UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MULLEN INDUSTRIES LLC,
Patent Owner.

Case No. IPR2022-01389
U.S. Patent No. 11,190,633

DECLARATION OF GERRY CHRISTENSEN

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I, Gerry Christensen, of Greenville, South Carolina, declare as follows:

1. My name is Gerry Christensen. I have been retained by Patent Owner, Mullen Industries LLC ("Patent Owner"), as a technical consultant and expert witness in the fields of telecommunications, network architecture and design for wireless communications and related consumer products in connection with an inter partes review ("IPR") petition challenging the validity of U.S. Patent No. 11,190,633 ("the '633 Patent") filed by the Petitioner in Case No. IPR2022-01389 as shown in the above caption. This Declaration is based on my personal knowledge and experience.

2. I have reviewed and understand the '633 Patent to be directed to cellular notifications and, more specifically, to embodiments for a user of a mobile telephonic device to be remotely notified of activity on the mobile telephonic device when that device is not physically with the user or otherwise readily accessible by the user. The structure of the claimed invention is a wristwatch, and the function of the claimed invention is receiving wireless communications from a mobile telephonic device of a user to notify the user of activity occurring at the mobile telephonic device, e.g., an incoming phone call. *See, e.g.*, Ex. 1001, 1:18-43.

3. I understand that Petitioner seeks cancellation of claims 1-39 of the '633 Patent and that this Declaration is being filed in support of the validity of the

claims and, more specifically, in support of Patent Owner's Response to the Petition ("Response").

4. I also understand that Petitioner in this matter has submitted a declaration from Dr. Harry V. Bims in support of the Petition. I have reviewed that declaration and the citations identified in that declaration in detail. I also have reviewed the transcript of the deposition of Dr. Bims that occurred in this matter on May 23, 2023.

5. I reserve the right to supplement this Declaration if additional information that affects my opinions becomes available. It may be necessary for me to revise or supplement this Declaration, or submit a supplemental or responsive Declaration, based on any response by Petitioner or further opinions from Dr. Bims.

6. If called to testify as an expert witness, I expect to provide testimony regarding, among other things, the level of skill, education and experience of a person skilled in the fields of telecommunications, network architecture and design for wireless communications and related consumer products at the time of the invention for this case.

7. My retention for this matter is through IMS Consulting and Expert Services ("IMS"). IMS bills $600 per hour for my services. My compensation is not contingent upon the particular opinions that I provide, and I have no financial interest

in the outcome of this matter. I have no ownership or beneficial interest in any of the parties to this case.

I. EXPERIENCE

8. My curriculum vitae and biographical summary are attached as Exhibit A to this Declaration.

9. I have over 35 years of experience in planning, engineering, product management, and business development for telecommunications networks, wireless applications, and services. I have specialized technology and applications experience in the areas of intelligent networks, next generation networks including IMS, mobile location services/technology, mobile messaging services (including text and multimedia-based messaging), and prepaid wireless.

10. I received my Bachelor of Science degree in Industrial and Systems Engineering in 1988 from the University of Florida. I received a Master degree in Business Administration with a concentration in management and use of information systems in 1995. I have been a registered Professional Engineer for over 20 years. I am the author of two books regarding telecommunications network architecture and applications – Data on SS7 and Yes 2 Prepay – and the co-author of two books regarding telecommunications network architecture and applications – Mobile Positioning and Location Management and Wireless Intelligent Networking.

11. In 1988, I began working at BellSouth Telecommunications in a number of different capacities, including work with switching equipment and analysis of traffic patterns and network usage. In 1992, I began working at BellSouth's Regional Planning and Engineering Center (RPEC), where I was part of a group that was responsible for engineering and planning for the entire SS7 network.

12. I started working for BellSouth Cellular in 1995 as Senior Manager of Network Strategic Planning. In that position, I was responsible for the planning, engineering, and introduction of the first Signaling System number Seven (SS7) system for BellSouth Cellular, which formed the backbone of all of the company's cellular signaling and support of core cellular services, including SMS messaging. I also led a team responsible for selecting and implementing the first stand-alone Home Location Register (HLR) with BellSouth Cellular.

13. From 1997 to 1999 and then again from 2001 to 2005, I was employed with Illuminet (subsequently acquired by VeriSign) as a Senior Product Manager and then Director of Wireless Business Development. During my employment, I was responsible for the planning and introduction of one of the first inter-carrier SMS messaging gateway systems in the USA. I was also part of a VeriSign team that evaluated and analyzed MMS technology from a technical and business perspective.

14. In 2005, I co-founded Zoove, a mobile marketing company. While with Zoove, I was the CTO, responsible for the over-all technical vision and direction for the company, as well as product management. In addition, I defined the overall technical functionality and features of products, including a mobile marketing application that used SS7 signaling and intelligent networks. I engineered and designed the first prototype of that product in conjunction with Alcatel-Lucent, including testing for switch integration.

15. In 2010, I started Wireless WayPoint, an independent consultancy firm focusing on telecommunications, wireless, and internet-based applications. Consulting practice areas include strategy and development of emerging business models and ecosystems, network infrastructure, circuit and IP-based applications, operational and business support systems.

16. In 2020, I was employed with Transaction Network Services as Senior Product Manager. In that role, I was responsible for analytics engine efficacy in support of call origination and termination services. This included internal customers, such as branded calling, and external customers, such as carriers, enterprise, traffic aggregators, and call centers. I was also responsible for related data strategy, product efficacy and continuous improvements. I worked with the data science team to ensure AE addresses emerging threats and opportunities. This included algorithm model tuning and decisions about data sources and usage.

17. In 2021, I joined my current employer, YouMail, as VP of Business Development. In this role, I am responsible for driving new business development and channel relationships for enterprise, service providers, and strategic partners. I develop new business strategies and execute sales plans in alignment with corporate goals. I also develop and execute against revenue plans that leverage unique market positioning, as well as operationalize plans for solution adoption and growth with measurable business metrics and success criteria.

II. THE '633 PATENT

18. For purposes of my opinions provided herein, Petitioner and Dr. Bims fairly describe the invention disclosed and claimed in the '633 Patent. Pet., 3-7; Ex. 1003, ¶¶ 43-56.

III. PETITIONER'S OBVIOUSNESS GROUNDS

19. The Petition asserts Grounds 1-4 alleging obviousness of claims 1-39 of '633 Patent:

Ground	References/Basis	Claims Challenged
1	**Narayanaswami**, Vock	1-18, 22, 27, 29, 35
2	**Narayanaswami**, Vock and the Nokia 8890 User Guide	19-21, 23-26, 28, 30-34, 36-39
3	**Fujisawa**, Vock	1-10, 13, 16, 18, 19, 22-27, 35-39
4	**Fujisawa**, Vock and the Nokia 8890 User Guide	11, 12, 14, 15, 17, 20, 21, 28-34

IV. MATERIALS CONSIDERED

20. I have considered the following documents:

- Patent Owner Response submitted in this matter;
- The ’633 Patent (Ex. 1001);
- The prosecution history of the ’633 Patent (Ex. 1002);
- U.S. Patent No. 6,417,117 to Narayanaswami *et al*. (Ex. 1005);
- U.S. Patent Publication No. 2002/0115478 to Fujisawa *et al*. (Ex. 1006);
- U.S. Patent No. 6,539,336 to Vock *et al*. (Ex. 1007);
- The Nokia 8890 User Guide (Ex. 1008);
- The Petition, and all other materials cited in the Petition, submitted in this matter;
- Patent Owner’s Preliminary Response submitted in this matter;
- Institution Decision Granting Institution issued in this matter
- Declaration of Dr. Harry V. Bims (Ex. 1003);
- Transcript of the deposition of Dr. Harry V. Bims in this matter (Ex. 2011); and
- Any and all other documents cited as Exhibits to this Declaration or the Response.

V. CLAIM CONSTRUCTION

21. I have been informed and understand that in an inter partes review claim terms are construed according to their plain and ordinary meaning as understood by one of ordinary skill in the art at the time of the invention in view of the claims, the specification and the prosecution history of the patent. Based on my review of the claims of the ’633 Patent, it is my opinion that the terms of these claims should be accorded their plain and ordinary meaning.

22. More specifically, I understand that Patent Owner has posited in its Response to the Petition that the plain and ordinary meaning of the claim term “said first event and second event are different” recited in Claim 1 of the ’633 Patent requires events of different types, e.g., an incoming call and a text message, and does not encompass events of the same type, e.g., serial incoming calls. Based on my review of the Response, I agree with Patent Owner’s proposed plain and ordinary meaning of this term.

23. I further understand that Patent Owner has posited in its Response to the Petition that the plain and ordinary meaning of the claim term “said device includes motion sensing operable to distinguish between a plurality of different types of motion” recited in Claim 1 of the ’633 Patent means that the device itself contains the motion sensing capability. Based on my review of the Response, I agree with Patent Owner’s proposed plain and ordinary meaning of this term.

VI. LEGAL PRINCIPLES

24. I was asked to analyze the ’633 Patent and the references discussed herein from the perspective of a person of ordinary skill in the art at the time of invention. I have been asked to assume, for purposes of this Declaration, that the time of the invention is the earliest claimed priority date of the ’633 Patent, which I understand is March 14, 2003.

25. I understand that Petitioner bears the burden in this IPR to prove unpatentability and that the burden of persuasion does not shift to the Patent Owner. I also understand that to prevail, Petitioner must support its challenges by a preponderance of the evidence, which I understand to mean that Petitioner has the burden to convince the Patent Trial and Appeal Board that there is a greater than 50% chance that the assertion is true. I am also informed that the need for Petitioner to support its challenges with sufficient evidence is especially true when the Petition raises only obviousness grounds, as is the case here.

26. In terms of obviousness, I understand that a patent claim is unpatentable as obvious only if the differences between the prior art and claimed subject matter are such that the claimed subject matter, as a whole, would have been obvious to skilled artisans like myself at the time of the invention.

27. I am informed that there is a general framework for analyzing whether an invention would have been obvious at the time of the invention to me and other

skilled artisans that includes (1) analyzing the scope and content of the prior art, (2) analyzing differences between the prior art and the claims at issue, (3) considering the level of ordinary skill in the pertinent art and (4) evaluating whether other, or "secondary," considerations, such as commercial success, long felt but unsolved needs, failure of others or copying might give light to the circumstances surrounding the origin of the subject matter claimed in the '633 Patent.

28. I also understand that whether skilled artisans would have been motivated to modify the teachings of a reference is a question of fact. I am further informed that to satisfy its burden of proving obviousness, Petitioner must articulate a reason why a person of ordinary skill in the art like myself or Dr. Bims would have combined or modified the cited prior art references. It is also my understanding that in addition to demonstrating that skilled artisans would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, Petitioner must also prove by a preponderance of the evidence that skilled artisans would have had a reasonable expectation of success in doing so.

29. I have been informed that Petitioner cannot satisfy its burden of proving obviousness using conclusory statements and instead must articulate specific reasoning, based on evidence of record, to support its conclusion of obviousness.

30. The opinions expressed in this Declaration are from the perspective of a person of ordinary skill in the art as of March 14, 2003.

VII. GROUNDS 1-4 IN THE PETITION DO NOT SHOW BY A PREPONDERANCE OF THE EVIDENCE THAT CLAIMS 1-39 WOULD HAVE BEEN OBVIOUS

31. It is my opinion that the Petition does not demonstrate in Grounds 1-4 that all claims of the ’633 Patent would have been obvious to skilled artisans at the time of the invention in March 2003. More specifically, it is my opinion that Petitioner has not sufficiently proven that an ordinarily skilled artisan would have been motivated to make the combinations set forth in its asserted grounds or that Narayanaswami or Fujisawa alone teach certain claim limitations, as provided in the Patent Owner Response and in this Declaration.

A. The Level of Ordinary Skill in the Art

32. I understand that a person of ordinary skill in the art is a hypothetical person who is presumed to be aware of pertinent art including knowledge in the art, thinks along conventional wisdom in the art, and is a person of ordinary creativity. I understand that this hypothetical person of ordinary skill in the art is considered to have the normal skills and knowledge of a person in the technical field.

33. I have reviewed the level of skill in the art proposed by Dr. Bims in his declaration and generally agree that a person of ordinary skill in the relevant art of the ’633 Patent would have been someone with at least a Bachelor of Science degree in computer science, computer engineering, electrical engineering or a similar degree with one or two years of experience with operating system and application

software in mobile devices, such as cell phones, personal digital assistants, and smart watches. Ex. 1003, ¶ 61.

B. The Scope and Content of the Cited References

1. The Primary References

34. I understand that Grounds 1 and 2 in the Petition rely on Narayanaswami as the primary reference and that Grounds 3 and 4 in the Petition rely on Fujisawa as the primary reference.

a. Narayanaswami (Ex. 1005)

35. Narayanaswami seeks to provide "increased PC desktop-like functionality" in the form factor of a wristwatch. Ex. 1005, 1:1-31. The field of endeavor of Narayanaswami is wearable computing devices with display screens and alarm clock and wireless communication capabilities. *Id*. Narayanaswami identifies various alleged shortcomings of then-current devices:

> More recently there have been attempts to incorporate some of the capabilities of the above devices into wrist watches. However, today, only special wearable watch devices are available that, besides time keeping functions, may possess a compass, or a Global Positioning System (GPS), or barometer, heart rate monitor, Personal Handy System (PHS) phone, pager, etc. There are shortcomings in these existing special function watches in that most of them are bulky, are mostly unconnected to the Internet or other PC/network devices, have limited battery life, and, are difficult to use. These currently available special function wrist watches additionally have user interfaces that are quite limited in what they can display.

