television/video equipment. Much of my work for the next decade involved graphical user interfaces for novel display of personal information, such as audio recordings, email and voice messages, and calendars, with user interaction via touch screens of various types and computer mice.

7. It was customary for these systems to display information in a two-dimensional grid, such as segments of voice mail recordings in Phone Slave

(1984)¹ and email in Conversational Desktop (1985)². But earlier my World of Windows (1981)³ displayed, on a single screen, streaming video of about 20 channels of live video into a grid of shrunk down active window panes; if a user indicated interest in a particular channel, they would first hear audio only, and subsequently the window would expand to fill the entire screen.

8. As desktop workstations with higher resolution displays became affordable from the mid-1980s, I deployed a number of applications to manage personal or personalized user data, including a version of voice mail, calendar, address book, and stock quotes. These applications would run on a remote server, and appear on the user's desktop as a grid of small windows similar to

¹ Chris Schmandt and Barry Arons, *A Conversational Telephone Messaging System*, IEEE Trans. on Consumer Elec., Vol. 30, No. 3, 21-24 (Aug. 1984), discussing grid layout for interaction with multi-segment voice messages.

² Schmandt et al., *Voice Interaction in an Integrated Office and Telecommunications Environment*, Proc. of AVIOS (American Voice Input/Output Society), 51-57 (Sept. 1985), discussing grid layouts displaying both voice and text messages, and inset windows showing detailed text messages.

³ Richard A. Bolt, *Gaze-Orchestrated Dynamic Windows*, ACM Siggraph, Computer Graphics, Vol. 15, No. 3, 109-119 (Aug. 1981)

conventional icons in operating systems such as Windows. But unlike Windows, these small versions of the applications were “live” and would change appearance in response to application specific information, such as new voice messages or a calendar entry alert⁴. A user could click on the small version of the application from the application grid to open a larger window for more complex interactions. Thus, a user could quickly access a variety of personal information from the grid layout of small versions of each application.

9. These personal information management applications were accessible on a variety of devices, not limited to the high-resolution desktop display, but also including PDAs, pagers, and voice access over the telephone network. As these devices were meant for users on the go and otherwise busy in the world, user agents monitored the various databases and decided when to notify users of a change, such as a calendar entry, a personal news story, or a new email. In doing

⁴ Chris Schmandt, *Multimedia Nomadic Services on Today's Hardware*, IEEE Network, Vol. 8, No. 5, 12-21 (Sept. 1994), discussing an architecture for local applications to interact with remotely stored user-centric data, using various media.

so, a process (CLUES, 1996)⁵ tracked conversations (a series of messages or phone calls with a particular person), a user's coarse geographic location (based on mining travel arrangements in the calendar), and scheduled appointments. In this manner, CLUES attempted to determine which events were relevant to the user *in context*, which was itself updated hourly.

10. Once it was determined that an event merited notification, another process, Active Messenger (1999)⁶ would determine which device(s) should receive notification. This was done in part by observing activity on each device, i.e., when a user most recently accessed his or her account from each device. The type of device recently used also influenced the manner of notification. For example, if the user was on a desktop computer, an important email message may be displayed in its entirety, while if on a pager only, the sender and subject line

⁵ Matthew Marx and Chris Schmandt, *CLUES: Dynamic Personalized Message Filtering*, Proc. of the 1996 ACM Conf. on Computer Supported Cooperative Work (CSCW '96), 113-121 (1996).

⁶ Schmandt et al., *Everywhere messaging*, IBM Sys. J., Vol. 39, Nos. 3-4, 660-677 (2000), with Natalia Marmasse, Stefan Marti, Nitin Sawhney, and Sean Wheeler, discussing Active Messenger's device-based and session oriented cascaded event notifications.

would fit into a single page (the entire message could be retrieved as a series of short pages).

11. In order to maintain privacy, these various applications and device accesses utilized well known authentication techniques, such as passwords evaluated at a centralized credential management server. Additional security was provided based on registered device addresses, such as a mobile phone number or a pager address as used by the POCSAG protocol.

12. My research also included the use of tactile alerts and notifications. As part of a project on autonomous communication intermediaries (2005), we built finger rings which included eccentric motor vibrators and micro switches to silently alert members of a group when one of them was receiving a phone call, and allowed the entire group to vote whether to allow the call to go through.⁷ WatchMe⁸ was a wrist worn watch, which used GPS to determine location and

⁷Stefan Marti and Chris Schmandt, *Giving the Caller the Finger: Collaborative Responsibility for Cellphone Interruptions*, Proc. of ACM (CHI 2005), 1633-1636 (2005), describing construction of a vibration enabled wearable ring used incoming call notifications.

⁸ Schmandt et al., *WatchMe: communication and awareness between members of a closely-knit group*, Sixth Proc. of Ubicomp 2004, 214-231(Sept. 2004), with

availability of each member of an intimate group. Among other features it allowed one member to communicate with another tactilely by controlling vibration on the other's watch. Additionally, I am an inventor on U.S. Patent 7,098,776, titled "Methods and Apparatus for Vibro-Tactile Communication", filed in 2004.

13. In addition to my own work, part of my responsibility as a principal investigator was to track and maintain contacts with industrial researchers and product developers. In addition to government funding (DARPA, ONR, NSF) I relied on industry funding through the Media Lab's two research consortia, Digital Life and Things that Think. Many established international communication companies and mobile phone developers participated in frequent visits and brainstorming sessions with my research group. As a result, during this time period I was made aware of industry trends and emerging standards as well as further looking research agendas.

14. In addition to M.I.T.-centered research, I have also participated in and reviewed for a number of conferences for both the ACM and IEEE. I have had program committee and conference management and conference chairing positions in the ACM CSCW, CHI, UIST, Mobicom, and Ubiquitous Computing

Natalia Marmasse and David Spectre, describing how a person with one watch can send idiosyncratic tactile messages to another.

conferences. I have served on the editorial board of several professional journals as well.

15. Based on the above experience and qualifications, I have a solid understanding of the knowledge and perspective of a person of ordinary skill (“POSITA”) in this technical field (providing information, including alerts, to a user on one or more of the user’s devices/platforms) since at least 1990.

16. My Curriculum Vitae is submitted herewith as Appendix A.

17. I am being compensated at my standard hourly rate for my study and other work in this matter. I am also being reimbursed for reasonable and customary expenses associated with my work in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony. In the last five years, I have provided deposition or trial testimony in the following matters:

- *Blackberry v. Facebook Inc.*, 2019
- *Bumble Trading Inc. v. Match Group LLC*, 2019
- *Tile Inc. v. Cellwitch, Inc.*, 2019
- *Snap Inc. v SRK Technology LLC*, 2019
- *Microsoft v. Speakware*, IPR 2019
- *Microsoft Corp. v. Uniloc 2017 LLC*, 2019
- *Express Mobile v. Shopify*, 2020

- *Walmart v. Sound View Innovations*, 2020
- *Express Mobile v. Wix Ltd.* 2020
- *Motorola Mobility LLC v. Ironworks Patents LLC* 2021
- *Express Mobile v. GoDaddy Inc.* 2021
- *Bumble Trading LLC v. Kinectus LLC* 2021
- *Tile, Inc. v. Linquet Technologies Inc.* 2021
- *Unified Patents, LLC v. Gesture Technology Partners, LLC* 2021
- *Quantum Metric, Inc, Decibel Insight, Ltd., and Decibel Insight, Inc. v. Content Square Israel Ltd.* 2021
- *Facebook, Inc. v. Palo Alto Research Center, Inc.* 2021
- *Meta Platforms Inc. v. AlmondNet Inc.* 2022
- *Apple Inc. v. Zentian Limited* 2022
- *Google LLC v. Mira Advanced Technology Systems Inc* 2022
- *Google LLC v. Robocast* 2023
- *Google LLC v. Buffalo Patents LLC* 2023
- *Samsung Electronics Co., Ltd v. Stanton Techiya, LLC* 2024
- *Roku, Inc. v. AlmondNet, Inc.* 2024
- *LinkedIn v. AlmondNet, Inc.* 2024
- *Google, LLC v. Dialect, LLC* 2024

III. UNDERSTANDING OF PATENT LAW

18. I am not an attorney. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law was provided to me by the Petitioner's attorneys.

19. I understand that when considering the scope of the claims of a patent that the patent claim terms should generally be given the ordinary meaning that the terms would have to a person of ordinary skill in the art in question after reading the patent as of the earliest claimed priority date. As discussed below, it is my opinion that the challenged claims are not entitled to the earliest priority date asserted by the '948 patent. However, in my opinion, the meaning of the claim terms would not have materially differed to a person of ordinary skill in the art ("POSITA") whether the claims were evaluated at the time of the earliest claimed priority date (2008) or at the time the application that led to the '948 patent was filed (2011).

20. I understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the term appears, but in the context of the entire patent, including the other claims and the specification of the application as filed. I further understand that the principal considerations regarding the scope and meaning of the claims are the plain language of the claim (including the surrounding claim language and context), the

patent specification, and the prosecution history. I understand that while a claim is to be read in light of the specification, one must generally avoid importing limitations into the claim from the specification. I am also informed that the prosecution history can often inform the meaning of the claim by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be. I applied these understandings when considering the scope and meaning of the claims of the '948 patent.

21. I understand that a prior art reference anticipates an asserted claim, and thus renders the claim unpatentable, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (i.e., necessarily present or implied).

22. I further understand that a claim is unpatentable if it would have been obvious. Obviousness of a claim requires that the claim would have been obvious from the perspective of a POSITA at the time the alleged invention was made. I understand that a claim could have been obvious from a single prior art reference or from a combination of two or more prior art references. I understand that an obviousness analysis requires an understanding of the scope and content of the prior art, any differences between the alleged invention and the prior art, and the level of ordinary skill in evaluating the pertinent art.

23. I further understand that a claim would have been obvious if it unites old elements with no change to their respective functions, or merely substitutes one element for another known in the field, and that combination yields predictable results. While it may be helpful to identify a reason for this combination, I understand that there is no strict requirement of finding an express teaching, suggestion, or motivation to combine within the references. When a product is available, design incentives and other market forces can prompt variations of it, either in the same field or different one. If a POSITA can implement a predictable variation, obviousness likely bars its patentability. For the same reason, if a technique has been used to improve one device and a POSITA would recognize that it would improve similar devices in the same way, using the technique would have been obvious. I understand that a claim would have been obvious if common sense directs one of ordinary skill, without hindsight bias caused by knowledge of the challenged claims, to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

24. I further understand that certain factors may support or rebut the obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the patented invention, skepticism of those having ordinary skill in the art at the time of invention, unexpected results of the invention, any long-felt but unsolved need in the art that was satisfied by the

alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill or expertise in the art, and copying of the alleged invention by others in the field. I understand that there must be a nexus—a connection—between any such secondary considerations and the alleged invention. I also understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.