Id., 1:31-44. Narayanaswami describes the particular problems with which its alleged invention is involved as "fitting components and power supplies such as batteries into such a small volume" and "the limited screen size of watches." *Id*., 1:55-60.

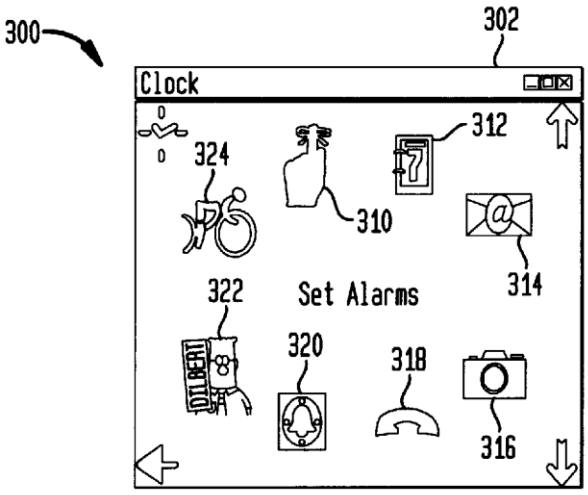
36. To address these issues, Narayanaswami purports to disclose watch embodiments capable of:

> "wirelessly accessing information and equipped with an interactive user interface and high resolution display for providing a variety of desktop PC-like functions"; and/or
>
> "providing time-keeping/alarm functions and equipped with an interactive user interface for enabling the setting of the various time-keeping/alarm functions in a manner requiring minimal effort and concentration from the user."

Id., 1:66-2:9.

37. Figure 4 depicts a "main menu" interface with various icons for "Personal Information Management (PIM) applications," similar to a "PC desktop":

FIG. 4



Id., FIG. 4. In addition to these basic applications, Narayanaswami states the watch may be implemented with software for receiving information from the internet:

> Other applications may include those enabling the receipt of excerpts of personalized data, such as traffic information, weather reports, school closings, stock reports, sports scores, etc., from the world wide web. These excerpts may be received as notifications or alarms on the Wrist Watch system 10.

Id., 7:58-63. Narayanaswami also describes adding software to the wristwatch for displaying the screen of another device:

> Inter-device interaction software applications are included to permit the watch display to become the display for another device such as a GPS located in a concealed location, (e.g., a bag), or a thermostat on the wall, etc. Thus, this application software enables communication between the other device and the Wrist Watch by receiving/displaying the data and transmitting back information sent from the Wrist Watch. As a further example, caller Id information may be displayed on the Wrist Watch display when the cell phone that belongs to that person rings.

Id., 7:63-8:5.

38. The remaining figures in Narayanaswami – Figures 5A-5D, 6A-6C, 7A-7C, 8A-8C, 9A-9C and 10 – and accompanying descriptions concern alarm clock embodiments. *Id*., 8:36-14:11.

b. Fujisawa (Ex. 1006)

39. Fujisawa concerns the field of endeavor of wireless devices that communicate with mobile phones. Ex. 1006, ¶ [0002]. Fujisawa explains that "small and lightweight mobile telephones are widely used, and ... often put in bags when carried by their users" and that "users have to take the mobile telephone from the bag to answer the telephone." *Id*. Fujisawa thus addresses the particular problem of answering a mobile telephone without taking it out of the bag.

40. The alleged invention of Fujisawa is a "radio communication device" that wirelessly communicates with a mobile telephone. *Id*., ¶ [0003]. Fujisawa states the radio communication device can be shaped like a watch. *Id*., ¶ [0006]. The specification describes three main embodiments directed to the radio communication device communicating with a mobile telephone. A "First Embodiment" of Fujisawa involves the radio communication device receiving an "incoming call notification signal" from a mobile telephone and providing a notification of an incoming call on a display of the device, as well as producing a sound, vibrating or emitting a light. *Id*., ¶¶ [0154]-[0156].

41. Fujisawa discloses a "Second Embodiment" that involves a radio communication device and communication protocol similar to the "First Embodiment" but with additional disclosures about recording "please wait" and "please leave a message" instructions for a third-party caller, sending those instructions to that caller and recording and playing back a voice message left by the caller:

> [A]ccording to the second embodiment, by using the watch-shaped information processing device 12A, the user can request the "please wait message" and a "call response message. Also, the user can record the "please wait message" and "call response message" in his or her own voice by using the watch-shaped information processing device 12A. The user also can record caller's messages in the watch-shaped information processing device 12A, so the user can hear the caller's message anywhere anytime…. So, the watch-shaped information processing device 12A becomes an interesting gadget to its user.

Id., ¶¶ [0298]-[0300]. A "Third Embodiment" in Fujisawa mirrors the "Second Embodiment" but teaches storing voice messages at a service center. *Id*., ¶ [0302].

42. Fujisawa discloses a discrete "Fourth Embodiment" for determining and notifying users about the strength of a communication link between devices. *Id*., ¶¶ [0376]-[0544].

2. The Secondary References

a. Vock (Ex. 1007)

43. Vock "relates generally to monitoring and quantifying sport movement" of a person or a vehicle ridden by a person. Ex. 1007, 1:1-19. The field of endeavor of Vock is quantitatively determining (e.g., measuring) and reporting to the user certain movement parameters of a user during a sport activity. Vock describes the particular problem with which its alleged invention is involved as being the fact that people can only assess whether they went fast, slow, or average, got "big air," or expended significant energy based on their perception, and not actual quantitative data:

> [P]ersons in such sporting activities only have a qualitative sense as to speed and loft or "air" time. For example, a typical snowboarder might regularly exclaim after a jump that she "caught" some "big sky," "big air" or "phat air" without ever quantitatively knowing how much time really elapsed in the air.
>
> Speed or velocity also remain unquantified. Generally, a person such as a skier can only assess whether they went "fast", "slow" or "average", based on their perception of motion and speed (which can be grossly different from actual speed such as measured with a speedometer or radar gun).
>
> There are also other factors that sport persons sometimes assess qualitatively. For example, suppose a snowboarder skis a double-diamond ski slope while a friend skis a green, easy slope. When they both reach the bottom, the "double-diamond" snowboarder will have expended more energy than the other, generally, and will have worked up

> a sweat; while the "green" snowboarder will have had a relatively inactive ride down the slope. Currently, they cannot quantitatively compare how rough their journeys were relative to one another.

Id., 1:52-2:6.

44. To address this problem, Vock discloses a "sensing unit" that can be a "stand-alone unit" (*id*., 3:60-4:28) or "integrated into objects already associated with the sporting activity," such as ski boots, snowboard boots, skis, bikes etc. *Id*., 4:29-44. Figure 2 shows an example, with a sensing unit 10':

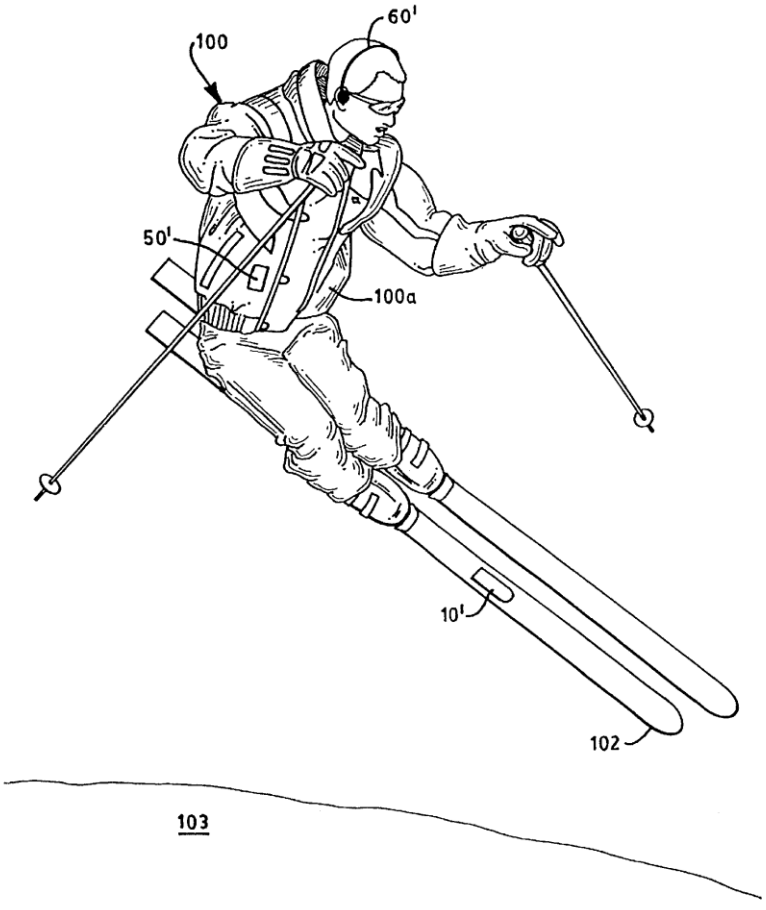


FIG. 2

Id., FIG. 2, 27:11-20.

45. Vock also indicates "the sensing unit provides for the measurement of power entirely within a watch":

> Manufacturers such as CASIO™, TIMEX™, SEIKO™, FILA™, and SWATCH™ make sport wrist-watches with certain digital electronics disposed therein. In accord with the invention, power measurement capability is added within such a watch so that "power" data can be provided to sport enthusiasts in all sports, e.g., volleyball, soccer, football, karate, and similar common sports.

Id., 4:45-53. Figures 38 and 39 disclose two different examples of such embodiments:

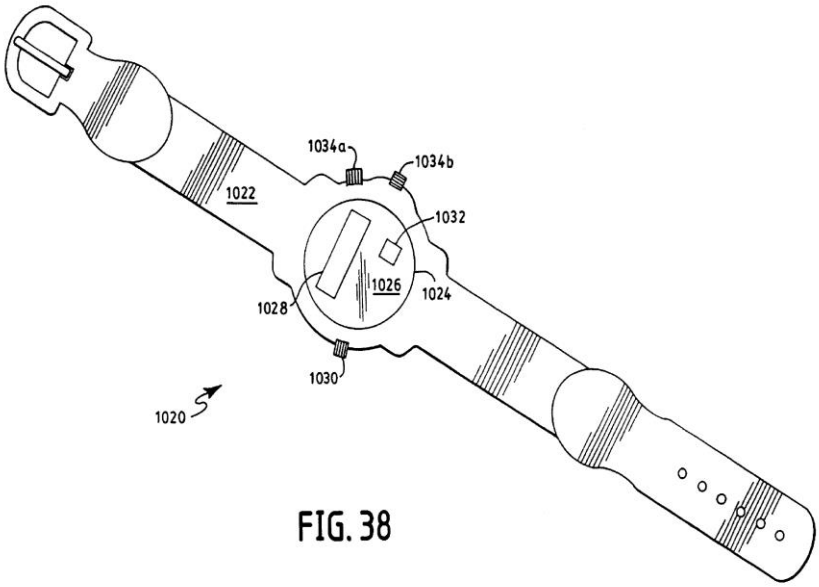


FIG. 38

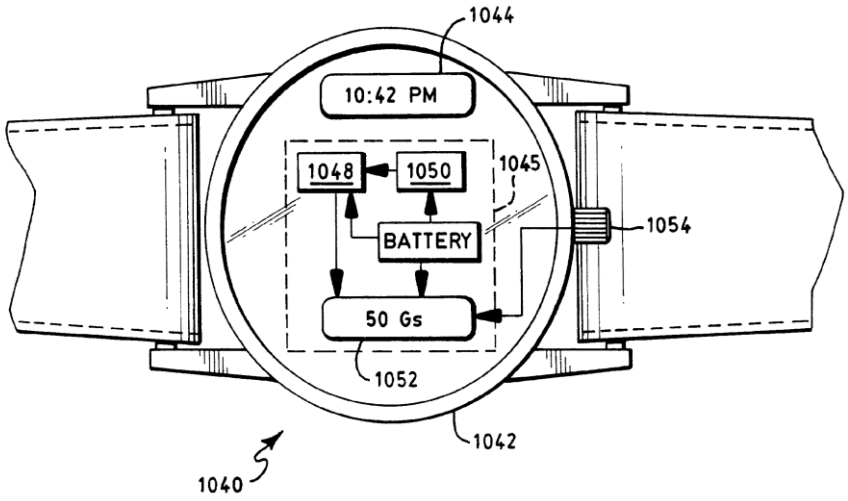


FIG. 39

Vock explains that these watches may contain power sensing units (1032, 1045) that inform the user of his/her performance data "without the additional mounting of a sensing unit on a vehicle." *Id*., 44:26-65. The watch embodiments are self-contained and have no communication with other devices. Vock describes another instance of such an embodiment with reference to Figure 21. *Id*., 40:48-62; *see also id.* 24:64-67 (describing watch containing data unit 50).

46. Vock also indicates that a watch may be used to receive and display performance data received from a sensing unit located elsewhere, such as on a ski, as depicted in Figure 27:

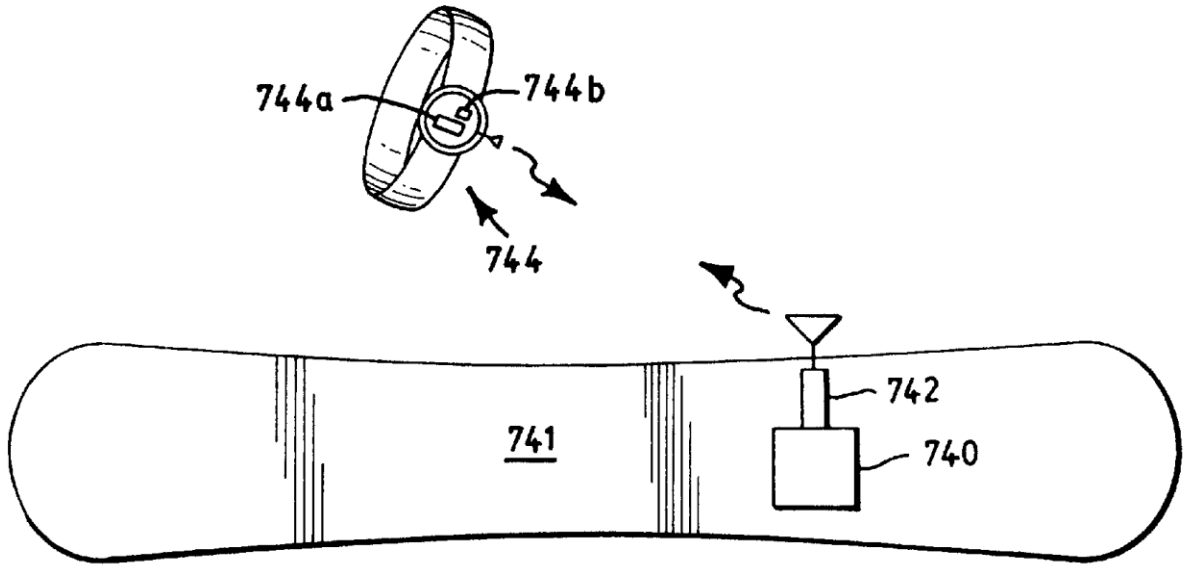


FIG. 27

Id., FIG. 27, 40:38-47. Vock depicts and describes an additional similar embodiment with respect to Figure 41. *Id*., FIG. 41, 46:1-30.

b. The Nokia 8890 User Guide (Ex. 1008)

47. Exhibit 1008 is a User Guide for the Nokia 8890 mobile phone and has a copyright date of 2000. Like many people in the mobile communications industry, I was well-aware of this phone and its capabilities. As I recall, I was a user of this phone for at least a year as a subscriber to cellular service from a United States-based wireless carrier. The Nokia 8890 phone did not have Bluetooth functionality or other means for wirelessly communicating with other devices.

C. Vock is Not within the Scope of Relevant Art

48. I have been informed that prior art references for obviousness challenges must be analogous to the claimed invention and, more specifically, (1)

must be from the same field of endeavor as the claimed invention, regardless of the problem addressed, or (2) if not in the same field of endeavor, must be reasonably pertinent to the particular problem to which the invention is directed.

49. I understand that Patent Owner asserts in its Response that Vock is not an analogous prior art reference under this framework. Based on my review of the Response and my analysis of Vock and the '633 Patent, I share the same view and have the following opinions.

1. The '633 Patent and Vock are in Different Fields of Endeavor

50. I am informed that the field of endeavor is determined by looking at the explanations of the invention's subject matter, including the embodiments, function and structure of the claimed invention.

51. The '633 Patent describes various embodiments for a user of a mobile telephonic device to be remotely notified of activity on the mobile telephonic device when that device is not physically with the user or not readily accessible by the user. The structure of the claimed invention is a wristwatch, and the function of the claimed invention is receiving wireless communications from a mobile telephonic device of a user to notify the user of activity occurring at the mobile telephonic device, e.g., an incoming phone call.

52. The field of endeavor of Vock is monitoring and quantifying sport movement of a human or vehicle carrying the human. While Vock also discloses a

wristwatch, the function of the Vock wristwatch is sensing movement data and transmitting that data to a computer. Accordingly, it is my opinion that Vock is not in the same field of endeavor because it has a function different from that of the claimed invention and, in my view, skilled artisans at the time of the invention would have turned to Vock when considering the invention of the '633 Patent.

53. In my opinion, skilled artisans would not have looked to prior art directed to power/movement sensing units as disclosed in Vock for a solution to the problem facing the inventor of the '633 Patent, namely notifying users of incoming cellular phone calls and other events on the cellular phone when the user is unable to hear or sense audio signals, sense vibrations or see light emanating from the cellular phone. The "motion sensing" recited in the claimed invention is that of sensing vibrations of the mobile telephonic device, e.g., indicative of an incoming call, text message or some other activity occurring at the mobile telephonic device. Vock is not related to the field of telecommunications and, more specifically, notifying the user of a mobile telephonic device that activity is occurring at the mobile telephonic device when that device is located remotely from the user or otherwise not accessible by the user.

2. Vock is Not Reasonably Pertinent to the Issue of Remotely Providing Cellular Notifications

54. It is my understanding that a reference is reasonably pertinent when it would have commended itself to an inventor's attention in considering the problem addressed in her patent, even though the reference was in a different field.

55. The '633 Patent states that the "present invention relates to cellular notifications . . . when the user cannot hear or sense audio signals or vibration signals (e.g., incoming call notification signals) emanating from that user's cell phone":

> Currently, mobile phones, and devices cable of receiving wirelessly transmitted calls, generally have two schemes of notifying a user of incoming calls when that user has the phone stored, for example, in a user's purse. The first scheme provides signals that may be heard by the user (e.g., ring tones or beeps). The second scheme provides a tactile signal (e.g., a vibration). However, both of these signals originate physically from the cell phone and some user's do not store his/her cell phone in a location where these signals can be recognized.

Ex. 1001, 1:18-34. The problem identified in the '633 Patent is that notifications of incoming calls and other events occurring on a mobile telephonic device existed physically on the phone and thus could not be perceived by the user if the phone is located remote to the user.

56. The purpose of the claimed invention of the '633 Patent is therefore to notify a user of an incoming call or other events when the user is unable to hear or

sense audio signals, sense vibrations or see light emanating from the mobile telephonic device.

57. Vock explains that persons engaging in sporting activities, such as mountain biking, skating, roller-blading, wind-surfing, and skate-boarding, only have a qualitative sense as to speed and loft or "air" time:

> For example, a typical snowboarder might regularly exclaim after a jump that she "caught" some "big sky," "big air" or "phat air" without ever quantitatively knowing how much time really elapsed in the air. Speed or velocity also remain unquantified. Generally, a person such as a skier can only assess whether they went "fast", "slow" or "average", based on their perception of motion and speed (which can be grossly different from actual speed such as measured with a speedometer or radar gun).

Ex. 1007, 1:45-63. Vock therefore describes devices that can be mounted on sports equipment or worn by a person during sporting activities that are able to quantify sports movements, such as "speed," "air time," "drop distance" and "power." *Id*., 2:9-26.

58. It is my opinion that skilled artisans at the time of the '633 Patent invention would not have looked to a sports movement detection device as disclosed in Vock when confronted with the problems described in the '633 Patent and with no knowledge of the claimed invention of the '633 Patent and considering the invention of the '633 Patent as a whole. In my view, that the '633 Patent refers to

control circuitry for sensing when mobile telephonic devices are vibrating does not make Vock relevant art.

D. Grounds 1 and 3 in the Petition Do Not Prove by a Preponderance of the Evidence that Either Narayanaswami or Fujisawa in View of Vock Discloses the Watch Band Recited in Claim 1

59. Narayanaswami and Fujisawa do not illustrate or describe "a watch band; a second watch band; a buckle, wherein said buckle is coupled to said second watch band" as recited in Claim 1. The Petition states that "Narayanaswami does not disclose the specific elements of the claimed watch band" and that "Fujisawa … does not disclose a two-piece watch band with a buckle." Pet. 28.

60. I also do not understand Vock to disclose a two-piece band. While Vock depicts a "watch" in Figures 27, 28, 38, 39, 41 and 80, these figures do not show "a watch band; a second watch band; a buckle, wherein said buckle is coupled to said second watch band," nor does Vock describe a "buckle" or multiple "bands."

61. Petitioner and Dr. Bims rely on Figures 38 and 39 together. The Vock specification, however, states that Figures 38 and 39 are two different configurations. In the "Brief Description of the Drawings" section, Vock refers to the "power watch" shown in Figures 38 and 39 as two separate configurations, i.e., "a power watch" and "*another* power watch configuration". Ex. 1007, 21:17-20 (emphasis added). It is my opinion that if Figure 39 was intended to be a different

view of the watch shown in Figure 38, the description of Figure 39 would have referred to the watch in Figure 38.

62. The figures in Vock also show different-looking bands, particularly at the interface of the band and watch face:

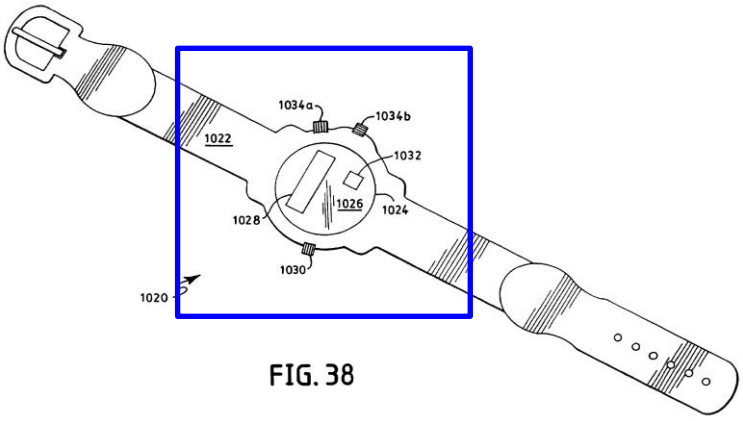


FIG. 38

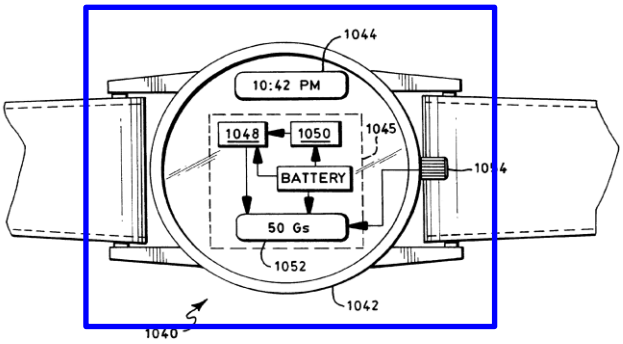


FIG. 39

Id., 44:26-47 (describing watch 1020 having a single "band 1022"); 44:48-45:5 (describing watch 1040 with no mention of a buckle nor multiple bands).

63. The specification of Vock also does not indicate that Figures 38 and 39 are showing the same watch. Vock describes Figure 39 as "another watch"—"FIG. 39 illustrates *another* watch system 1040 for measuring power and informing a user of that power"—and not as the watch in Figure 38. *Id.*, 44:48-49 (emphasis added).

I also note that Figures 38 and 39 do not have the same reference numerals for common features. The statement in Vock's description of the watch system 1040 depicted in Figure 39 – "As above, the watch 1042 is made to mount over the user's wrist" – indicates that both watches can be mounted on the human wrist, which could have been done in a variety of ways using a variety of known watch band configurations.

64. Incorporating any of the watch bands disclosed in Vock with the Narayanaswami watch would not have provided for a two-band watch with a buckle as Claim 1 of the '633 Patent requires. For example, adding the single band with buckle in Figure 38 of Vock to the single-banded watch in Figure 1 of Narayanaswami would have provided for a single-banded watch with a buckle, not a two-banded watch with a buckle:

Vock, Fig. 38

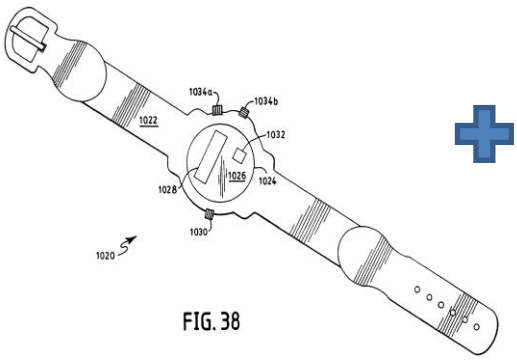
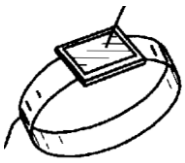
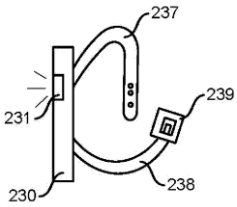


FIG. 38

Narayanaswami, Fig. 1



'633 Patent, Fig. 2



65. Similarly, combining Figure 39 with Figure 1 would not have resulted in an embodiment with two bands and a buckle:

Vock, Fig. 39 **Narayanaswami, Fig. 1** **'633 Patent, Fig. 2**

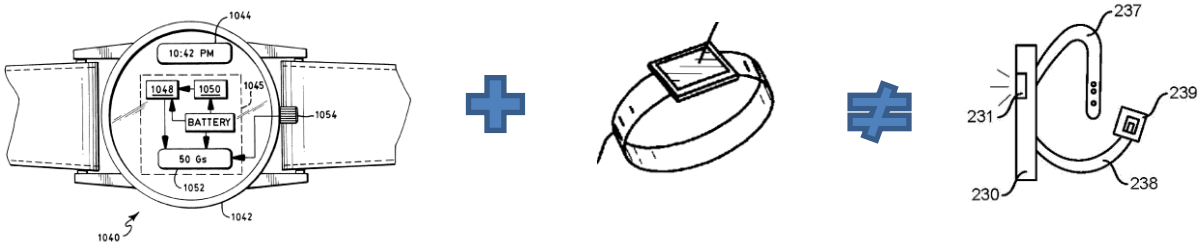


FIG. 39

I understand that Petitioner argues that Figure 39 of Vock shows two bands but that is not necessarily true. Both portions shown on the sides of the watch face could most certainly be part of the same single band, e.g., a single band of elastic, rubber or some other appropriate material.