25. I understand that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the descriptions found in the patent being considered.

26. I understand that Petitioner has the burden of proving unpatentability by a preponderance of evidence, which means that the claims are more likely than not unpatentable.

27. I understand that other challenges to the patentability of a patent, including patent ineligibility, enablement, written description, and definiteness or clarity of claim language, cannot be raised in IPR proceedings before the Board.

28. I understand, however, that if Patent Owner wishes to rely on the filing date of an earlier ancestor application, that ancestor application must provide a written description of the claimed invention that reasonably conveys to POSITAs that the inventor(s) had possession of the full scope of the claimed subject matter as of the filing date of that earlier ancestor application. Thus, I understand that a

patent claim is not entitled to claim priority to an earlier ancestor application unless the ancestor application provides adequate full scope written description support for the claimed invention.

29. I further understand that, to meet the written description requirement, it is not enough that the claims would have been obvious in view of the disclosure. I also understand that the written description requirement requires that the disclosure of the claimed subject matter must be: (1) express or necessarily present, (2) complete, and (3) unambiguous.

30. The analysis in this declaration is in accordance with the above-stated legal principles.

IV. MATERIALS CONSIDERED AND INFORMATION RELIED UPON REGARDING THE '948 PATENT

31. My opinions are based on my years of education, research, and experience, as well as my investigation and study of relevant materials.

32. As part of my work in connection with this matter, I have studied the '948 Patent and the U.S. Patent and Trademark Office file history of the application that led to the '948 Patent (U.S. Patent Application No. 13/086,165). I have also reviewed the applications to which the '948 patent claims priority—U.S. Patent Application No. 12/465,331 (“the May 2009 parent application”) and U.S. Provisional Patent Application No. 61/052,765 (“the May 2008 provisional

application”)—the prior art reference cited herein, as well as additional background references.

33. In preparing this declaration, I have reviewed the following materials bearing Exhibit Nos. that I understand are being referenced in the IPR to which my declaration accompanies:

LIST OF EXHIBITS

No.	Description
1101	U.S. Patent No. 8,751,948 (“ the ’948 patent ”)
1102	File History of U.S. Patent No. 8,751,948
1104	International Patent Application Publication No. WO 2009/140386 to Wetzer et al. (“ the PCT publication ”)
1105	U.S. Patent Application Publication No. 2004/0044736 to Austin-Lane et al. (“ Austin-Lane ”)
1106	U.S. Patent Application No. 12/465,331 (“ the May 2009 parent application ”)
1108	U.S. Provisional Patent Application No. 61/052,765 (“ the May 2008 provisional application ”)
1109	Full Claims Listing (1-7, 10-11, 13, 18-19, 23, 29, and 35-36)
1110	U.S. Patent Application No. 13/086,165 to Wetzer et al. (“ the April 2011 CIP application ”)
1111	U.S. Patent No. 7,348,968 to Thomas Dawson (“ Dawson ”)
1112	U.S. Patent No. 7,136,045 to Rosenberg et al. (“ Rosenberg ”)

1113	Lee et al., <i>Haptic Pen: A Tactile Feedback Stylus for Touch Screens</i> , Proc. of the 17th ann. ACM symp. on User interface software and tech. (UIST '04), 291-294 (Oct. 2004) (“ Lee ”)
1114	Hoggan et al., <i>Investigating the Effectiveness of Tactile Feedback for Mobile Touchscreens</i> , Proc. of the SIGCHI Conf. on Human Factors in Computing Sys. (CHI '08), 1573-1582 (Apr. 2008) (“ Hoggan ”)
1115	Stephen Brewster and Aurora Constantin, <i>Tactile Feedback for Ambient Awareness in Mobile Interactions</i> , Proc. of the 24 th BCS Interaction Specialist Grp. Conf. (BSC '10), 412-417 (Sept. 2010) (“ Brewster ”)
1116	<i>IBM Rational Application Developer V6 Portlet Application Development and Portal Tools</i> (August 2005) (“ WebSphere-Portal ”)
1117	Ron Ben-Natan et al., <i>Mastering IBM WebSphere Portal</i> (2004) (“ Ben-Natan ”)
1118	<i>IBM WebSphere Everyplace Access V5 Handbook for Developers and Administrators Volume I: Installation and Administration</i> (May 2005) (“ WebSphere-Everyplace-1 ”)
1119	<i>IBM WebSphere Everyplace Access V5 Handbook for Developers and Administrators Volume II: Application Development</i> (March 2005) (“ WebSphere-Everyplace-2 ”)
1120	<i>IBM WebSphere Everyplace Access V5 Handbook for Developers and Administrators Volume IV: Advanced Topics</i> (March 2005) (“ WebSphere-Everyplace-4 ”)
1122	U.S. Patent 7,376,907 to Santoro et al. (“ Santoro ”)
1123	<i>Microsoft Computer Dictionary</i> (5th Edition) (excerpts)
1124	U.S. Patent No. 5,548,692 (“ Cok ”)
1125	<i>Microsoft Internet Explorer ResourceKit</i> , Microsoft (1998)

1126	David Pogue, <i>iPhone The Missing Manual</i> (excerpts) (2007)
1127	David Pogue, <i>Mac OS X Leopard The Missing Manual</i> (excerpts) (2007)
1128	Harry Newton, <i>Newton's Telecom Dictionary</i> (20th Ed.) (excerpts) (2004)
1129	WSRP standard 1.0 specification
1130	WSRP standard 2.0 specification

V. LEVEL OF SKILL IN THE ART AND STATE OF THE ART

A. Person Of Ordinary Skill In The Art

34. For purposes of this declaration, I understand the time of the invention to be April 2011, which is the filing date of the application that led to the '948 patent. For purposes of my analysis herein, there would be no material difference in the definition of a POSITA if taken at any point in the time period from this date back to May 2009.

35. I understand that several factors are relevant to determining the level of ordinary skill in the art at the time of the claimed invention. I understand that those factors include: (1) the educational level of the inventor(s); (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) the rapidity with which innovations are made; (5) sophistication of the technology; and (6) the educational level of active workers in the field.

36. Having reviewed and considered the '948 patent, its prosecution history, the state of the art at the time of the invention, including the level of skill of the persons with whom I worked, and the above-listed factors, it is my opinion that the person of ordinary skill in the art for purposes of the '948 patent in April 2011 ("POSITA") would have had a bachelor's degree in electrical engineering, computer science, or equivalent, with two or more years of experience developing and implementing graphical user interfaces for controlling server-based applications, including handling asynchronous notifications generated by those applications and web services, such as portal systems, or an equivalent amount of relevant work or research experience. A POSITA would have been familiar with common approaches for presenting information on a graphical user interface, including various layouts for presenting multiple elements, such as icons, widgets, windows, etc. *E.g.*, EX1116, 2-4; EX1118, 34, 390; EX1122, 7:31-43, Fig. 1; EX1124, 1:15-19, 3:35-40, FIG. 1; EX1125, xxx, 183; EX1126, 5, EX1127, 22.

37. Further, a POSITA would have been familiar with communication protocols and markup languages commonly used for transmitting information (including notification data) between a server and a user's device(s), such as HTTP, SMS, SMTP, HTML, XML, and RFC822 email headers. Similarly, a POSITA would have understood and/or used Java technologies, XML applications, and Web publishing, along with protocols and techniques for managing and

interfacing to remote web objects, such as Web Services for Remote Portlets (WSRP). EX1116, xix, 12, 899; EX1105, [0004-5], [0031], [0033], [0048]; EX1128, 402, 702, 760, 933-934; EX1129 (WSRP 1.0); EX1130 (WSRP 2.0).

38. POSITAs commonly used SSO and/or other authentication processes to verify the identity of the user and their device, to protect the user's privacy. EX1116, 5, 11, 15-16, 630, 638-639, 899-900; EX1117, 15, 365-401; EX1118, 5-6; EX1119, 182-183; EX1120, 327-360; EX1123, 42-43, 299, 310, 483, 495, 580; EX1128, 752. POSITAs would have understood how to implement a server with an authentication directory (e.g., LDAP) including a plurality of user, device, and application accounts. *Id.* A POSITA also would have been familiar with techniques to manage users' sessions, for example, to track the lifetime of a given sign-on. EX1116, 134-139, 285; EX1117, 18-19, 164, 228, 233-234, 264, 480-482; EX1118, 28-29, 381-384; EX1105, [0035]. It also was common practice to encrypt communications between a server and a user's device(s) to prevent unauthorized entities from gaining access to the information, thus protecting the user's privacy. EX1116, 11, 630, 899-900; EX1117, 5-6, 380-383; EX1118, 315-337; EX1123, 495; EX1128, 777. A POSITA also would have been familiar with protocols commonly used to authenticate users (e.g., single sign-on or SSO) and encrypt communications (e.g., SSL). *Id.*

VI. CLAIM CONSTRUCTION

39. I understand that, in *inter partes* review (IPR), claim terms should be given the ordinary meaning that the terms would have to a person of ordinary skill in the art on the earliest effective filing date, in view of the specification and file history.

40. Unless otherwise expressly discussed, I apply the plain and ordinary meaning of all claim terms for this declaration. I reserve the right to offer my opinion on any constructions or construction issues present by Patent Owner Cyandia, Inc.

A. Proposed Constructions

41. For this declaration, I apply the following constructions:

“**provide [an] alert**” (EX1101, 31:65, 32:4, 36:34-35, 36:41, 38:1-2, 38:8) should be construed at least in part as: “present a tactile, auditory, or visual notification.”

“**information**” (throughout the ’948 claims) should be construed at least in part as: “tactile, auditory, or visual information.”

42. It is my opinion that the claimed-recited “alert” and “information” should be construed to include tactile alerts and information, in addition to auditory and visual alerts and information, at least because the ’948 patent describes the alerts and information as including tactile alerts and information. EX1101, 9:39-43,

15:14-19. “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).” EX1101, 9:39-43. “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.” *Id.* 15:14-19 (emphasis added). It is my opinion, therefore, that the plain meaning of “provide [an] alert” in the challenged claims, as well as “information,” encompasses presenting tactile alerts and information in addition to auditory and visual alerts and information.

VII. NO WRITTEN DESCRIPTION SUPPORT FOR TACTILE INFORMATION/ALERTS IN THE ANCESTOR APPLICATIONS

43. I have reviewed these three applications to assess what they disclosed to a POSITA about the sensory modalities of the information and alerts conveyed to a user: the May 2008 provisional application (EX1108), the May 2009 parent application (EX1106), and the April 2011 “continuation-in-part” (“CIP”) application (EX1110) issuing as the ’948 patent (EX1101). In particular, I analyzed whether the applications disclose to a POSITA that the information and alerts provided to a user include tactile information and alerts.

44. The May 2009 parent application describes providing information to users, including alerts, through sight and sound, but not through vibrations. It describes providing, receiving, and interacting with visual and auditory information, not tactile information.

45. For example, here are some passages in the May 2009 parent application describing information provided to users, each limited to visual and auditory information:

Information relevant to the user may be presented in, by way of non-limiting example, a twelve item grid in the form of “channels.” These channels may be preconfigured and may contain any information format. Non-limiting examples include streaming video, audio, voiceover-IP communication, environmental monitoring information, financial services information, enterprise resource planning information, building information modeling, product lifecycle management information, project management information, immersive 3D environments, video conferencing information, RSS reader information, channel application repository information, end-user preferences and localization information, word processing documents, spreadsheets, presentation/slide shows, email, address book information, instant messaging information, enterprise content management information, text, graphics, pictures, video, , [sic] remote device

control/interaction, and 3D graphic visualization of objects.

EX1106, [0022].

The video server 213 may be a hardware device or software application that may provide application services to transform, transmit, and support the delivery of information in the form of video and audio.

EX1106, [0041].

46. Similarly, here is the only passage in the May 2009 parent application describing the sensory modality of alerts provided to users, which is limited to visual and auditory alerts:

If an established condition is met, the channel alert server 211 may notify the identity management server 208 to confirm the subscriber of the event, determine the active devices of the subscriber, and then pass through the web services gateway 207 and the channel grid framework 201 to provide a visual or auditory alert in the channel 202.

EX1106, [0039].

47. POSITAs in 2009 were familiar with visual, auditory, and tactile information, and their differences. These three are properly referred to as different sensory modalities as they rely on a human's different senses of sight, hearing, and touch. More specifically, tactile information conveyed as vibrations uses vibratory sensation, which is the ability to perceive vibration. The POSITA would not

confuse any of these three different sensory modalities, thinking, for example, that a reference to “visual” information included sounds or vibrations.

48. The most common sensory modality of information conveyed to a user using computer systems (including mobile smart phones) in 2009 was visual information, with auditory information second, and tactile information a distant third. (I exclude pagers from “computer systems”.) For example, desktop and laptop computers commonly conveyed information to users by visual and auditory means, not by vibrations or other tactile means. A POSITA in 2009 reading a description of a system that conveyed visual or auditory information to a user via a laptop or desktop computer would not assume that the system also conveyed tactile information to a user. Similarly, a POSITA asked to implement a system having all of the functions described in the above quotations from the May 2009 parent application would not understand that they needed to include tactile indicators.

49. Tactile indicators are a different class of information with substantial differences from visual and auditory indicators. Some of the significant differences between a tactile indicator versus a visual or audible indicator include that the tactile indicator uses the sense of touch, rather than sight or hearing, can be felt without others noticing, can be effective in noisy or visually cluttered environments, is typically limited to less complex information, and requires the

user to be touching the device providing the information, all differences a skilled artisan in 2009-2011 would have understood.

50. Nothing in the May 2009 parent application would have conveyed to the skilled artisan that the applicants had conceived of modifying the described systems and methods in order to provide alerts to users through vibrations or other tactile means or otherwise providing, evaluating, receiving, or interacting with information encoded as vibrations. The May 2009 parent application does not mention “tactile” or “vibration.” It does mention “touch” ([0024], [0025], [0037]), but limited to a user touching a display to interact with a channel or object (which touching does not provide vibrations or other tactile alerts or information to a user.)

51. The May 2008 provisional application, which the May 2009 parent application says it incorporates, likewise does not mention “tactile” or “vibrations,” does not describe tactile alerts, and does not describe receiving, providing, evaluating, or interacting with information conveyed to a user by vibrations or other tactile means. The May 2008 provisional application mentions a user conveying commands to a display by “touch” but does not describe a device conveying information to a user by vibrations or other tactile means. For example:

The interface consists of a multi element touch interface
that can be deployed to any number of computing and

display devices ranging from mobile phones to computer screens. These touch elements invoke a computing command. The [sic] can be represented as static icons, streaming data or other representation. They are not limited to touch access and can interact with other sensory means such as eye movements or voice commands.

EX1108, [0009].

52. In May 2009, POSITAs would have expected a disclosure of a system providing tactile information and alerts to have included disclosure of the following elements, none of which are contained in the May 2009 parent application.

- **Tactile Actuators:** Devices that create tactile sensations through vibrations or motions. *See, e.g.*, EX1111, Abstract, 7:53-59 (describing an “actuator” for providing haptic feedback when a stylus moves a cursor over a displayed object), 5:50-53 (“The actuator may include, but is in no way limited to, a linear actuator, a repulsive magnet pair, a mechanical spring, or a rotary actuator that outputs a rotational force (torque)”), Fig. 3B (showing an electromagnet actuator); EX1112, Abstract (describing a “tactile actuator” for providing force feedback to a computer mouse, using masses and springs, as shown in FIGS. 3A-3C); EX1113, 292 (describing actuators for a haptic pen that provide tactile feedback, including “linear actuators, piezo

stack actuators, and solenoids”); EXS1114-1115 (describing applications for a small linear vibrotactile actuator called the C2 Tactor)

- **Tactile Drivers:** Electronic components that control the haptic actuators, ensuring precise and varied tactile feedback. *See, e.g.*, EX1111, Abstract, 8:22-34 (describing a “CPU” that sends command signals to the actuator to perform the desired haptic response), 5:34-36 (“Additionally the CPU (310) of the stylus (230) may control the coupled actuator (320) in response to the received commands.”); EX1112, 11:14-14:39 (describing a “local microprocessor” that drives the actuator); EX1113, 292 (describing a PIC16F876 microcontroller that drives the solenoid of the haptic actuator); EXS1114-1115 (describing controlling the linear actuator by playing sound files).
- **Tactile Feedback API:** An application programming interface that allows developers to integrate haptic feedback into the system’s software. This API manages the communication between the software and the haptic hardware. For example, Dawson describes a “CPU” (or any processor) which accepts commands transmitted to the disclosed device, and translates them into control signals for the actuator (as cited above) such as magnitude and direction of current to the actuator coil. EX1111, 6:4-18. Lee describes a two-layer interface where “[l]ow-level control routines are handled by the

micro-controller, while the PC control software selects which overall tactile sensation is desired.” EX1113, 292. Hoggan also describes that “[t]hree actuators were pulsed in turn to give the feeling of movement around a circle to indicate the progress of a download.” and “[w]hen a fingertip-over, fingertip-click, or fingertip-slip event was triggered, the actuator placed nearest the button would be used to present the feedback.” EX1114, 7-8.

- **Event Triggers:** Software mechanisms that detect specific events or conditions and trigger the haptic feedback. These could be integrated into the existing channel alert system. *See, e.g.*, EX1111, 7:53-59 (describing that a haptic response is triggered when a stylus moves over a displayed object, according to the logic shown in Fig. 5); EX1112, 5:13-16 (describing a host application program that checks for input signals received from the electronics and sensors of the mouse and outputs force values and/or commands to be converted into forces output for the mouse); EX1113, 293 (describing providing different haptic feedback depending on the number and force of the clicks); EX1114, 7-8 (describing two triggers: a “progress of a download” and “[w]hen a fingertip-over, fingertip-click, or fingertip-slip event was triggered”); EX1115 (describing trigger events based on the distance of a friend from the test subject user).

53. The April 2011 CIP application, however, does describe tactile alerts and information in addition to the visual and auditory alerts and information disclosed in the May 2009 parent application. (EX1110, [0057], [0093].) This new disclosure is skeletal and appears in these two passages in the CIP application:

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). [EX1110, [0057]; EX1101, 9:39-43 (emphases added)]

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.” [EX1110, [0093]; EX1101, 15:14-19) (emphasis added)]

54. The POSITA would understand these passages to disclose that providing an alert in the CIP application (and in the resulting '948 patent) encompasses presenting tactile as well as auditory and visual notifications, and understand them to disclose that receiving, providing, evaluating, and interacting with “information” in the CIP application (and in the resulting '948 patent)

encompasses performing these functions or actions with tactile as well as auditory and visual information.

55. As explained above, the May 2009 parent application did not describe this full breadth of functions and actions because it did not describe tactile alerts or other tactile information. Therefore, a POSITA in 2009 would not understand the May 2009 parent application to have described the full breadth of any of the below-underscored functions or actions recited in claim 1 of the '948 patent relating to alerts or other information conveyed to a user:

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 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-executable 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 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) 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):

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) controlling the at least one communication interface to transmit the notification data to the 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.

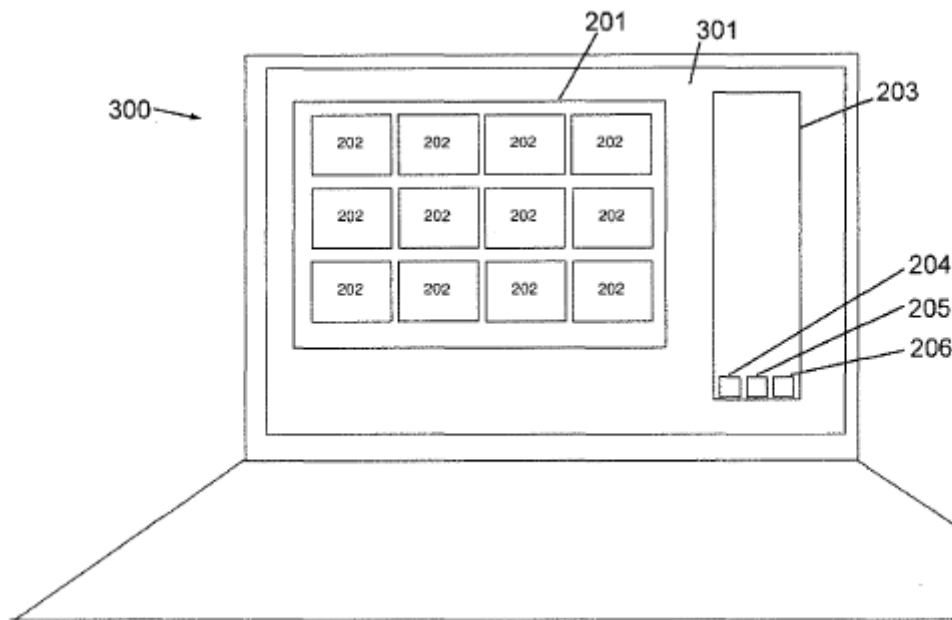
VIII. THE PCT PUBLICATION AND AUSTIN-LANE

A. The PCT Publication (EX1104) And Its Incorporated Provisional Application, The '765 Provisional (EX1108)

56. The PCT publication is analogous art to the '948 patent because it is from the same field of endeavor: providing secure user-centric information to a user. EX1101, Title, Abstract, 2:4-13, 31:17-32:15 (claim 1); EX1104, Title, Abstract, [0002], [0008], claim 9.