66. Incorporating any watch band of Vock into the Fujisawa watch also would not have provided for a two-band watch with a buckle as recited in Claim 1 of the '633 Patent. Adding the single band with buckle in Figure 38 of Vock to the band in Figure 1 of Fujisawa having no buckle or lugs would not have provided for two bands and a buckle:

Vock, Fig. 38 **Fujisawa, Fig. 1** **'633 Patent, Fig. 2**

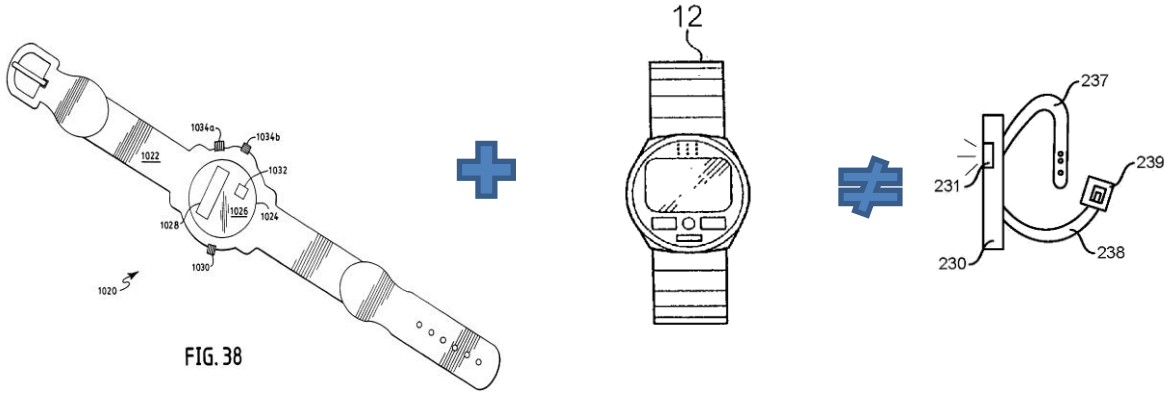


FIG. 38

Similarly, adding two embodiments together – Figure 39 and Figure 1 – neither of which disclose a buckle, would not have resulted in an embodiment *with* a buckle:

Vock, Fig. 39 **Fujisawa, Fig. 1** **'633 Patent, Fig. 2**

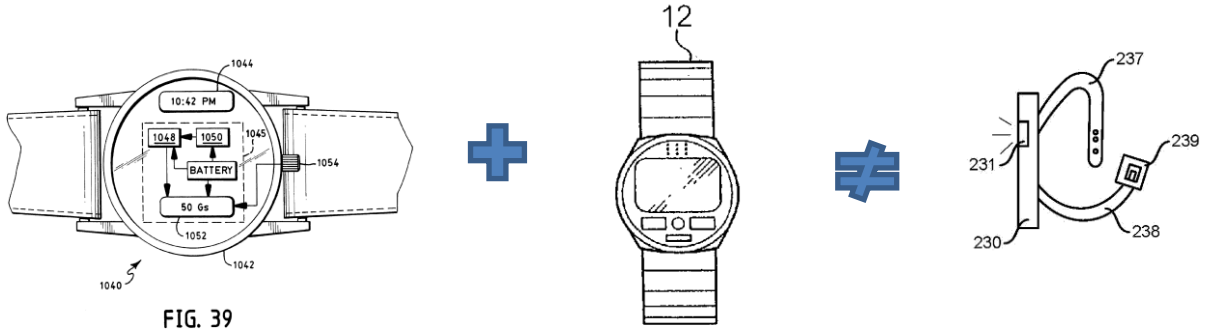


FIG. 39

67. It is my opinion that the Petition does not present evidence that sufficiently demonstrates this claim limitation in the cited prior art references.

E. Ground 1 in the Petition Does Not Prove by a Preponderance of the Evidence that the Narayanaswami Wrist Watch "Includes Motion Sensing Operable to Distinguish Between a Plurality of Different Types of Motion" as Recited in Claim 1

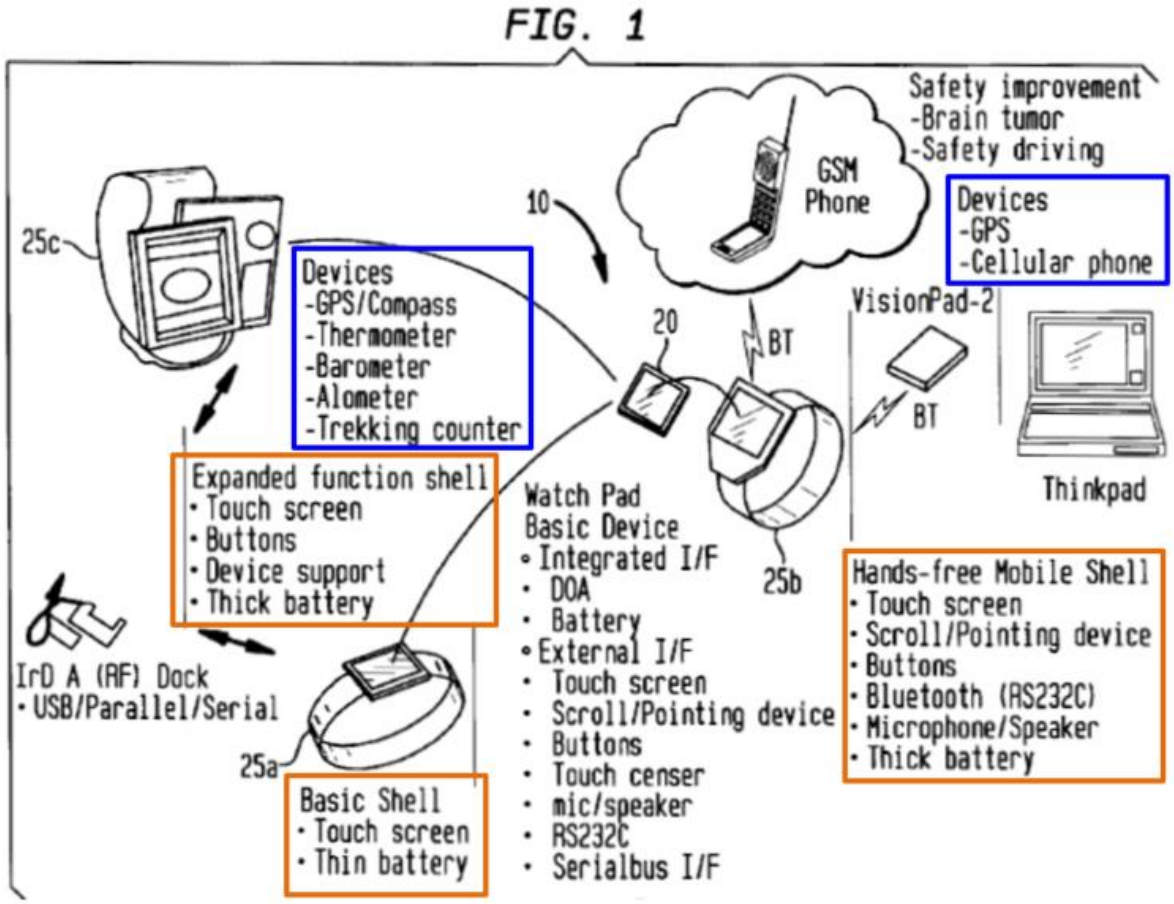
1. The "Includes" Requirement

68. Based on my review of the Petition and Dr. Bims' declaration (Ex. 1003), it appears to me that neither Petitioner nor Dr. Bims have explained in detail why Narayanaswami discloses the "included" claim element of Claim 1.

69. As an initial matter, and as noted above, I agree with Patent Owner that the "includes" language in Claim 1 of the '633 Patent requires "motion sensing" capability to be contained within "said device."

70. I understand that the Petition and Dr. Bims allege that lines 40-50 in column 3 and lines 15-19 in column 6 of Narayanaswami describe devices capable of sensing motion. My reading of these excerpts, however, is that Narayanaswami describes these devices as being supported by wrist watch device 10 or connected to device 10 over an interface, not as actually being included in device 10. Ex. 1005, 3:40-50; 6:15-19. Petitioner and Dr. Bims do not explain why "support for" or "over an interface" would have been understood by skilled artisans at the time as disclosing that the "various devices" and "additional sensors" were contained within device 10.

71. In my opinion, Figure 1 of Narayanaswami depicts components contained in wrist watch device 10 in one list (**orange**) and those devices that are not onboard, but supported by device 10, in a separate list (**blue**):



Id., FIG. 1 (annotated). Figure 1 does not show that the GPS/Compass or alometer [sic] in shell 25c are part of the "Expanded function shell" or any other part of the wrist watch device 10. Figure 1, for example, identifies "Cellular phone" under "Devices," which surely is not incorporated into wrist watch device 10.

2. The "Operable to Distinguish Between a Plurality of Different Types of Motion" Requirement

72. The Petition also does not address the "operable to distinguish between a plurality of different types of motion" claim element recited in Claim 1. For example, Petitioner and Dr. Bims do not explain why "GPS and altimeter sensors

are both capable of sensing motion," nor describe what type of motion either device allegedly senses or whether and how these devices would have operated to distinguish between different types of motion. Pet. 32; Ex. 1003, ¶ 107.

73. As an expert in telecommunications, I understand the term GPS (Global Positioning System) to refer to a receiver capable of signaling with a constellation of satellites that reside in geosynchronous orbit around the Earth. GPS works on the principle that if you know your distance from several known locations, then you can calculate your location. Ex. 2013. The "known" locations are GPS satellites themselves, and the distance is measured by measuring the time of arrival of an encoded signal. *Id*. The satellites also broadcast a data stream along with the encoded signal. *Id*. The data stream carries information about the satellite's location. *Id*. Furthermore, the GPS receiver is capable of deriving speed as a side benefit of calculating position. *Id*. GPS chipsets must compensate for doppler shift of the radio frequency signal received, which is caused by relative movement between the satellites and the receiver. *Id*. These calculations adjust for each satellite signal with any remaining discrepancy of the received frequency due to the movement of the GPS receiver itself. *Id*. Therefore, I can attest that calculations derived from measurements of GPS signals provide the position of a GPS-enabled device, typically presented as a latitude and longitude, so long as the device has adequate signaling with at least three satellites. This information, used in conjunction with

programs that calculate the position of a device over time, may be used for a variety of purposes such as calculating speed and direction. For example, at the time of the invention, stand-alone GPS-enabled handheld or wearable devices, such as those produced by Garmin, relied upon GPS receiver speed calculations, as well as additional programs and map data, for calculations to provide additional information such as historical and current place on the earth, direction of travel and turn-by-turn navigation. *Id*. Similarly, GPS position and speed data were used at the time in conjunction with programs and map data to calculate information used for automotive vehicle navigation systems.

74. Based on my general engineering background, it is my understanding that altimeter-enabled devices/equipment, such as airplanes, may benefit from altitude change information derived via calculations involving changes in barometric pressure. Ex. 2012. It is my understanding that an altimeter consists of a sealed metal chamber that expands as air pressure decreases and contracts as it increases. *Id*. Measurements of these changes were used at the time of the invention in conjunction with a known point in space, such as sea level, to determine altitude. *Id*. Altimeters were used at the time of the invention (and still are today) in aviation to convey altitude, and changes in altitude, via an analog dial mounted on an aircraft's instrument panel. *Id*. This information, used in conjunction with programs that

calculate the altitude of a devices/equipment over time, could be used for a variety of purposes such as calculating speed of descent and/or ascent.

75. For at least these reasons, I do not understand GPS or altimeter devices to be capable of directly sensing, measuring and quantifying motion as Petitioner and Dr. Bims allege.

76. The Petition and Dr. Bims also do not explain what type of motion is alleged sensed by the "tilt and motion (velocity, direction, speed) sensors" referenced in Narayanaswami or whether and how these devices would have operated to distinguish between different types of motion. Pet. 32; Ex. 1003, ¶ 107.

77. While Dr. Bims contends that "[i]t would have been obvious to a POSITA to use motion sensors to distinguish between different types of motion, such as the vibration motion during "quiet time" and the velocity and direction motions using the GPS and altimeter sensors," he does not provide evidence or technical reasoning supporting this assertion. Ex. 1003, ¶ 107.