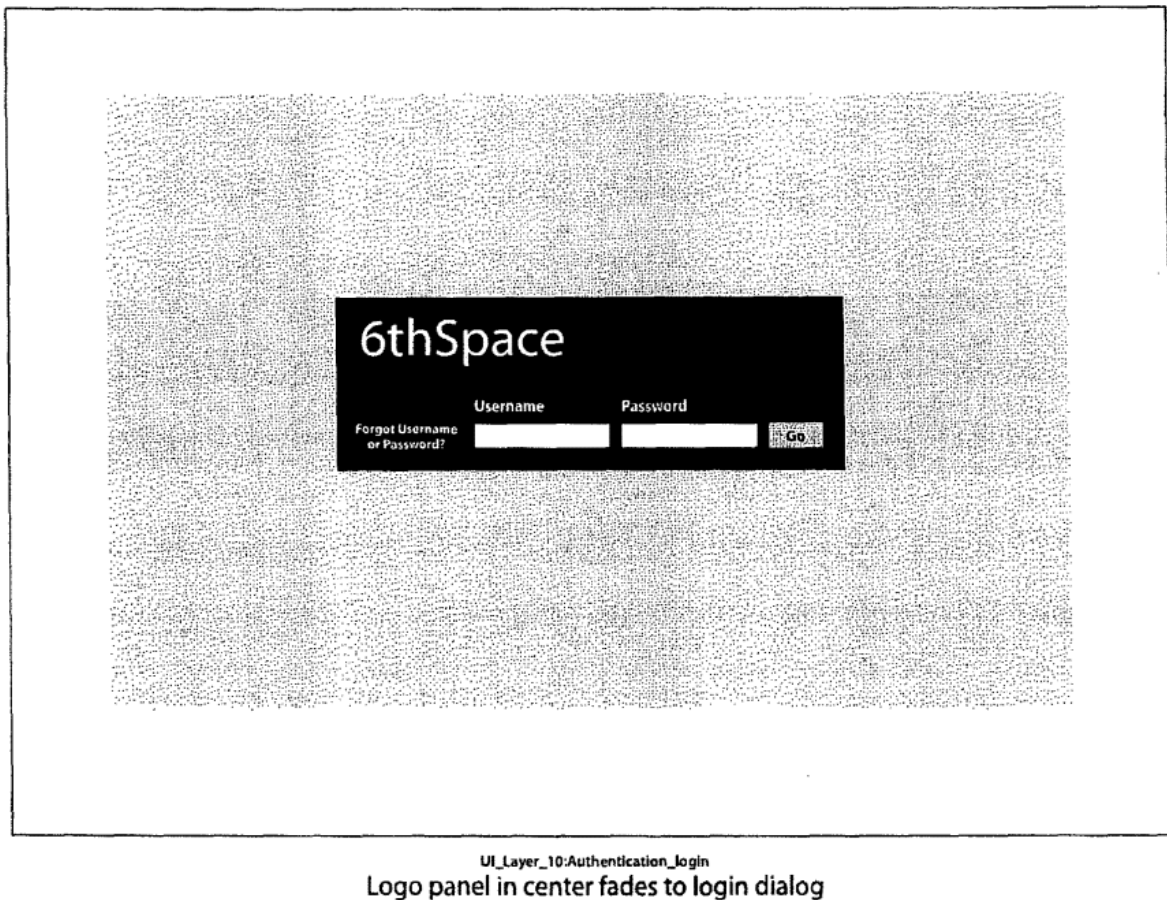
57. The PCT publication is substantively identical to the May 2009 parent application, containing the same drawings and specification. *Compare* EX1104 *with* EX1106, 1-48. It also incorporates by reference the May 2008 provisional application (EX1108). EX1104, [0001]. Like the May 2009 parent application, the

PCT publication describes systems and methods for providing a “channel grid framework” on a user’s device(s). *E.g.*, EX1104, Abstract, [0009], [0014], FIG. 3.



EX1104, FIG. 3 (showing computer display device 300 displaying channel grid framework 201 comprising a 3x4 grid of channels 202); *see also id.*, [0022], [0031].

58. Before “the channel grid framework 201 may be established for the user,” the user must be authenticated, such as by logging in with their username and password. EX1104, [0051]; *see also id.*, Abstract, [0009], [0050], [0035], [0054], [0061], claim 1; EX1108, [0009], 23, 31.



EX1108, 31.

59. After the user is authenticated, the “user may access specific channels 202 and interact with them based on the user’s profile.” EX1104, [0032]. For example, “the user may take action by touching, clicking, or otherwise interacting with the channel.” *Id.*, [0024]. The user profile “may identify user preferences, platform identities, and service support instructions as to how the user wishes information to behave on the selected platform.” *Id.*, [0034].

60. “Information may be delivered to a user based on the user’s identity as established by the system when the user’s session is established. Because the user

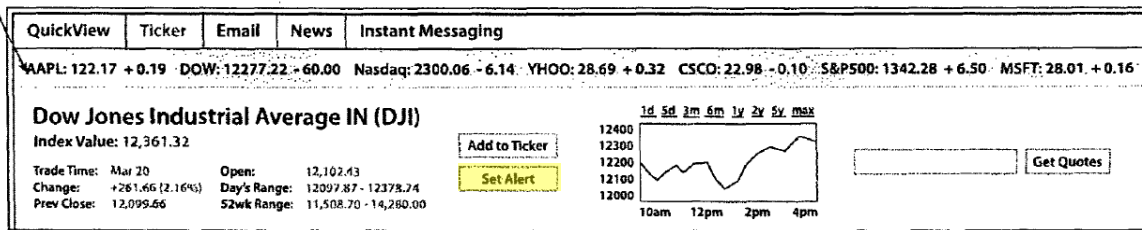
is known and authenticated, preferences and rights to certain information types can be defined and managed for the user.” EX1104, [0021]. “Based on the access rights assigned to an individual and the underlying actions enabled through the channel's design, immediate response to an event or a complex logic chain that formed the event may occur.” *Id.*, [0024]. These “access [rights] and security protocols may be identified for each condition and action to be performed by the user.” *Id.*, [0036]; *see also id.*, [0022] (“Each channel may be configured to perform complex functions both in how the information is synthesized and delivered as well as what the user may do with it (as may be driven by the identify [sic] and authorization granted to the user).”).

61. The channels provide “[i]nformation relevant to the user,” such as “financial services information ... email, address book information, instant messaging information, ... text, graphics, pictures, video,” etc. *Id.*, [0022]. The channels also provide “visual or auditory alert[s].” *Id.*, [0039].

62. Users also can set up alerts, including establishing specific events/conditions that trigger an alert. EX1104, [0023], [0039] (A user can “define threshold conditions with definitive values assigned to events, conditions, logical workflows, discrete information values or signal data.”).

63. For example, a user can set up an alert for a stock. EX1108, 45.

Stock Ticker: Ticker will be live, constantly updating and displaying stocks based on user-defined preferences.



EX1108, 45 (yellow annotations added).

64. “If an established condition is met, the channel alert server 211 may notify the identity management server 208 to confirm the subscriber of the event, determine the active devices of the subscriber, and then pass through the web services gateway 207 and the channel grid framework 201 to provide a visual or auditory alert in the channel 202.” EX1104, [0039]. “The alert can appear as defined on other platforms such as a mobile device, a television (set top box), a Blu-ray player, or other devices.” EX1104, [0039]; *see also id.*, claim 9 (alert on “first and second [computing device] platforms”). The alert also can be sent “via configurable combination of SMS, Email, HTML, JavaFX (Channels).” EX1108, 25; *see also id.*, 23.

65. Like any other information provided by the channels, the alerts “must be authenticated” and can be “set ... to follow” a user “from device to device.” EX1108, 25, 43; *see also* EX1104, [0035-36] (describing how a user must be

authenticated and information (e.g., an alert) must be authorized before it is provided to the user), [0050-51].

66. Several back-end software modules (e.g., a channel alert server, an identity management server, a channel server) are responsible for performing most or all of the above-described functionality including, for example, authenticating the user, establishing and storing the user's profile including the user's preferences (e.g., alert triggers), ensuring the user is authorized to access requested content, and providing the content (including alerts) to the user's device(s). EX1104, [0031-32], [0035-36], [0039-40], [0050-62]. These back-end software modules "can be conveniently implemented using one or more general purpose computer systems" (EX1104, [0068]) including "server computers" (*id.*, [0065]) comprising "one or more memories" (*id.*, [0067]) and "one or more computer processors (*id.*, Abstract, [0009], claim 1)."

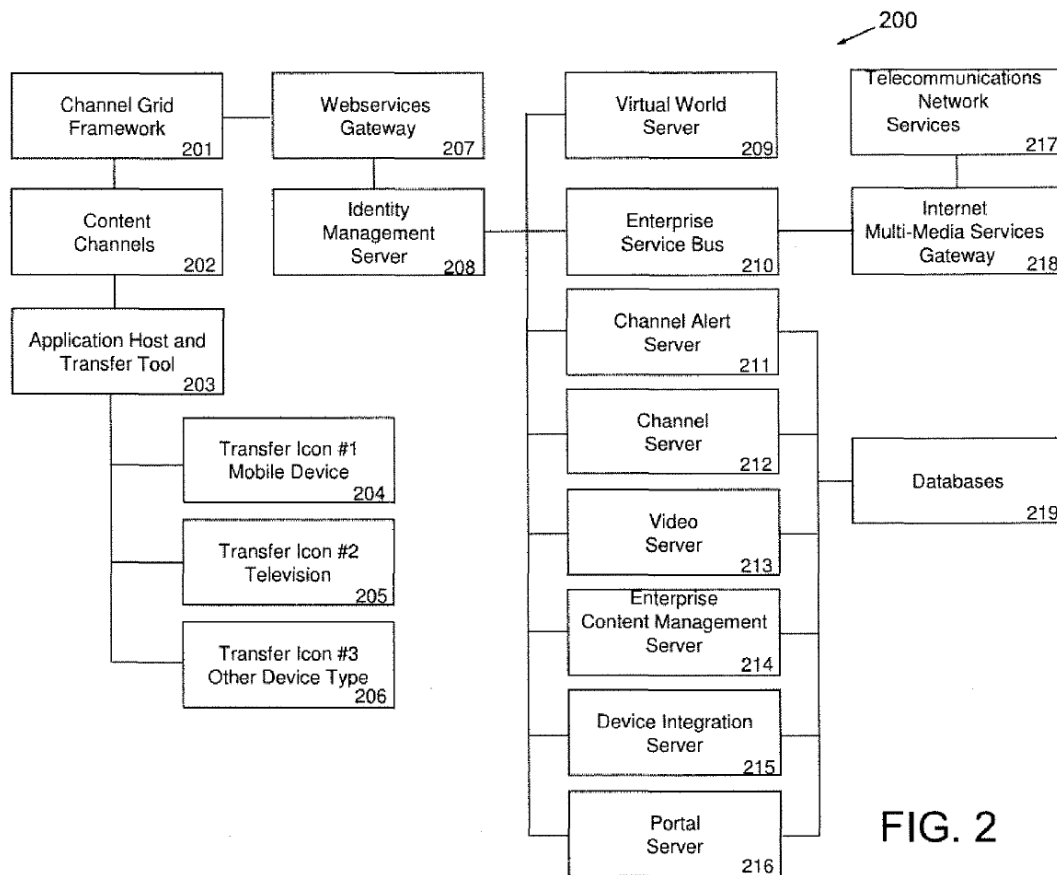


FIG. 2

EX1104, FIG. 2.