F. Ground 1 in the Petition Does Not Show by a Preponderance of the Evidence that Narayanaswami Alone or Combined with Vock Discloses or Makes Obvious Claims 12, 13, 15, 16-18, 27 and 29

1. The Petition Does Not Prove that Narayanaswami Discloses or Makes Obvious a "Reminder" Notification as Recited in Claim 12

78. Claim 12 recites that the "second user perceivable [notification] signals are indicative of a reminder." Ex. 1001, 7:21-22. Claim 1, from which Claim 12

depends, recites that those "signals" must be "dependent upon . . . second communication signals" that are received from a "mobile telephonic device" and "associated with a second event." *Id.*, 6:55-67. In my opinion, the claimed "reminder" is thus in response to communication signals received from a mobile telephonic device and associated with an event. The Petition does not show that Narayanaswami discloses this feature or renders it obvious.

79. The Petition and Dr. Bims rely on a "snooze option" described in Narayanaswami—"One feature in particular enabled by the present invention is the facility by which a user may stop the alarm, select a snooze option where the user will receive subsequent reminders (i.e., the alarm to activate) after a predefined time interval . . . ." Pet., 38 (citing Ex. 1005, 8:28-32); Ex. 1003, ¶ 121. But in my opinion, a recurring alarm following selecting "snooze" on the wrist watch device 10 is not a "second user perceivable notification signal[] that [is] dependent upon said second communication signals" received from a mobile telephonic device and associated with an event as recited in Claim 12. Recurring alarms associated with a basic "snooze" function are set by the user on the watch device 10 itself as described in Narayanaswami.

80. Petitioner and Dr. Bims also allege "a POSITA would understand that a reminder can be stored as a calendar entry, the notification of the occurrence of the calendar entry would be the reminder, and thus Narayanaswami discloses that the

second event is indicative of a reminder." Pet., 38; Ex. 1003, ¶ 121. Neither the Petitioner nor Dr. Bims, however, reference any disclosure in Narayanaswami (or other exhibits) that supports equating a notification indicative of a calendar event and a notification indicative of a reminder of a future calendar event (e.g., "You have a meeting starting in 5 minutes."). In fact, the '633 Patent uses these two terms separately as two different types of notifications. Ex. 1001, 3:14-18 ("For example, remote notification device 130 may alert a user when cell phone 101 receives an incoming call, a calendar notification occurs, a reminder occurs, a missed call occurs, a new voice or text message is received, or any other cell phone activity."); 7:19-22 (Claim 11 reciting "calendar notification" and Claim 12 reciting "reminder").

2. The Petition Does Not Prove that Narayanaswami Discloses or Makes Obvious a "Missed Call" Notification as Recited in Claim 13

81. Claim 13 recites that the "second user perceivable [notification] signals are indicative of a missed call." Ex. 1001, 7:23-24. Like Claim 12, Claim 13 depends from Claim 1, which further recites that the "signals" must be "dependent upon . . . second communication signals" received from a "mobile telephonic device" and "associated with a second event." *Id.*, 6:55-67. The claimed "missed call" notification is thus in response to communication signals received from a mobile

telephonic device and associated with an event. The Petitions fails to prove that Narayanaswami discloses this feature or renders it obvious.

82. The Petition and Dr. Bims cite to an excerpt in Narayanaswami at lines 13-20 in column 11 that, in my opinion, does not concern incoming calls, let alone notifying a user of watch device 10 that the call was missed. Pet., 38-39; Ex. 1003, ¶ 122. That disclosure relates to an alarm setting feature for setting priorities of quiet time versus the alarm. Ex. 1005, 11:13-20.

83. Dr. Bims alleges that a "POSITA would understand that Narayanaswami treats calls as an event that triggers a type of alert or alarm and that if the user does not respond to the call, then the watch will provide an alarm at a preset time after the call is missed." Ex. 1003, ¶ 122. He does not, however, cite to any evidence or persuasive or technical reasoning supporting this assertion.

84. Petitioner and Dr. Bims also argue that "Narayanaswami discloses . . . determining that a user did not hear an alarm, such as the alert associated with the incoming call." Pet., 39; Ex. 1003, ¶ 122. It is my opinion that Narayanaswami does not, in fact, contain such a disclosure.

3. The Petition Does Not Prove that Narayanaswami Discloses or Makes Claims 15-17 and 29 Obvious

85. Claims 15-17 and 29 first and second "user-perceivable signals" that are indicative of an incoming call, reminder and/or missed call. Ex. 1001, 7:29-40.

For at least the reasons provided above as to Claims 12 and 13, it my opinion that Narayanaswami does not disclose these features nor render them obvious.

4. The Petition Does Not Prove that Narayanaswami Discloses or Makes Claim 18 Obvious

86. Claim 18 depends from Claim 1 and requires that "at least one of said plurality of different types of motion is a human motion." Ex. 1001, 7:41-42. For at least the reasons provided above as to Claim 1, it is my opinion that Narayanaswami does not disclose this feature or render it obvious.

5. The Petition Does Not Prove that Narayanaswami Discloses or Makes Claim 27 Obvious

87. Claim 27 depends from Claim 1 and requires that the "device" is "operable to" (i) receive third wireless communication signals associated with a third event, wherein each of said first event, second event, and third event is different," and (ii) "provide third user-perceivable notification signals that are dependent upon said third wireless communication signals." Ex. 1001, 8:5-10. In my opinion, the Petition does not demonstrate that Narayanaswami discloses these features or renders them obvious.

88. The Petition and Dr. Bims allege Narayanaswami discloses providing notifications of events that are different, e.g., a series of missed calls, and events that are of different types, e.g., a missed call and a reminder. Pet. 41; Ex. 1003, ¶ 129. However, as demonstrated in Section V.A, Claim 1 requires the first, second and

third events to be different, and *not* three separate occurrences of the same type of event, e.g., three missed calls. Also, as demonstrated in Sections VII.F.1 and VII.F.2, the Petition does not prove that Narayanaswami discloses or makes obvious the "reminder" and "missed call" limitations in Claims 12 and 13, respectively. Accordingly, Petitioner's statement as to Claim 27 that "Narayanaswami discloses providing notifications of . . . events that are of different types, e.g., a missed call and a reminder," is not supported.

G. Ground 2 in the Petition Does Not Prove by a Preponderance of the Evidence that Narayanaswami Alone or in View of Vock and/or the Nokia 8890 User Guide Discloses or Makes Obvious Claims 19-21, 23-26, 28, 30-34 and 36-39

1. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Discloses or Makes Obvious a "Voice Message" Notification as Recited in Claim 19

89. Claim 19 depends from Claim 1 and recites the "first user-perceivable signals are indicative of a voice message." Ex. 1001, 7:43-44. Narayanaswami does not disclose "voice message" notifications, and it is my opinion that Petitioner fails to demonstrate that Narayanaswami in view of the Nokia 8890 User Guide renders this feature obvious.

90. The Petition and Dr. Bims concede that Narayanaswami does not disclose notifying a user of wrist watch device 10 of a voice message, but contend that modifying device 10 to include this functionality would have been obvious to skilled artisans because voicemail notifications were being implemented on mobile

phones at the time, as evidenced by the Nokia 8890 User Guide. Pet. 42; Ex. 1003, ¶ 133.

91. Dr. Bims alleges that skilled artisans would have incorporated a voicemail notification feature into the Narayanaswami watch device 10 because this feature was "commonly available in mobile phones" and "would provide additional functionality" to device 10, and because users would have "preferred" a broad set of features in the watch device 10. Ex. 1003, ¶ 93. His declaration testimony does not support these assertions with any additional evidence or reasoning and on their own do not demonstrate by a preponderance of the evidence that skilled artisans would have recognized some deficiency in Narayanaswami or had some other reason to look to the Nokia 8890 User Guide or combine the two references. This allegation presumes that skilled artisans would automatically presume that a watch in communication with a mobile phone would be capable of replicating any/all feature functionality of that phone, which is not necessarily the case. At the time of the invention, wireless handset feature functionality was self-contained in the phone and thus wasn't obvious to extract it and/or expose it to other devices.

92. Claim 19 depends from Claim 1, which further recites that the "signals" must be "dependent upon . . . first communication signals" received from a "mobile telephonic device" and "associated with a first event." *Id.*, 6:55-67. The claimed "voice message" is thus in response to communication signals received from a

mobile telephonic device and associated with an event. The Petition and Dr. Bims do not address this requirement or that the phones disclosed in the Nokia 8890 User Guide are not Bluetooth-enabled and did not wirelessly communicate with other devices. Ex. 1008.

2. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Obvious a "Text Message" Notification as Recited in Claim 20

93. Claim 20 recites that the "first user-perceivable [notification] signals are indicative of a text message." Ex. 1001, 7:45-46. Like Claim 19, Claim 20 depends from Claim 1, which further recites that the "signals" must be "dependent upon . . . first communication signals" received from a "mobile telephonic device" and "associated with a first event." *Id*., 6:55-67. The claimed "text message" notification is thus in response to communication signals received from a mobile telephonic device and associated with an event. Petitioner and Dr. Bims rely on the same obviousness analysis as advanced against Claim 19. Pet. 42-43; Ex. 1003, ¶¶ 134. Accordingly, for at least the reasons provided as to Claim 19, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide renders Claim 20 obvious.

3. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 21 Obvious

94. Claim 21 recites that the "device is operable to allow a user to select a type of user-perceivable signal for said first user-perceivable signals that is different

than a type of user-perceivable signal for said second user-perceivable signals" Ex. 1001, 7:47-51. Petitioner and Dr. Bims rely on the same obviousness analysis as advanced against Claims 19 and 20. Pet. 43; Ex. 1003, ¶¶ 135-136. Moreover, that Narayanaswami discloses a single type of notification for a phone call, namely the displaying of a Caller ID, does not sufficiently support adding the feature of user selection of different audible tones into the Narayanaswami watch device 10. Dr. Bims also fails to explain how the touch screen in Narayanaswami would have had the capability to select or how the processors in Narayanaswami would have supported this functionality. For at least the reasons provided as to Claims 19 and 20, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide renders this feature obvious.

4. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 23 Obvious

95. Claim 23 recites the "wireless communication signals operable to be sent to said mobile telephonic device comprise wireless communication signals to answer an incoming call" and depends from Claim 22, which requires that the device be "operable to send wireless communication signals to said mobile telephonic device." Ex. 1001, 7:52-58. It is my opinion that the Petition does not demonstrate that Narayanaswami in view of the Nokia 8890 User Guide renders obvious the features of Claim 23.

96. Petitioner and Dr. Bims cite to one disclosure in Narayanaswami that describes transmitting information from watch device 10 back to another device:

> Inter-device interaction software applications are included *to permit the watch display to become the display for another device* such as a GPS located in a concealed location, (e.g., a bag), or a thermostat on the wall, etc. Thus, this application Software enables communication between the other device and the Wrist Watch by receiving/displaying the data and ***transmitting back information*** sent from the Wrist Watch.

Ex. 1005, 7:63-8:3 (emphasis added); Pet., 44; Ex. 1003, ¶ 137. It is my opinion that the "transmitting back information" disclosure in Narayanaswami (i) is in the specific context of watch device 10 serving as a display screen for other devices (see "to permit the watch display to become the display for another device" italicized above), and (ii) Narayanaswami does not explain what "transmitting back information" means, what that information entails and how the watch device 10 is configured for this functionality. This single disclosure does not teach the watch device 10 sending signals to a mobile telephonic device to answer an incoming phone call, as the required by Claim 23.

97. Petitioner and Dr. Bims cite to the Nokia 8890 User Guide—"Nokia User Guide discloses "[w]hen someone calls you, the phone alerts you (see 'Ringing options' on page 60) and Call flashes on the display. To answer, press any key...." Pet, 44 (citing Ex. 1008, 19); Ex. 1003, ¶ 137. This disclosure, however, only

describes the functionality of notifying a user of an incoming call, which is a functionality already described in Narayanaswami. Ex. 1005, 8:3-5.

98. Dr. Bims also alleges that skilled artisans would have found it "obvious to send these voice signals from a smart watch, such as the watch disclosed in Narayanaswami, to the mobile device, thus allowing the user to conduct a voice call via the smart watch." Ex. 1003, ¶ 137. Dr. Bims does not, however, cite to any additional evidence or provide any technical reasoning supporting his assertion.

99. Dr. Bims also does not explain why skilled artisans would have reasonably expected to successfully implement such functionality into the Naraysanaswami watch device 10.

5. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 24 Obvious

100. Claim 24 recites the "wireless communication signals operable to be sent to said mobile telephonic device comprise voice signals" and depends from Claim 22. Ex. 1001, 7:52-54, 59-61. Petitioner and Dr. Bims rely on the same obviousness analysis used against Claim 23. Pet. 43-44; Ex. 1003, ¶ 138. For the reasons provided as to Claim 23, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claim 24 obvious.

6. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 25 Obvious

101. Claim 25 recites the "wireless communication signals operable to be sent to said mobile telephonic device comprise wireless communication signals to answer an incoming call and wireless communication signals comprising voice signals" and depends from Claim 22. Ex. 1001, 7:52-54, 62-66. Petitioner and Dr. Bims rely on the same analysis used against Claim 23. Pet. 45; Ex. 1003, ¶ 139. For the reasons provided as to Claim 23, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claim 25 obvious.

7. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 26 Obvious

102. Claim 26 recites the "wireless communication signals comprising voice signals comprise voice signals operable to be utilized by said mobile telephonic device for an active call" and depends from Claim 22. Ex. 1001, 7:52-54, 8:1-4. Petitioner and Dr. Bims rely on the same deficient obviousness analysis as advanced against Claim 23. Pet. 45; Ex. 1003, ¶ 140. For at least the reasons provided as to Claim 23, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claim 26 obvious.

8. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claim 28 Obvious

103. Claim 28 recites the "device is operable to allow a user to select different types of user-perceivable signals for each" of the first, second and third

user-perceivable notification signals. Ex. 1001, 8:11-15. Petitioner and Dr. Bims rely on the same analysis used against Claim 21. Pet. 45; Ex. 1003, ¶ 141. For the reasons provided as Claim 21, the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claim 28 obvious.

104. Narayanaswami also discloses only one type of notification for an incoming call, namely displaying a caller ID. Ex. 1005, 8:3-5. It is my opinion that this single disclosure does not sufficiently support adding the feature of user selection of different audible tones into the Narayanaswami watch device 10. In this regard, Dr. Bims does not explain how the touch screen in Narayanaswami would have had the capability to select different notification signals or how the processors in Narayanaswami would have supported this functionality.

105. Dr. Bims does allege "it would have been obvious to a POSITA to assign different types of user-perceivable signals, such as the visual or audible signals disclosed by the Nokia User Guide, in the smart watch of Narayanaswami" and that "a user could select different tones, which are user-perceivable signals, and different types of tones for each different type of event, such as, for example, selecting a different type of tone for a voice call, a text message, or a reminder." Ex. 1003, ¶ 141. But again, he does not provide any additional evidence or technical reasoning supporting this assertion. Dr. Bims also does not address why skilled artisans at the time, based on the Narayanaswami disclosure, would have reasonably

expected to successfully implement the selection of different notification signals, the assignment of different notification signals to specific events at the mobile telephonic device and the activation of those different notifications signals in response to an event at the mobile telephonic device.

9. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claims 30-34 Obvious

106. Claims 30-34 recite first, second and/or third user-perceivable notification signals that are indicative of incoming calls, reminders, missed calls, voice messages and/or text messages. Ex. 1001, 8:21-45. Petitioner and Dr. Bims rely on the same analysis used against Claims 12, 13, 19, 20 and/or 27. Pet. 46-47; Ex. 1003, ¶¶ 142-146. For the reasons provided as to Claims 12, 13 19, 20 and 27, it is my opinion that the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claims 30-34 obvious.

10. The Petition Does Not Prove that Narayanaswami in View of the Nokia 8890 User Guide Makes Claims 36-39 Obvious

107. Claim 36-39 recite sending wireless communication signals to the mobile telephonic device that include signals to answer an incoming call and/or voice signals, including voice signals for an active call. Ex. 1001, 8:49-64. Petitioner and Dr. Bims rely on the same analysis used against Claims 23-26. Pet. 47-48; Ex. 1003, ¶¶ 147-150. For the reasons provided as to Claims 23-26, it is my opinion that

the Petition does not show that Narayanaswami in view of the Nokia 8890 User Guide makes Claims 36-39 obvious.

H. Ground 3 in the Petition Does Not Prove by a Preponderance of the Evidence that Fujisawa Discloses or Makes Obvious Claim 19

108. Claim 19 recites the "first user-perceivable [notification] signals are indicative of a voice message." Ex. 1001, 7:43-44. Claim 19 depends from Claim 1, which further recites that the "signals" must be "dependent upon . . . first communication signals" received from a "mobile telephonic device" and "associated with a first event." *Id*., 6:55-67. The claimed "voice message" notification is thus in response to communication signals received from a mobile telephonic device and associated with an event. It is my opinion that the Petition does not prove that Fujisawa discloses Claim 19 or renders it obvious.

109. Petitioner and Dr. Bims rely on Fujisawa's description for reading saved voice messages from memory 33 on the watch-shaped information processing device 12/12A:

> [W]hen the central control circuit 25A receives "message playing operation by list" (step Sd2: playing operation by list), it sees the address management table AMT and acquires all the readout addresses for the caller's messages." "Using the readout addresses, the central control circuit 25A reads only the incoming call time data and the caller data in the nonvolatile memory 33, and displays them on the display unit 29 (step Sd5)." Thus, Fujisawa discloses that the user-perceivable signals are indicative of a voice message.

Ex. 1003, ¶ 172 (citing Ex. 1006, ¶¶ [0290]-[0291]).

110. In my opinion, Dr. Bims' reliance on paragraphs [0290] and [0291] of Fujisawa is improper. Based on my review of Fujisawa, these paragraphs do not teach "third user perceivable signals are indicative of a voice message." Claim 19 of the '633 Patent requires that the "user-perceivable [notification] signals" be "dependent upon" the "wireless communication signals" received from the "mobile telephonic device"; however, the "incoming call time data and the caller data in the nonvolatile memory 33" that is displayed to the user as described in paragraph [0291] of Fujisawa do *not* depend on wireless communication signals. Rather, the call time and caller data is read by "central control circuitry 25A" from memory 33 at the user's request subsequent to voice message data being stored in memory 33. The display of this information and/or the playback of stored voice messages are not "user-perceivable notification signals that are dependent upon [] received first communication signals" and that are indicative of a "voice message" as recited in Claims 1 and 19.

I. Ground 4 in the Petition Does Not Prove by a Preponderance of the Evidence that Fujisawa Alone or in View of Vock and the Nokia 8890 User Guide Discloses or Makes Obvious Claims 11, 12, 14, 15, 17, 20, 21 and 28-34

1. The Petition Does Not Prove that Fujisawa in view of the Nokia 8890 User Guide Makes Obvious a "Calendar Notification" as Recited in Claim 11

111. Claim 11 recites the "second user-perceivable [notification] signals are indicative of a calendar notification." Ex. 1001, 7:19-20. Claim 1, from which Claim 11 depends, further recites that those "signals" must be "dependent upon . . . second communication signals" that are received from a "mobile telephonic device" and "associated with a second event." *Id*., 6:55-67. The claimed "calendar notification" is thus in response to communication signals received from a mobile telephonic device and associated with an event. It is my opinion that the Petition does not show that Fujisawa in view of the Nokia 8890 User Guide makes Claim 11 obvious.

112. Petitioner and Dr. Bims recognize that Fujisawa does not describe the watch-shaped information processing device 12/12A as providing signals indicative of a calendar notification. Petitioners and Dr. Bims thus rely on the Nokia 8890 User Guide—"The calendar keeps track of reminders, calls you need to make, meetings, and birthdays. It can even sound an alarm when it's time for you to make a call or go to a meeting." Pet., 61; Ex. 1003, ¶ 186. Dr. Bims argues that skilled artisans would have deemed it obvious to incorporate the "alarm" feature because it was a "common feature of mobile devices at the time," would have provided added

functionality and users would have preferred a broad set of features. Ex. 1003, ¶¶ 94, 96. His declaration, however, does not provide any specific evidence supporting these assertions.

113. Dr. Bims also argues that skilled artisans would have reasonably expected to successfully incorporate calendar notifications into the Fujisawa watch because Fujisawa discloses "providing notifications of an incoming call." Ex. 1003, ¶ 186. However, he does not cite to any evidence to support the inference that a skilled artisan would have reasonably expected to successfully implement providing a signal indicative of a calendar notification in response to a calendar event occurring on a mobile telephonic device.

2. The Petition Does Not Prove that Fujisawa Discloses or Makes Obvious a "Reminder" Notification as Recited in Claim 12

114. Claim 12 recites that the "second user perceivable [notification] signals are indicative of a reminder." Ex. 1001, 7:21-22. Claim 1, from which Claim 12 depends, further recites that those "signals" must be "dependent upon . . . second communication signals" that are received from a "mobile telephonic device" and "associated with a second event." *Id*., 6:55-67. The claimed "reminder" is thus in response to communication signals received from a mobile telephonic device and associated with an event. Petitioner and Dr. Bims rely on the same analysis used against Claim 11. Pet., 61; Ex. 1003, ¶ 187. For the reasons provided as to Claim 11,

it is my opinion that the Petition does not prove that Fujisawa in view of the Nokia 8890 User Guide makes Claim 12 obvious.

115. Petitioner and Dr. Bims also allege that "One type of item that the calendar can keep track of is a 'reminder'." Pet., 61; Ex. 1003, ¶ 187. In my opinion, calendar events and reminders of calendar events are two different types of events, as those terms are used in the '633 Patent. Ex. 1001, 3:14-18 ("For example, remote notification device 130 may alert a user when cell phone 101 receives an incoming call, a calendar notification occurs, a reminder occurs, a missed call occurs, a new voice or text message is received, or any other cell phone activity."); 7:19-22 (Claim 11 reciting "calendar notification" and Claim 12 reciting "reminder").

3. The Petition Does Not Prove that Fujisawa in View of the Nokia 8890 User Guide Makes Claims 14, 15 and 17 Obvious

116. Claims 14, 15 and 17 recite first and second user-perceivable signals that are indicative of incoming calls, calendar notifications and/or reminders. Ex. 1001, 7:25-31, 36-40. Petitioner and Dr. Bims rely on the same analysis used against Claims 11 and 12. Pet. 61-62; Ex. 1003, ¶¶ 188-190. For the reasons provided as to Claims 11 and 12, it is my opinion that the Petition does not show that Fujisawa in view of the Nokia 8890 User Guide makes Claims 14, 15 and 17 obvious.

4. The Petition Does Not Prove that Fujisawa in view of the Nokia 8890 User Guide Makes Obvious a "Text Message" Notification as Recited in Claim 20

117. Claim 20 recites that the "first user-perceivable [notification] signals are indicative of a text message." Ex. 1001, 7:45-46. Claim 1, from which Claim 20 depends, further recites that those "signals" must be "dependent upon . . . second communication signals" that are received from a "mobile telephonic device" and "associated with a second event." *Id*., 6:55-67. The claimed "text message" notification is thus in response to communication signals received from a mobile telephonic device and associated with an event. In my opinion, the Petition does not prove that Fujisawa in view of the Nokia 8890 User Guide makes Claim 20 obvious.

118. The Petition concedes that Fujisawa does not describe the watch-shaped information processing device 12/12A as providing signals indicative of a text message. Petitioners and Dr. Bims thus point to the Nokia 8890 User Guide—"Nokia User Guide discloses, [w]hen you receive a text message, the phone displays Message received and the [text message icon], and makes a sound." Pet., 79; Ex. 1003, ¶ 191. I note that Dr. Bims again argues that skilled artisans would have deemed it obvious to incorporate the text message feature because it was allegedly a "common feature of mobile devices at the time," would have provided added functionality and users would have preferred a broad set of features. Ex. 1003, ¶¶ 94, 96, 191. Dr. Bims does not provide any additional evidence supporting these

assertions, however. While text messaging was a common capability of smart phones, with two-way texting (mobile terminate and originate messaging) introduced in the United States in 1996 coincident with the network build-out associated driven by buildout of PCS carriers, text messaging would arguably not become widely used until approximately 2002 when cross-carrier SMS technology was introduced. Before 2002, text messaging was not a common feature and was limited to intra-carrier communications. For example, before 2002, text messaging could only occur between two Verizon-carrier mobile phones, not between a Verizon-based and an AT&T-based phone. Before 2002, it would not have been obvious to incorporate text messaging into a watch because person-to-application technology did not develop until after 2002, and the watch would have been a platform with applications. A phone to watch is certainly not person to person.

119. Dr. Bims also argues that skilled artisans would have reasonably expected to successfully incorporate text message notifications because Fujisawa discloses "providing notifications of an incoming call." Ex. 1003, ¶ 191. His declaration testimony, however, does not cite to any evidence to support the inference that a skilled artisan would have reasonably expected to successfully implement providing a signal indicative of a text message notification in response to a text message received on the mobile telephonic device. As stated earlier, this presumes that any and all functionality inherent in a mobile phone could be

replicated by a Bluetooth connected device. As stated above, it would not have been obvious to incorporate text messaging notifications into a watch because development of person-to-application technologies, requiring SMS communications between a mobile phone and a platform, was not developed on a large scale until after 2002.

5. The Petition Does Not Prove that Fujisawa in view of the Nokia 8890 User Guide Makes Claim 21 Obvious

120. Claim 21 recites that the "device is operable to allow a user to select a type of user-perceivable signal for said first user-perceivable signals that is different than a type of user-perceivable signal for said second user-perceivable signals." Ex. 1001, 7:47-51. In my opinion, the Petition does not show that Fujisawa in view of the Nokia 8890 User Guide makes Claim 21 obvious.

121. Petitioner and Dr. Bims concede that Fujisawa does not describe the watch-shaped information processing device 12/12A as allowing a user to select different types of signals for the first and second notification signals, but point to disclosures in the Nokia 8890 User Guide that describe assigning ring tones to caller groups and alert tones to text messages. Pet. 62-63; Ex. 1003, ¶ 192.

122. It is my opinion that Dr. Bims does not provide sufficient evidence of motivation to combine disclosures in the Nokia 8890 User Guide with the Fujisawa watch. His declaration testimony alleges that "a user could select different tones"

but does not explain how or why a person ordinarily skilled in the art would have been motivated to do so at the time of the invention. *See* Ex. 1003, ¶¶ 94, 96, 192.