B. Austin-Lane (EX1105)

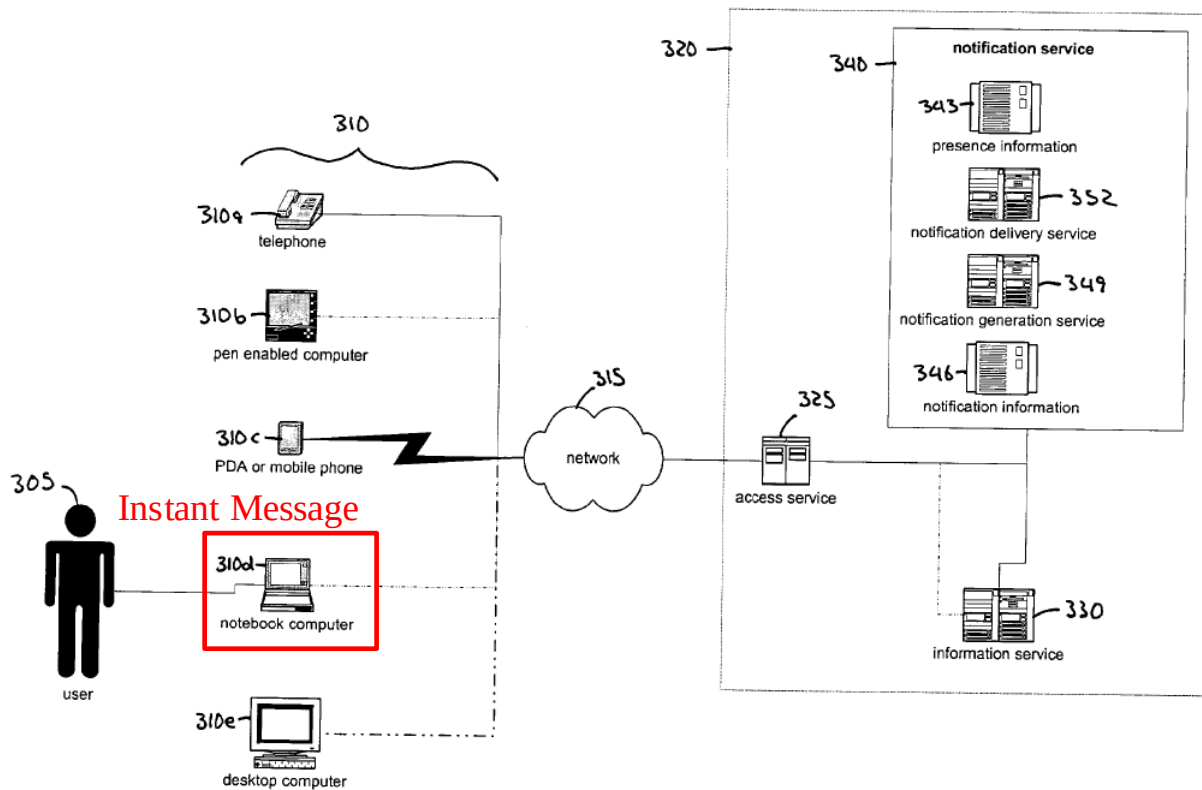
67. Austin-Lane is analogous art to the '948 patent because it is from the same field of endeavor: providing secure user-centric information to a user.

EX1101, Abstract (“Display of and access to secure user-centric information”), 1:66-4:15; EX1105, Title, Abstract, [0002] (“This disclosure generally relates to systems and methods of delivering information”), [0019], claim 1.

68. Not only does Austin-Lane describe permitting a user to set up an alert—just like the '948 patent—it also describes setting up one of the same types

of alerts, a stock alert. EX1105, [0036-40], [0057-58]. For example, the user can elect “to receive the stock alert when a specified stock exceeds a 52-week high.” EX1105, [0040].

69. Austin-Lane also describes determining how to notify the user based at least in part on the user’s presence information (e.g., whether and on which device(s) the user is online) to ensure the user receives the alert “without significant delay” (e.g., [0019], [0023]). EX1105, [0006-9], [0019], [0021], [0023-24], [0027], [0029], [0035], [0039], [0046], [0055]. For example, if “the presence information [] indicate[s] that the user 305 presently is online using notebook computer 310d ... and that the user 305 has an active IM connection ... the notification delivery service 352 may provide the notification to the user 305 using an instant message to the notebook computer 310d.” EX1105, [0046].



EX1105, FIG. 3 (red annotations added).

70. Austin-Lane describes how the presence information is received from an information service (e.g., EX1105, [0035]) and how the alert is generated and formatted according to the determined notification method. EX1105, [0031], [0039], [0041], [0045-46], [0079]. The “notification generation service [] generates notifications based on the ... notification delivery service [] that delivers the notifications to the user [] using one or more of the delivery mechanisms.” EX1105, [0041]. These delivery mechanisms “format the notification using a standard protocol, such as, ... (SGML), ... (XML), ... (HTML), ... (DOM) ...”

(EX1105, [0031]) and deliver the alert using a networking protocol, such as “SMS,” “WAP,” “TCP,” “IP,” (EX1105, [0048]), etc.

**IX. GROUND 1: CLAIMS 1-7, 10, 11, 13, 18, 19, 23, 29, 35, and 36 ARE OBVIOUS OVER
THE PCT PUBLICATION IN VIEW OF AUSTIN-LANE**

71. It is my opinion that claims 1-7, 10, 11, 13, 18, 19, 23, 29, 35, and 36, would have been obvious to a POSITA over the PCT publication in view of Austin-Lane. The PCT publication discloses or suggests every element of the challenged claims except some of those for which there is no written description support in the ancestor applications, namely: (1) 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 (2) generating notification data (data configured to cause the at least one external device to provide the at least one alert) according to the determined notification method. Austin-Lane, however, discloses or suggests these unsupported claim elements and explains their benefits. *E.g.*, EX1105, [0006-9], [0019], [0021], [0023-24], [0027], [0029], [0031], [0035], [0039], [0041], [0045-46] [0055], [0079]. Sending the alert to the device the user is currently using (as indicated by session data) ensures the user receives the alert promptly and generating the notification data such that it conforms to the requirements/specifications of the determined notification method ensures that the

user actually/successfully receives the alert. *E.g., id.*, [0031], [0039], [0041], [0045-46], [0079]. Thus, as explained in greater detail below, a POSITA would have been motivated with a reasonable expectation of success to start with the PCT publication design and incorporate Austin-Lane's teachings to determine a notification method based on session data and generate notification data according to the determined notification method to ensure successful and prompt delivery of the alert to the user.

A. Combining the PCT Publication And Austin-Lane Teachings

72. A POSITA would have been motivated with a reasonable expectation of success to combine the PCT publication's disclosed system with Austin-Lane's teachings to (1) determine a notification method for the alert based on the user's presence information and (2) generate the notification based on the determined notification method.

73. As taught by Austin-Lane, selecting a notification method that sends the alert to a device (e.g., notebook computer) and, optionally, an application (e.g., instant messaging) on that device that the user is currently using ensures the user receives the alert "without significant delay." *E.g.*, EX1105, [0046]; *see also id.*, [0006-9], [0019], [0021], [0023-24], [0027], [0029], [0035], [0039], [0055]. Thus, a POSITA would have been motivated to modify the PCT publication system to

select the notification method based on the user's online presence to ensure the user receives the alert promptly.

74. Austin-Lane also teaches what a POSITA would have generally understood: after selecting a particular notification method, the notification data (i.e., the data transmitted to the user's device that is responsible for causing the alert to be displayed on the user's device) must be generated and formatted according to the selected notification method so that it is suitable for the selected notification method (i.e., so that it is properly sent to, received by, and processed by the user's device(s)), and so that it is properly provided to the user on the user's device(s). EX1105, [0031], [0039], [0041], [0045-46], [0079]. For example, a POSITA would have understood and/or at least found it obvious that the content and/or format of the notification data for a visual alert is different than for an audible alert, and that even for visual alerts, the notification data is different for text (e.g., instant message) than graphics (e.g., flashing icon). Further, a POSITA would have understood that the content and/or format of the notification data would depend on the communication protocol being used (e.g., HTTP vs. SMS vs. SMTP) and/or the markup language being used (e.g., HTML vs. XML vs. RFC822 email headers). Thus, when incorporating into the PCT publication system Austin-Lane's teaching to determine a notification method, a POSITA also would have been motivated to incorporate Austin-Lane's concomitant teachings to generate

notification data according to the determined notification method to ensure the alert is successfully and properly provided on the user's device(s).

75. A POSITA would have reasonably expected to succeed in incorporating Austin-Lane's teachings in the PCT publication's system at least because it requires only minor software changes that were well within the skill of a POSITA. The PCT publication's system already includes a channel alert server that determines the active devices of the user and delivers an alert to the user's device(s). EX1104, [0023], [0039], claim 9; EX1108, 23, 25, 45. Moreover, the PCT publication and Austin-Lane disclose setting the same type of alerts (stock alerts) and disclose providing the alert in the same way (visually). EX1104, [0039]; EX1105, [0036-40], [0057-58]; EX1108, 45. Thus, given how much the PCT publication already discloses about its alerts (and how similar and complementary its teachings are to Austin-Lane's) modifying the PCT publication's system to include Austin-Lane's teachings to determine a notification method and generate a notification according to the determined notification method requires only minor software changes that a POSITA would have reasonably expected to succeed in achieving.