6. The Petition Does Not Prove that Fujisawa in view of the Nokia 8890 User Guide Makes Claim 28 Obvious

123. Claim 28 similarly recites that the "device is operable to allow a user to select different types of user-perceivable signals" for each of first, second and third notification signals. Ex. 1001, 8:11-15. In my opinion, the Petition does not show that Fujisawa in view of the Nokia 8890 User Guide makes Claim 28 obvious for at least the reasons provided as to Claim 21.

7. The Petition Does Not Prove that Fujisawa in View of the Nokia 8890 User Guide Makes Claims 29-31 Obvious

124. Claims 29-31 recite first, second and third user-perceivable signals that are indicative of incoming calls, reminders, missed calls, voice messages and/or text messages. Ex. 1001, 8:16-30. Petitioner and Dr. Bims rely on the same analysis used against Claims 12, 13, 19, 23, 20 and 30. Pet. 64; Ex. 1003, ¶¶ 195-197. For at least the reasons provided as to Claim 12 as to "reminder" notifications and Claim 20 as to "text message" notifications, it is my opinion that the Petition does not show that Fujisawa in view of the Nokia 8890 User Guide make Claims 29-31 obvious.

8. The Petition Does Not Prove that Fujisawa Discloses or Makes Obvious the "Incoming Call," "Missed Call" and "Voice Message" Notifications of Claim 32

125. Claim 32 recites the "first user-perceivable signals are indicative of an incoming call, said second user-perceivable signals are indicative of a missed call, and said third user-perceivable signals are indicative of a voice message." Ex. 1001, 8:31-35. The Petition and Dr. Bims rely only on Fujisawa to challenge Claim 32, citing to "Ground 3, claims 13, 19 and 23." Pet., 64. Taken together, however, the Fujisawa disclosures cited by Petitioner and Dr. Bims in Ground 3 against Claims 13, 19 and 23 do not (and cannot) teach both a "missed call" notification and a "voice message" notification.

126. As to Claim 13 directed to a "missed call" notification, Petitioner and Dr. Bims cite to Paragraph [0272] of Fujisawa as disclosing a missed call:

> Fujisawa also discloses a second event. First, receiving two calls, one after the other would satisfy this limitation. Second, to the extent the claim requires the second event is of a different type than the first, Fujisawa discloses a different second event—***a missed call:*** "As shown in FIG. 19, during this process, the caller's telephone number and a message 'recording caller's message' are shown on the display unit 29 of the watch-shaped information processing device 12A to inform the user that the call is currently leaving a message." Ex. 1006, [0272].

Ex. 1003, ¶ 155; Pet., 51.

127. As to Claim 19, as demonstrated above in Section VII.H, Petitioner relies on improper disclosures in Fujisawa. The only disclosure in Fujisawa of a

"voice message" notification is in Paragraph [0272], which indicates that "the caller's telephone number and a message 'recording caller's message' are shown on the display unit 29 of the watch-shaped information processing device 12A to inform the user that the call is currently leaving a message." Ex. 1006, ¶ [0272].

128. To meet both the "missed call" and "voice message" requirements of Claim 32, however, Petitioner and Dr. Bims must rely on the exact same disclosure in Fujisawa, namely in Paragraph [0272], for the two different claim elements, which is improper. The '633 Patent makes clear that the recited "missed call" and "voice message" are two different types of events that cannot be satisfied by the same disclosure in Fujisawa.

129. For at least these reasons, it is my opinion that Claim 32 is not taught by Fujisawa, nor has the Petition demonstrated otherwise.

9. The Petition Does Not Prove that Fujisawa in View of the Nokia 8890 User Guide Makes Obvious the "Text Message" Limitations Recited in Claims 33 and 34

130. Claims 33 and 34 recite first, second and third user-perceivable signals that are indicative of incoming calls, missed calls, voice messages and/or text messages. Ex. 1001, 8:36-45. Petitioner and Dr. Bims rely on the same analysis as used against Claim 20 with respect to "text message" notifications. Pet. 64-65; Ex. 1003, ¶¶ 198-199. For at least the reasons provided as to Claim 20, it is my opinion

that the Petition does not demonstrate that Fujisawa in view of the Nokia 8890 User Guide makes Claims 33 and 34 obvious.

VIII. CONCLUSION

131. I declare that all statements made in this declaration are based on my own knowledge and experience and are true to the best of my knowledge and that any statements made on information and belief are thought to be true.

132. I further declare that these statements have been made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: June 6th 2023

Gerry Christensen

EXHIBIT A

Contact

gchristensen@youmail.com

www.linkedin.com/in/gerrychristensen (LinkedIn)

Top Skills

Branding & Identity

Brand Protection

Business Identity

Certifications

Professional Engineer

Publications

Mobile Positioning and Location Management with GPS, Terrestrial Positioning, Non-cellular (RFID and WiFi) Positioning, and Managing Location Information

Wireless Intelligent Networking

Data on SS7

Yes 2 Prepay

Patents

System and method for mediating service invocation from a communication device

System and method for service invocation and response with a communication device

Sender identification system and method

Gerry Christensen

Information and Communications Technology Expert

Greenville, South Carolina, United States

Summary

Technology, Media, and Telecom (TMT) sector professional with 30+ years developing, managing, and advising about networks, devices, apps and services. This includes planning, engineering, product management, business and corporate development.

Skilled in system design, network architecture, and application development. Experience areas include digital identity, presence and location, SS7 and SIP signaling, network, cloud, and end-point intelligence. Range of experience spans fixed and wireless network operators, service bureau, and application provider companies. Solutions designed and implemented include location services, wireless data infrastructure, mobile messaging, content management, prepaid and stored value applications, and mobile marketing.

Author of many technical papers about various telecommunications subjects including the published reports “Yes 2 Prepay” and “Data on SS7” as well as co-author of the books “Wireless Intelligent Networking” and "Mobile Positioning and Location Management".

Thought leader in emerging and disintermediating technologies including 5G, 6G, and Artificial Intelligence of Things (AIoT). Additional areas include Broadband, Cloud Computing, Data Management Analytics, Edge Computing, Immersive Technologies (Augmented and Virtual Reality), Industrial Automation, Internet of Things, and Robotics.

Broad intellectual property experience including patent submission and prosecution, portfolio analysis, and strategy development. Intellectual property development, assertion, and defense. Patent analysis from both a technological and business valuation point-of-view including forensic analysis of claims vs. potential infringing products.

Experience

YouMail Protective Services
Vice President of Business Development
January 2022 - Present (1 year 5 months)

YouMail Protective Services™ works with enterprise to eliminate unlawful brand impersonation.

Also, learn how communication service providers make informed call treatment decisions, customer contact organizations optimize call operations, and businesses stop vishing (voice phishing) and take control of enterprise identity including brand impersonation.

YouMail, Inc
Vice President of Business Development
May 2021 - Present (2 years 1 month)
Irvine, California, United States

Business development, including direct sales and channels, for YouMail's fastest growing business unit, YouMail Protective Services, which provides B2B services to communication service providers and enterprise.

Have established and scaled new digital services business including development, structuring and launch of B2B offering. Responsible for substantially increasing communication service provider and enterprise recurring annual revenue from May to December 2022.

Drive new business development and channel relationships for enterprise, service providers, and strategic partners. Identify and communicate the YouMail value proposition for platform and services with an emphasis on mutually beneficial, scalable and high growth opportunities.

Develop new business strategies and execute sales plans in alignment with corporate goals. Build business cases aligned with solution definitions that leverage platform and service differentiation and optimize user experience. Develop and execute against revenue plans that leverage unique market positioning. Increase product market fit and reach of YouMail services. Develop strategy and execute playbook for strategic partnerships and alliances.

Wireless Waypoint
Founder and Principal Consultant
September 2010 - Present (12 years 9 months)

Wireless Waypoint provides consulting, professional and expert services for the telecommunications, Internet, and commerce industries. Our primary focus is wireless technology, solutions and applications. Our core competency areas are switching, signaling, and related applications. Our practice areas include strategy and development of emerging business models and ecosystems, network infrastructure, circuit and IP based applications, operational and business support systems.

GLG
Advisory Council Member
2010 - Present (13 years)

Christensen has a strong working knowledge in many ICT areas and considered an expert and thought leader. As a knowledge transfer agent, Mr. Christensen is often called upon to put complex technology concepts into more easily digestible information. In addition to his knowledge and experience in ICT, Gerry has broad intellectual property experience including patent submission and prosecution, portfolio analysis, and strategy development. He assists clients with intellectual property development, assertion, and defense. He provides patent analysis from both a technological and business valuation point-of-view including forensic analysis of claims vs. potential infringing products. Mr. Christensen is also an inventor himself with patents in his name.

Transaction Network Services
Sr. Product Manager
May 2020 - April 2021 (1 year)
Olympia, Washington, United States

Telecom data and analytics product management for mitigating unwanted robocalls and enabling wanted enterprise calls via telephone number authentication, caller authorization, and branded calling. Was responsible for product management of TNS Call Guardian platform and embedded Analytics Engine (AE) including support of existing services and identification of new data and analytics dependent offerings.

Was responsible for AE efficacy in support of call origination and termination services. This included internal customers, such as TNS branded calling, and external customers, such as carriers, enterprise, traffic aggregators, and

call centers. Was responsible for related data strategy, product efficacy and continuous improvements.

Worked with data science team to ensure AE addresses emerging threats and opportunities. This included algorithm model tuning and decisions about data sources and usage. Ensured continuous improvement for terminating network customer protection. Identified and realized new and enhanced feature/functionality for call originators and traffic aggregators. Simultaneously balanced the protection needs of terminating network customers and call completion needs of originating networks.

Identified and collaborated with a diverse set of stakeholders to develop plans that target high-priorities across technology, product, and business needs. Identified opportunities, developed strategies and plans that mapped solutions to target customers and partners.

Mind Commerce

Founder

July 1999 - February 2020 (20 years 8 months)

Greater Seattle Area

Responsibilities for leading Technology Media and Telecom (TMT) research, consulting, and advisory company include overall company leadership and oversight of Analyst/Author Relations, Commissioning, Content Licensing, Editing, Reseller Relations, Sales and Marketing.

Mind Commerce is an Information and Communications Technology (ICT) strategy company that has focused exclusively on ICT/TMT for over twenty years. With deep roots within the ICT industry, we are well-connected and often called upon by clients to improve their understanding of current challenges, identify future opportunities, and provide vision for the next 5 to 10 years.

Our ICT research provides key trends, projections, and in-depth analysis for infrastructure, platforms, devices, applications, services, emerging business models and opportunities. Our ICT research provides insights into the impact of emerging technologies on existing value chains including industry disruption and ecosystem evolution.

Our practice areas include: Artificial Intelligence, Broadband Wireless, Cloud Solutions, Data and Analytics, Immersive Technologies, IoT, Robotics, and Smart Cities.

North Olympic Land Trust
Board Member
2014 - 2017 (3 years)
Port Angeles, Washington, United States

Contributor to strategic plan and helped Board ensure effective organizational planning, provide sufficient resources, and fulfill its obligations. Co-founded and served on Board-owned LLC to manage acquired property and handle commercial matters.

Zoove, Corp.
Co-founder and CTO
September 2005 - September 2010 (5 years 1 month)
Palo Alto, California

Start-up venture with investment from Highland Capital, Worldview, Cardinal, Panorama, Rogers Wireless and Verizon. Solutions based upon a mobile advertising platform using mobile abbreviated dial codes (** or #) Created a new calling namespace to be used by marketers. Technical and product functionality direction for prototype application for company start-up. Provided overall technical vision and direction for the company. Led product management for wireless advertising technology, products, and services. Defined overall technical functionality, product and features for support of brand and advertising agency clients.

Remained with company in consulting capacity until acquisition by mBlox in 2014.

VeriSign, Inc.
Director of Wireless Business Development
July 2001 - September 2005 (4 years 3 months)
Mountain View, California

Developed strategies and plans for new network and application business with emphasis in the areas of wireless data, mobile messaging and content for organic growth as well as partnerships, mergers and acquisitions. Member of team that established strategy that resulted in acquiring three companies to fulfill company objectives in mobile messaging and content: Jamba!, Unimobile, and LightSurf.

SME on due diligence team for Jamba! and Unimobile acquisitions. Identified new product and business opportunities and guided VeriSign industry influence through leadership in the Mobile Marketing Association (MMA). Responsibilities included development through first stages of product gate process as well as resource allocation and proper hand off to product management for life cycle management.

SignalSoft

Director of Product Management
October 1999 - June 2001 (1 year 9 months)
Boulder, Colorado

Built and led group of product managers responsible for all corporate mobile location service software products on a global basis. Set direction and established strategic plans for mobile location service application product line. Directed requirements gathering, feature planning, and release management. Communicated strategy/plans in support of marketing and sales efforts. Managed cross-product functions and strategic initiatives.

ILLUMINET

Senior Product Manager, Wireless Services
August 1997 - October 1999 (2 years 3 months)
Overland Park, Kansas

Responsible for new Wireless Intelligent Network (WIN) service business development and life cycle product management of existing wireless network services. Developed WIN service strategy and plans for execution. Directed WIN implementation efforts and ongoing management and optimization of services and vendors/partner relationships. SME on team that engaged National Telemanagement Corporation (NTC) for partnership deals for WIN-based prepay wireless, which ultimately led to the acquisition of NTC.