1. Claim 1

a) Element [1.1]

[1.1] 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:

76. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests it. The PCT publication discloses or suggests an apparatus (e.g., “servers or networks of servers” that include various software modules, including a channel alert server, an identity management server, a channel server, etc.) (EX1104, [0027]; *see also id.*, [0002], [0031-32], [0035-36], [0039-40], [0050-62], [0065], [0068]) to provide secure (*see, e.g., id.*, [0036]) user-centric information (“information relevant to the user” such as “streaming video, audio, voice-over-IP communication, environmental monitoring information, financial services information ... email, address book information, instant messaging information ... pictures, video,” etc.) (*id.*, [0022]) on at least one user platform operated by a user platform (“platform”) (*id.*, *passim*) / (“registered devices or platforms”) (*id.*, [0033]), and to evaluate at least some of the secure user-centric information (“evaluate content provided by the first computer application”) (*id.*, [0036], claims 8, 20, 32; *see also id.*, claims 9, 21, 33). *See also* EX1104, Abstract, [0008], [0028], [0031-32], [0035], [0039-40], [0050-62], [0065], [0067-68], claim 1; EX1108, 18, 23.

b) Element [1.2]

[1.2] at least one communication interface facilitating wired and/or wireless communications with the at least one user platform via one or more transmission media;

77. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests it. EX1104, [0028-30], [0035-36], [0040], [0045], [0068-69]; EX1108, 25. For example, the PCT publication discloses that the apparatus (e.g., “servers or networks of servers”) are “implemented on the World Wide Web” (*id.*, [0068]) and include wired or wireless “transmission media” (*id.*, [0069]; *see also id.*, [0034], [0040], [0045]). A POSITA would have understood or at least found it obvious that the servers include at least one communication interface to be able to perform the PCT publication’s prescribed communications, including wired and/or wireless communications with other networked devices. EX1104, [0020], [0027-31], [0034], [0038], [0040-41], [0045], [0047], [0068-69].

c) Element [1.3]

[1.3] at least one memory storing processor-executable instructions; and

78. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests that the apparatus (e.g., “servers or networks of servers”) comprises at least one memory

storing processor-executable instructions (“computer-readable storage media including computer-readable instructions configured to cause one or more computer processors to execute”). EX1104, claims 1, 8; *see also id.*, Abstract, [0009], [0069].

d) Element [1.4]

[1.4] at least one processor communicatively coupled to the at least one communication interface and the at least one memory, retrieving processor-executable [sic] 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:

79. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests it. EX1104, Abstract, [0009], [0021-22], [0031], [0035-36], [0040], [0061], [0068-69], claim 8; EX1108, 25. The PCT publication discloses that the apparatus (e.g., “servers or networks of servers”) comprises at least one processor (“one or more computer processors”) that implements one or more of the software modules (a channel server, a channel alert server, an identity management server, etc.) (EX1104, [0027]; *see also id.*, [0002], [0031-32], [0035-36], [0039-40], [0050-62], [0065], [0068]). EX1104, Abstract, claims 1, 8-11, [0009]; *see also id.*, [0068-69]. The PCT publication also discloses that the one or more computer processors “execute operations” (EX1104, Abstract) and one of the operations described by the PCT publication is to “evaluate content provided by the first computer application”) (*id.*,

[0036], claims 8, 20, 32). A POSITA would have understood or found it obvious that the at least one processor is communicatively coupled to, and retrieves processor-executable instructions from, the at least one memory (“computer readable storage media”) and executes the processor-executable instructions at least because the PCT publication discloses that the memory “provid[es] instructions to [the] processor for execution.” *Id.*, [0069]). A POSITA also would have understood or found it obvious that the at least one memory is communicatively coupled to the at least one communication interface at least because it would need to be communicatively coupled to the communication interface to perform the PCT publication’s prescribed functions, including transmitting information to other devices (e.g., alerts to the user’s device(s)). EX1104, [0020-23], [0036], [0039], [0051], [0066-69].

e) Element [1.5]

[1.5] A) implementing 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;

80. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests that the

apparatus (e.g., “servers or networks of servers”) implements a “channel grid framework” (e.g., EX1104, Abstract, [0031]) including a matrix of a plurality of authorized channels (“three-by-four (3x4) matrix” that “display[s] twelve channels”) (*id.*, [0031]; *see also* EX1108, 19). EX1104, FIG. 3, [0009], [0036]; EX1108, 25.

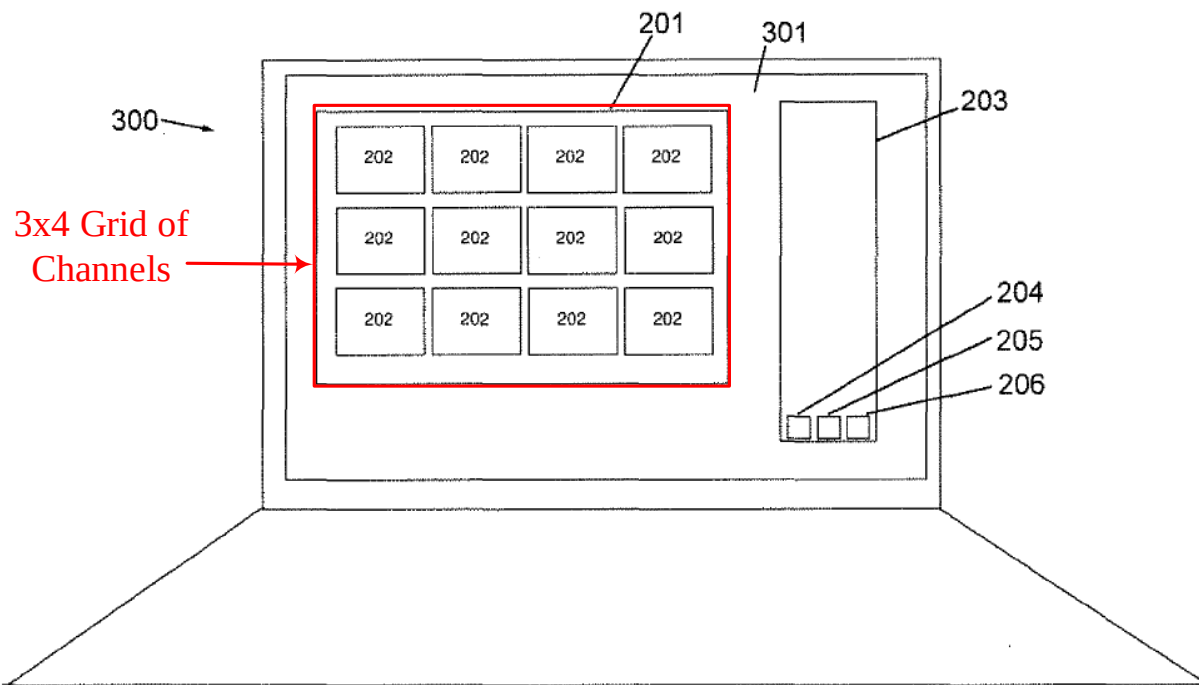


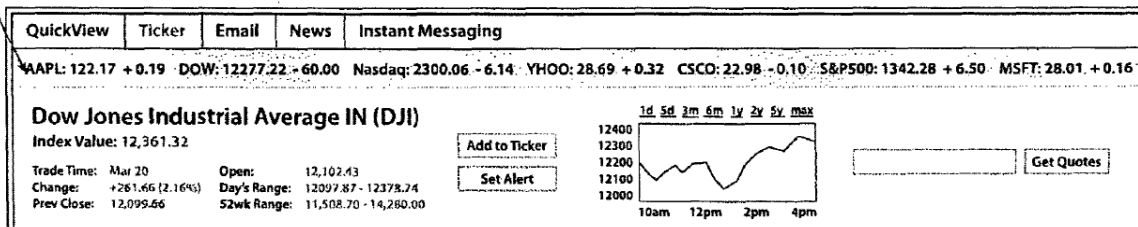
FIG. 3

EX1104, FIG. 3 (red annotations added).

81. The PCT publication also discloses or suggests that 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 at least because the PCT publication discloses that (1) “the underlying actions enabled through each channel’s design” is “[b]ased on the [user’s] access rights” (EX1104, [0024]) and (2) “access and security protocols may be identified for each condition and action to be performed by the user” within a given channel (EX1104, [0036]). The PCT publication further discloses or suggests that the plurality of authorized channels include at least a first channel (any of the twelve “channels 202”) (*e.g.*, EX1104, [0031], FIG. 3) through which the user receives and/or interacts with first channel information (“streaming video, audio, voice-over-IP communication, environmental monitoring information, financial services information ... email, address book information, instant messaging information ... pictures, video,” etc.) (*id.*, [0022]). For example, the PCT publication discloses or suggests a stock/financial services channel that provides stock price information. EX1104, [0022]; EX1108, 45.

Stock Ticker: Ticker will be live, constantly updating and displaying stocks based on user-defined preferences.



EX1108, 45.

f) Element [1.6]

[1.6] 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;

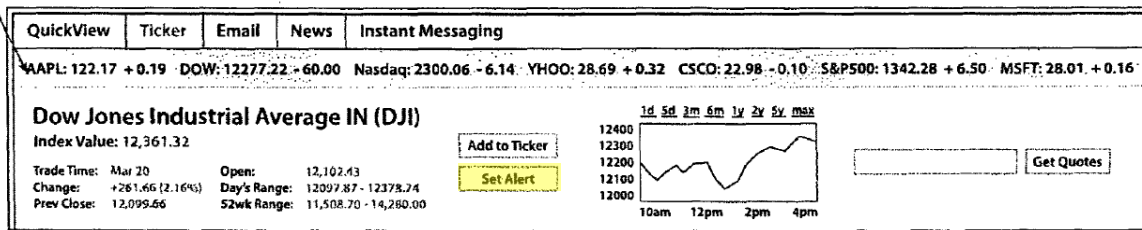
82. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication expressly discloses it. EX1104, [0034] (“a user profile may be established which may identify user preferences, platform identities, and service support instructions as to how the user wishes information to behave on the selected platform”).

g) Element [1.7]

[1.7] C) receiving configuration data indicating one or more user preferences regarding alerts transmitted via the first channel based on the user profile;

83. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses it, for visual and auditory alerts. EX1104, [0023], [0039]; EX1108, 45. “[A] user or developer may define threshold conditions with definitive values assigned to events, conditions ...” and that “[i]f an established condition is met, the channel alert server ... provide[s] a visual or auditory alert in the channel.” EX1104, [0039]. For example, the user can set a stock alert.

Stock Ticker: Ticker will be live, constantly updating and displaying stocks based on user-defined preferences.



EX1108, 45 (yellow annotations added).

h) Element [1.8]

[1.8] D) receiving session data indicating a current state of at least one external device of the user;

84. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses that the channel alert server “determine[s] the active devices of the subscriber” of the alert, and, as explained below for element [1.10], the combination includes Austin-Lane’s teachings to determine a notification method based on session data⁹ (“presence information”). EX1104, [0039]; *infra* Section IX.A.1.j. Thus, when implementing Austin-Lane’s teachings to determine a notification based on the session data

⁹ The ’948 patent provides that session data indicates whether the user has an active session (i.e., whether they are online or offline). *See, e.g.*, EX1101, 20:60-21:15, 23:20-43.

(“presence information”) in the PCT publication’s disclosed system, a POSITA would have understood or found it obvious that the at least one processor receives the session data indicating a current state of the at least one external device¹⁰ of the user (i.e., data indicating whether and which of the user’s device(s) is/are active) (see EX1101, 21:1-15, 23:28-43) to “determine the active devices of the subscriber,” as taught by the PCT publication, and determine a notification method based on the session data, as taught by Austin-Lane. *Id.*, [0039]; EX1105, [0006-9], [0019], [0021], [0023-24], [0027], [0029], [0035], [0039], [0046], [0055].

i) Element [1.9]

[1.9] E) 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):

85. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses that the channel alert server “may continually monitor application and information activities defined by

¹⁰ The ’948 patent refers to user devices, user platforms, and clients synonymously. See, e.g., EX1101, 8:25-26 (“[u]ser devices 118 serve as a user platform operated by a user 116”), 8:40-41 (“user devices or ‘platforms’ (clients)”).

a channel. By way of non-limiting example, a user or developer may define threshold conditions with definitive values assigned to events, conditions, logical workflows, discrete information values or signal data. If an established condition is met, the channel alert server [] may ... provide a visual or auditory alert in the channel.” EX1104, [0039]; *see also id.*, claim 9.

j) Element [1.10]

[1.10] 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;

86. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because Austin-Lane discloses it. Specifically, Austin-Lane teaches determining a notification method (a “delivery mechanism” (EX1105, *passim*), which can include: **(1)** the user device(s) to send the notification to (e.g., phone, PDA, notebook computer, desktop computer) (*e.g.*, EX1105, [0005], [0029], [0032], [0046], [0061], FIG. 1); **(2)** the communication protocol to use to send the notification, i.e., how to send the notification (e.g., SMTP (for email), SMS (for texts), HTTP (for web browsers)) (*e.g.*, EX1105, [0004], [0033], [0048]); and **(3)** the type of alert to provide, i.e., how to present the notification, (e.g., text, an icon, a pop-up window, a video, an email, an audible or tactile alarm) (*e.g.*, EX1105, [0039], [0046], [0079])), based on the current state of the at least one external device indicated by the session data (“presence information” (EX1105,

passim)), which may include whether and on which device(s) the user is online and/or whether and on which applications the user has an active session (*e.g.*, EX1105, [0046], [0066-67], [0074-77])). *See also* EX1105, [0006-9], [0019], [0021], [0023-24], [0026-28], [0031-32], [0035], [0047-48], [0055], [0064-65], [0071-73], FIGS. 2, 7-9. For example, if “the presence information [] indicate[s] that the user 305 presently is online using notebook computer 310*d* ... and that the user 305 has an active IM connection ... the notification delivery service 352 may provide the notification to the user 305 using an instant message to the notebook computer 310*d*.” EX1105, [0046].

87. As explained above, a POSITA would have been motivated to combine the PCT publication’s disclosed system with Austin-Lane’s teachings to determine a notification method for the alert based on the user’s presence information to provide the alert to the user “without significant delay.” *E.g.*, EX1105, [0046]. Because the PCT publication’s system already includes a channel alert server that determines the active devices of the user and delivers an alert to the user’s device(s) (EX1104, [0023], [0039], claim 9; EX1108, 23, 25, 45) and because the PCT publication discloses setting the same type of alert (stock alert) and presenting it in the same way (visually) as Austin-Lane (EX1104, [0039]; EX1105, [0036-40], [0057-58]; EX1108, 45), modifying the PCT publication system to include these teachings from Austin-Lane would have required only

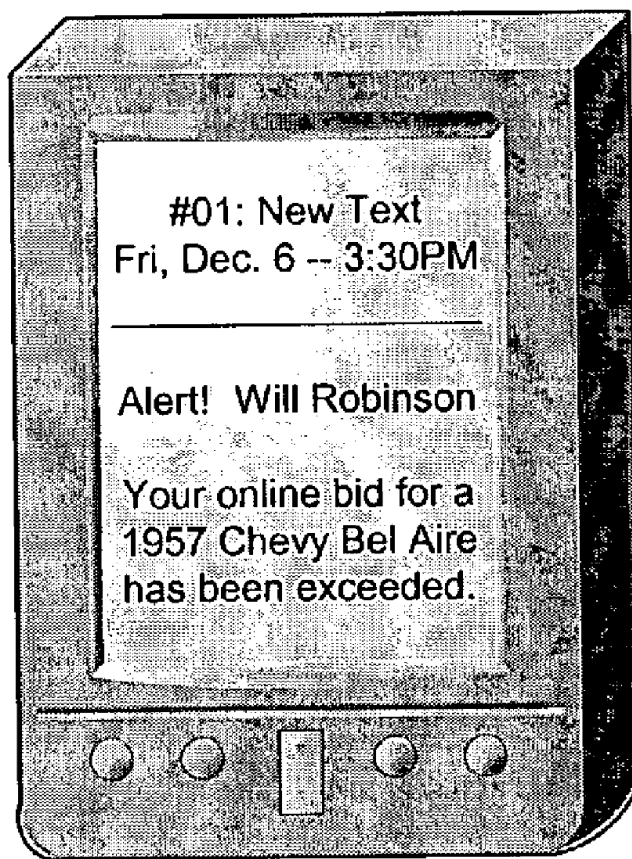
minor software changes that a POSITA would have reasonably expected to succeed in achieving.

k) Element [1.11]

[1.11] 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

88. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because Austin-Lane discloses or suggests it. Austin-Lane describes how notification data (“electronic data” in the form of an “electronic notification”) (e.g., EX1105, [0026], [0028]; *see also id.*, Abstract, [0014-15], [0019-20], [0046], claim 1), is generated and formatted according to the determined notification method. *Id.*, [0031], [0039], [0041], [0045-46], [0079]. The “notification generation service [] generates notifications based on the ... notification delivery service [] that delivers the notifications to the user [] using one or more of the delivery mechanisms.” *Id.*, [0041]; *see also id.*, [0044] (“Content for the notification may be provided by the notification generation service”). The delivery mechanisms “format the notification using a standard protocol, such as, ... (SGML), ... (XML), ... (HTML), ... (DOM) ...” (*Id.*, [0031]) and deliver the alert using a networking protocol, such as “SMS,” “WAP,” “TCP,” “IP,” (*Id.*, [0048]), etc. 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 at least because it “provide[s] the notification to the user.” EX1105, [0039]; *see also id.*, [0009], [0046], [0079], claim 8, FIG. 10. For example, the notification data may cause an auction alert to be displayed to the user on a PDA or mobile phone. EX1105, [0079], FIG. 10.



PDA or mobile phone

EX1105, FIG. 10. The alert may be “an instant message, an icon, a pop-up window, a video, a flashing indicator, and/or an audio, or tactile alarm.” EX1105, [0039]; *see also id.*, [0079].

89. As explained above at paragraphs 74-75, when implementing Austin-Lane's teachings to determine a notification method in the PCT publication's system, a POSITA also would have been motivated with a reasonable expectation of success to combine Austin-Lane's concomitant teachings to generate notification data according to the determined notification method. A POSITA would have understood and/or at least found it obvious that the content and/or format of the notification data depends on the notification method (e.g., the notification data for an instant message to a laptop is different than a flashing indicator to a phone) (EX1105, [0039], [0046], [0066], [0079]). Thus, to ensure the notification is properly sent to and received by the user, a POSITA would have understood or found it obvious that the notification data must be generated to conform to the requirements/specifications of the determined notification method, as taught by Austin-Lane. EX1105, [0031], [0039], [0041], [0045-46], [0079].

I) Element [1.12]

[1.12] H) controlling the at least one communication interface to transmit the notification data to the 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.

90. In my opinion, the PCT publication+Austin-Lane combination teaches this element at least because the PCT publication discloses or suggests it in the

context where the user has only a single external device. The PCT publication discloses or suggests that the apparatus controls the at least one communication interface to transmit the notification data to the external device via the first channel without being requested by the user at least because the PCT publication discloses transmitting the notification to the external device “when the evaluated content meets the predetermined threshold condition” (i.e., whether or not the user requests the notification). EX1104, claim 9; *see also id.*, [0023], [0039]. The PCT publication also discloses or suggests that, like the transmission of any other information, the transmission of the notification data to the 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. *Supra* Section IX.A.1.e (claim element [1.5]); EX1104, [0024] (“the underlying actions enabled through the channel’s design” are “[b]ased on the [user’s] access rights”), [0036] (“access and security protocols may be identified for each condition and action to be performed by the user”).

2. Claim 2

[2.1] 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), the at least one processor performs H).

91. As explained above for claim element [1.9-1.12], the PCT publication discloses or suggests that the processor performs H) if the one or more events,

conditions, logical workflows, discrete information values or signal data is/are determined in E). *Supra* Sections IX.A.1.i-l. Thus, in my opinion, the PCT publication+Austin-Lane combination renders this claim obvious.

3. Claim 3

[3.1] 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), 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.

92. In my opinion, the PCT publication+Austin-Lane combination renders this claim obvious because of the PCT publication's disclosure. The PCT publication discloses that "[i]f an established condition is met, the channel alert server 211 may notify the identity management server 208 to confirm the subscriber of the event, determine the active devices of the subscriber, and then pass through the web services gateway 207 and the channel grid framework 201 to provide a visual or auditory alert in the channel 202." EX1104, [0039]. A skilled artisan would have understood or at least have found it obvious that the processor would have to store the trigger information in memory to later transmit the trigger information to the web services gateway and the channel grid framework, as expressly taught by the PCT publication. Moreover, a POSITA would have understood or at least have found it obvious that the processor would store the

trigger information in memory while waiting for the identity management server to confirm the subscriber of the event and determine the active devices of the user.

4. Claim 4

[4.1] The apparatus of claim 3, wherein if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E), the at least one processor further performs H).

93. As explained above for claim element [1.9-1.12], the PCT publication discloses or suggests that the processor performs H) if the one or more events, conditions, logical workflows, discrete information values or signal data is/are determined in E). *Supra* Sections IX.A.1.i-l. Thus, in my opinion, the PCT publication+Austin-Lane combination renders this claim obvious.

5. Claim 5

[5.1] 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.

94. In my opinion, the PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication expressly discloses at least one of the claim-recited information types. *E.g.*, EX1104, [0022], claim 7.

6. Claim 6

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

95. In my opinion, the PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication expressly discloses that “[n]on-limiting examples of triggers may include exceeding a quantified numerical limit and multiple similar events trending in a certain direction.” EX1104, [0023].

7. Claim 7

[7.1] The apparatus of claim 1, wherein E) comprises: E1) 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) establishing a trigger, based at least in part on E1), if the at least one criterion is met.

96. In my opinion, the PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication discloses or suggests the limitations that claim 7 adds to independent claim 1. EX1104, [0023] (“The trigger may cause the information channel to ... provide a notification to the user.”), [0039], claim 9 (“[C]omparing the evaluated content provided by the first computer application to a predetermined intelligent alert threshold condition; and

displaying an alert condition on the first and second platforms when the evaluated content meets the predetermined threshold condition.”).

8. Claim 10

[10.1] The apparatus of claim 1, wherein the at least one processor performs H), 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.

97. As explained above for claim element [1.9-1.12], the PCT publication discloses or suggests that the processor performs H). *Supra* Sections IX.A.1.i-l. The PCT publication also discloses or suggests that the alert is “a visual or auditory alert.” EX1104, [0039]. Thus, in my opinion, the PCT publication+Austin-Lane combination renders this claim obvious.

9. Claim 11

[11.1] The apparatus of claim 1, wherein the at least one processor performs H), and wherein the at least one alert includes activation of at least one channel of the plurality of channels.

98. As explained above for claim element [1.9-1.12], the PCT publication discloses or suggests that the processor performs H). *Supra* Sections IX.A.1.i-l. The PCT publication also discloses or suggests that the alert includes activation of at least one channel because it discloses that the alert is provided “in the channel.” EX1104, [0039]; see also EX1108, 56. Thus, in my opinion, the PCT publication+Austin-Lane combination renders this claim obvious.

10. Claim 13

[13.1] The apparatus of claim 1, wherein the at least one processor performs H), and wherein: H) 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) 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) 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.

99. As explained above for claim elements [1.5] and [1.11-12] the PCT publication discloses or suggests that the processor transmits to the external device: (1) channel information (e.g., stock information) and (2) notification data that causes the alert to be provided. *Supra* Sections IX.A.1.e, IX.A.1.k-l. As also explained above for claims 10-11, the PCT publication discloses or suggests that the appearance of the authorized channel changes to generate the alert at least because the PCT publication discloses that the alert is a visual alert that is provided in the channel. EX1104, [0039]; *see also supra* Sections IX.A.8-9. Thus, the PCT publication+Austin-Lane combination renders this claim obvious.

11. Claim 18

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

100. The PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication expressly discloses that the external device on which the alert appears includes “a mobile device, a television (set top box), [and] a Blu-ray player.” EX1104, [0039].

12. Claim 19

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

101. As explained above for claim element [1.5], the PCT publication discloses or suggests that the processor controls the at least one communication interface to transmit at least some of the first channel information (e.g., stock price information) to the user platform. *Supra* Section IX.A.1.e; EX1104, [0022]; EX1108, 45. Thus, the PCT publication+Austin-Lane combination renders this claim obvious.

13. Claim 23

[23.1] 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) 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.

102. The PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication discloses that the apparatus

“support[s] [] user, application, and device authentication.” EX1108, 23; *see also* EX1104, [0035-36], [0054].

14. Claim 29

[29.1] The apparatus of claim 1, wherein in A), the at least one processor implements a channel server that defines one or more 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) controlling the at least one communication interface to transmit at least some of the first channel information to the at least one user platform.

103. The PCT publication+Austin-Lane combination renders this claim obvious at least because the PCT publication discloses or suggests the limitations that this claim adds to claim 1. EX1104, [0040], [0061], claim 33. The “channel server [is] configured to provide the first computer application” (EX1104, claim 33), including the information associated with the first computer application. EX1104, [0040], [0061], claim 33.

15. Claims 35-36

104. Claims 35 and 36 are substantively identical to claim 1 except they do not require a communication interface or processor. Thus, these claims are obvious over for the same reasons claim 1 is obvious. *Supra* Section IX.A.1.

**X. SECONDARY CONSIDERATIONS
(OBJECTIVE INDICIA OF NON-OBVIOUSNESS)**

105. I am not aware of any allegations by the named inventors of the '948 patent or any assignee of the '948 patent that any secondary considerations tend to rebut the obviousness of any challenged claim of the '948 patent.

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

Dated: September 20, 2024

A handwritten signature in black ink, appearing to read 'Chris Schmandt', written over a horizontal line.

Signature

APPENDIX A

Christopher Schmandt

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Education

M.I.T., Master of Science, Visual Studies (Computer Graphics), 1980

M.I.T., Bachelor of Science, Computer Science, 1978

Professional Experience -- MIT

Media Laboratory, Principal Research Scientist, 1985-2018 (retired)
Director, Living Mobile Research Group (formerly Speech + Mobility)

Architecture Machine Group, Research Associate, 1980-1984

Architecture Machine Group, Research Assistant, 1979-1980

Architecture Machine Group, Graphics Programmer, 1977-1979

Departmental Undergraduate Research Opportunities Program Coordinator, 1984-2018

Laboratory Intellectual Property Committee 2001-2016, chair 2002-2009

Departmental Committee on Graduate Studies, 1996-2001, 2007-2018

Sponsored Research Activities

Alerting and Mobile Messaging, Digital Life Consortium, MIT Media Lab, 1997-2018

Acoustical Cues to Discourse Structure, National Science Foundation, Principal Investigator, 1995-1998

Parsing Radio, News in the Future Consortium, MIT Media Lab, 1993-1999

Desktop Audio, SUN Microsystems, Inc., Principal Investigator, 1989-1996

Voice Interaction in Hand Held Computers, Apple Computer, Principal Investigator, 1991-1993

Voice Interfaces for Network Services, AT&T, Principal Investigator, 1989-1991

Back Seat Driver, NEC, Principal Investigator, 1988-1991

Acoustic and Visual Cues for Speech Recognition, DARPA, co-Principal Investigator, 1986-1988

Personal Computers and Telephony, NTT Public Corporation, Principal Investigator, 1984-1989

Home Telecomputing, Atari, Inc., Principal Investigator, 1983

Testifying legal engagements within the last five years, representing party in italics

- *Microsoft v. SpeakWare*, 2019
- *Bumble Trading LLC v. Match Group LLC*, 2019
- *Tile Inc. v. Cellwitch Inc.*, 2019
- *Blackberry Ltd v. Facebook, Inc* 2020
- *EROAD Ltd v. PerDiem Co.*, 2020
- *Snap Inc. v. SRK Technology LLC*, 2020
- *Shopify Inc Ltd v. Express Mobile Inc.*, 2020
- *Express Mobile Inc. v Wix Ltd* 2020
- *Motorola Mobility LLC v. Ironworks patents, LLC.* 2021
- *Express Mobile Inc. v GoDaddy Inc* 2021
- *Bumble Trading LLC v. Kinectus, LLC.* 2021
- *Tile, Inc v. Linquet Technologies, Inc.* 2021
- *Facebook, Inc. v. Palo Alto Research Center, Inc.* 2021
- *Unified Patents, LLC v. Gesture Technology Partners, LLC.* 2021
- *Quantum Metric, Inc v. Content Square Isreal, Ltd.* 2021
- *Meta Platforms Inc. v. AlmondNet, Inc* 2022
- *Apple Inc. v. Zentian Limited* 2022
- *Google LLC v. Mira Advanced Technology Systems Inc* 2022
- *Google LLC v. Robocast* 2023
- *Google LLC v. Buffalo Patents LLC* 2023
- *Amazon v. AlmondNet* 2023
- *Google LLC v. Valtrus* 2023
- *Samsung Electronics Co., Ltd v. Stanton Techiya, LLC* 2024
- *Roku, Inc. v. AlmondNet, Inc.* 2024
- *LinkedIn v. AlmondNet, Inc* 2024
- *Google, LLC v. Dialect, LLC* 2024

Professional Experience -- Intellectual Property

Co-inventor on U.S. Patents

- 5,177,685 for "Automobile navigation system using real time spoken driving instructions"
- 6,728,348 for "System for storing voice recognizable identifiers using a limited input device such as a telephone key pad"
- 6,937,986 for "Automatic dynamic speech recognition vocabulary based on external sources of information"
- 7,098,776 for "Methods and apparatus for vibrotactile communication"
- 7,392,280 for "Method for summarization of threads in electronic mail"
- 7,738,637 "Interactive voice message retrieval"
- 7,443,283 for "Methods and apparatus for connecting an intimate group by exchanging awareness cues and text, voice instant messages, and two-way voice communications"
- 7,865,560 for "System for summarization of threads in electronic mail"
- 8,121,653 for "Methods and apparatus for autonomously managing communications using an intelligent intermediary"
- 8,135,128 for "Animatronic creatures that act as intermediaries between human users and a telephone system"

Co-inventor on U.S. Patent Applications

- 20020076009 "International dialing using spoken commands"
- 20020087328 "Automatic dynamic speech recognition vocabulary based on external sources of information"

- 20020064257 "System for storing voice recognizable identifiers using a limited input device such as a telephone keypad"
- 20030023688 "Voice-based message sorting and retrieval method"
- 20030081738 "Method and apparatus for improving access to numerical information in voice messages"
- 20030144846 "Method and system for modifying the behavior of an application based upon the application's grammar"
- 20030158903 "Calendar bar interface for electronic mail interaction"

Publications

Field Study of a Tactile Sound Awareness Device for Deaf and Hard of Hearing Users ISWC 2020. (with D. Jain, B. Chiu, S. Goodman, L. Findlater, J. Froehlich)

SkinMorph: Texture-Tunable On-Skin Interface Through Thin, Programmable Gel ISWC 2018. (with Cindy Kao, M. Banforth, D. Kim)

Technical Interventions to Detect, Communicate, and Deter Sexual Assault. ISWC 2017. (with Manisha Mohan)

Exploring Interactions and Perceptions of Kinetic Wearables. DIS 2017. (with Cindy Hsin-Liu Kao, D. Ajilo, O. Anilonyte, A. Dementyev, I. Choi and S. Follmer)

Leveraging User-made Predictions to Help Understand Personal Behavior. MobileHCI 2017. (with Miriam Greis, Tilman Dangler and Albrecht Schmidt)

Rovables: On-Body Robots as Mobile Wearables. UIST 2016. (with Cindy Hsin-Liu Kao, A. Dementyev, I. Choi, D. Ajilo, M. Xu, and S. Follmer)

DuoSkin: Rapidly Prototyping On-Skin User Interfaces Using Skin-Friendly Materials. ISWC 2016. (with Cindy Hsin-Liu Kao, Christian Holz, Asta Roseway, and Andres Calvo)

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