AT&T

9 years 3 months

Manager of Network Strategic Planning and Implementation
February 1995 - July 1997 (2 years 6 months)
Atlanta, Georgia

Developed RFPs, managed selection process for vendors, and developed plans for company's own SS7 network and first stand-alone HLR. Led efforts of other staff members and market units to develop network strategies. Developed network evolution plans to support business strategy and in

consideration of trends in technology, industry standards, and regulatory environment.

Identified, evaluated, and procured network elements required to implement network plans. Performed overall coordination for plan execution. Managed vendors for network optimization. Major projects included support for Local Number Portability (LNP) as well as Phase I and II of Enhanced 9-1-1 vendor selection and planning.

Signaling and Intelligent Network Planner/Engineer
November 1992 - February 1995 (2 years 4 months)
Birmingham, Alabama

Was responsible for planning and engineering of 1/3 of BellSouth Telecommunications SS7 network. Developed plans for network growth and evolution of signaling and intelligent network elements for nine state region. Interfaced with inter-exchange carriers, independent telephone companies, wireless providers, and internal business units to manage interconnection and determine future network requirements. Forecasted link and node capacity requirements based on interconnection expectations and feature deployment strategies. Engineered and monitored network elements to maintain capacity. Developed and monitored capital and expense budgets.

Manager
February 1992 - November 1992 (10 months)
Jacksonville, Florida

Managed order management group of nine people responsible for processing requests for switching services, new services, and enhancements.

Quality Consultant/Trainer
September 1991 - June 1992 (10 months)
Jacksonville, Florida

Provided training and consultation to internal customers regarding quality improvement and best practices. Focused on total quality management principles and use of process and efficiency improvement techniques from industrial engineering. Provided numerous structured training engagements to management and craft employees in classroom setting.

Equipment Engineer
August 1989 - February 1992 (2 years 7 months)
Jacksonville, Florida

Coordinated installation and removal of central office equipment. Estimated project material, labor, and engineering costs. Monitored vendor billing,

material requirements, and internal charges for accuracy. Provided expense and budget information to upper management. Supervised seven Network Analyst Specialists whose responsibilities included payment of central office equipment invoices and maintenance of property records and budgets.

Network Design Engineer
May 1988 - August 1989 (1 year 4 months)
Jacksonville, Florida

Designed cost effective central office switching configurations based on estimated line and trunk growth and demand for new services. Analyzed communications traffic patterns and forecasted future network usage. Monitored switch performance to meet customer#s service objectives.

Gainesville Regional Utilities
Industrial Engineering Intern
April 1987 - April 1988 (1 year 1 month)
Gainesville, Florida, United States

US Navy
Industrial Engineering Intern
May 1986 - August 1986 (4 months)
Jacksonville, Florida, United States

Jax Naval Air Station Facilities Engineering Department

US Navy
Industrial Engineering Intern
September 1985 - December 1985 (4 months)
Jacksonville, Florida, United States

Jax Naval Air Station Facilities Engineering Department

Education

University of Florida
BSIE, Industrial Engineering · (August 1983 - April 1988)

Auburn University
MBA, Business Administration · (January 1993 - July 1997)

Gerry Christensen: Information and Communications Technology Experience, Skills and Expertise

Gerry Christensen
Information and Communications Technology Expert

May 21, 2023

Current Employment

Gerry Christensen is currently Vice President of Business Development for YouMail, Inc., a company that leverages communications analytics capabilities to address critical industry needs for consumer protection from unwanted communications and enterprise needs for ensuring brand integrity over communications channels.

Mr. Christensen is one of the key employees within YouMail's Protective Services business unit, which provides B2B solutions for ICT infrastructure vendors, communication service providers and enterprise organizations. In this role he is responsible for leading new business development and strategic relationships with enterprise organizations, communication service providers, and ICT vendor partners.

He works with enterprise to eliminate unlawful brand impersonation. He also helps communication service

providers make informed call treatment decisions, customer contact organizations optimize call operations, and businesses stop vishing (voice phishing) and take control of enterprise identity including brand impersonation.

Education and Publications

Mr. Christensen holds a Bachelor of Science in Industrial and Systems Engineering from the University of Florida and a Master of Business Administration from Auburn University. He is author of many technical papers about various telecommunications subjects including “Yes 2 Prepay” and “Data on SS7” as well as co-author of the books “Wireless Intelligent Networking” and "Mobile Positioning and Location Management".

35 Years in Telecommunications

Mr. Christensen is skilled in telecommunications system design, network architecture, and application development. His experience areas include digital identity, presence and location, SS7 and SIP signaling, network, cloud, and end-point intelligence. His range of experience includes business and technical roles within fixed and wireless network operators, managed service providers, and application development companies.

As a knowledge transfer agent, Mr. Christensen is often called upon to put complex technology concepts into more easily digestible information. For example, Gerry frequently opines about emerging technologies such as Artificial Intelligence of Things (AIoT) and sixth generation (6G) cellular as per his articles written for TechTarget addressing “What is AIoT” and “What is 6G”.

Over the course of his 35 year career in telecommunications, Mr. Christensen has been involved with many transformative technologies and solutions including:

- **Evolution of Signaling** 🥽: In-band, to out-of-band, back to in-band. TDM to SS7 to SIP.
- **Evolution of Intelligence** 🧠: Centralized to decentralized. Stored program control switching, IN/WIN/CAMEL, and now WWW 3.0

- **Evolution of Wireless Networks** 📶: 1G, 2G, 2.5G, 3G, 4G, 5G, 6G
- **Evolution of Competition** 🏁: Duopoly, PCS licenses, LNP, MNVOs, OTT communications
- **Evolution of Messaging** 📥: No text, to one-way text, to two-way intra-carrier, to inter-carrier and now OTT apps
- **Evolution of Public Safety** 🚑: Enhanced 9-1-1, NG 9-1-1
- **Evolution of Network and User/Equipment Identity** 🆔: Closed networks with authenticated U/E, open networks and non-authenticated U/E, semi-controlled and partially verifiable U/E
- **Entity Identity** ❓: In the age of unwanted robocalls, generative AI and deep fakes, the new frontier will likely be entity (person, business, content) identification, authentication, authorization and accounting.

Legacy and Next Generation Networks

Mr. Christensen is an expert in legacy Time Division Multiplex (TDM) Public Switched Telecommunication Networks (PTSN) and supporting technologies such as TDM-based switching and signaling via Signal System number Seven (SS7) protocol. This includes SS7-based trunk signaling used for call set-up/tear-down and database services that rely upon intelligent network protocols (WIN and CAMEL for ANSI and GSM networks respectively). His experience in PSTN based applications and services is wide-ranging and includes mobile location services/technology, mobile messaging services, and prepaid wireless.

He is also an expert in next generation network technologies including those required to support Voice over Internet Protocol (VoIP) and many IP enabled applications and services. For example, he is an expert in IP Multimedia Subsystem (IMS) and supporting technologies such as Session Initiation Protocol (SIP). Mr. Christensen's expertise also includes knowledge and experience with PSTN-to-Internet Protocol (IP) interoperability, which is

used for PSTN-to-VoIP (and vice versa) calling and various applications such as Multimedia Messaging (MMS). He is an expert in E.164 Number to URI Mapping via Electronic Number (ENUM) technology.

Location Technology and Services

Mr. Christensen is a location technology expert with a wide range of experience in location determination methods (GPS and other methods) as well as supporting technologies such as GIS/mapping, APIs, and interaction with operating systems and applications. His experience in location technologies is broad and deep.

In his role as strategic planning manager for BellSouth Cellular in 1996, he was responsible for evaluating handset-based positioning methods and network approaches to implement the FCC's order for Phase I and Phase II of enhanced 9-1-1. In 1999, Mr. Christensen became the first director of product management for leading location technology middleware provider, SignalSoft, a company that developed the predecessor technology (known as "Location Manager") to the standards-based Control Plane infrastructure for GSM and ANSI (e.g. CDMA) networks, now known as GMLC/SMLC and MPC respectively.

In addition to the aforementioned Control Plane related location technologies, Mr. Christensen has also worked with many User Plane approaches (e.g. not dependent on carrier infrastructure) to implement and operate location applications. He has accomplished this in various roles including product management and business development at VeriSign, Zoove, and in his own independent consulting practice. This has provided him with experience dealing with a wide variety of location-based service (LBS) applications including integration of LBS apps at both the device and network level.

Voice Call Routing

Mr. Christensen is an expert in telecommunications interconnection and call routing. Christensen was responsible for network planning and engineering for AT&T's wireline and cellular systems for nine years. He was also responsible for managed communications services for

many network operators while working for a service bureau vendor for six years.

Over the course of his career, Mr. Christensen has worked with packet networks and systems involving many different technologies, protocols, interfaces, and devices. His experience ranges from SS7 to SIP involving TDM within the PSTN, VoIP over next generation networks, and interoperability between the two networks. He has been an industry leader in packet-based communications for a variety of applications, services, and solutions.

Non-Voice Communications

Mr. Christensen is an expert in messaging including SMS and MMS used for person-to-person communications as well as business to person engagement such as mobile marketing. Christensen co-founded Zoove, a mobile marketing company, serving as its CTO for five years.

Mr. Christensen engineered the UI and interoperability for the Zoove's Star/Star (**) service that allowed an end-user to engage in a multi-modal (voice, text, and data), multi-media experience simply by dialing ** and hitting send from their mobile phone. This solution relied upon the use of SS7, intelligent networking, and interoperability between carrier switches and third-party infrastructure.

While at VeriSign/Illuminet, Mr. Christensen was a key member of staff responsible for intercarrier messaging service realization. He was also member of the VeriSign M&A team acquiring three companies to fulfill company objectives in mobile messaging and content: Jamba!, Unimobile, and LightSurf.

Cybersecurity

Mr. Christensen has worked with many aspects of cybersecurity throughout his career, ranging from digital certificates to securing networks and systems from various threat vulnerabilities. As a designer and engineer of solutions involving platforms and devices of many types, he has dealt with many aspects of end-point and infrastructure security and privacy issues.

Communications Identity

Mr. Christensen is an expert in telecommunications identity including caller ID, spoofing methods and threats, authentication and validation such as STIR/SHAKEN, and analytics including event-based (such as SIP messages and CDRs) as well as content-based such as audio analytics. He is an expert in threats posed to consumers, networks and enterprises due to unwanted robocalls including methods employed by bad actors to exploit weaknesses in telecommunications networks and IT equipment.

Intellectual Property Experience and Expertise

In addition to his knowledge and experience in ICT, Gerry has broad intellectual property experience including patent submission and prosecution, portfolio analysis, and strategy development.

Gerry has acted as subject matter expert and/or expert witness in many intellectual property disputes and other litigation cases. Disputes include litigation involving many technologies within telecommunications, Internet, and wireless infrastructure, content, commerce, and applications. Gerry has testimony experience including expert reports, affidavits, deposition, and arbitration.

Christensen has also been retained to assess patent portfolios for companies that develop, acquire, and license patented technologies. He provides patent analysis from both a technological and business valuation point-of-view including forensic analysis of claims vs. potential infringing products.

Mr. Christensen is also an inventor himself with patents in his name including US8103868 B2 - Sender Identification System and Method, US 11/985,576 - System and Method for Mediating Service Invocation from a Communication Device, and US20130303137 A1 - System and Method for Service Invocation and Response with a Communication Device based on Transmitted Code Content Recognition.

Employment History

In 1988, Christensen began working at BellSouth Telecommunications in a number of different capacities, including work with switching equipment and analysis of

traffic patterns and network usage. In 1992, he began working at BellSouth's Regional Planning and Engineering Center (RPEC), where he was part of a group that was responsible for engineering and planning for the entire SS7 network.

Christensen started working for BellSouth Cellular in 1995 as Senior Manager of Network Strategic Planning. In that position, he was responsible for the planning, engineering, and introduction of the first Signaling System number Seven (SS7) system for BellSouth Cellular, which formed the backbone of all of the company's cellular signaling and support of core cellular services, including SMS messaging. Christensen also led a team responsible for selecting and implementing the first stand-alone Home Location Register (HLR) with BellSouth Cellular.

From 1997 to 1999 and then again from 2001 to 2005 Christensen was employed with Illuminet (subsequently acquired by VeriSign) as a Senior Product Manager and then Director of Wireless Business Development. During his employment, he was responsible for the planning and introduction of one of the first inter-carrier SMS messaging gateway systems in the USA. He was also part of a VeriSign team that evaluated and analyzed MMS technology from a technical and business perspective.

In 2005, Christensen co-founded Zoove, a mobile marketing company. While with Zoove, he was the CTO, responsible for the over-all technical vision and direction for the company, as well as product management. In addition, Christensen defined the overall technical functionality and features of products, including a mobile marketing application that used SS7 signaling and intelligent networks. He engineered and designed the first prototype of that product in conjunction with Alcatel-Lucent, including testing for switch integration.

In 2010, Christensen started Wireless WayPoint, an independent consultancy firm focusing on telecommunications, wireless, and internet-based applications. Consulting practice areas include strategy and development of emerging business models and

ecosystems, network infrastructure, circuit and IP based applications, operational and business support systems.

In 2020, Christensen was employed with Transaction Network Services as Senior Product Manager. In that role, he was responsible for analytics engine efficacy in support of call origination and termination services. This included internal customers, such as branded calling, and external customers, such as carriers, enterprise, traffic aggregators, and call centers. He was also responsible for related data strategy, product efficacy and continuous improvements. Christensen worked with data science team to ensure AE addresses emerging threats and opportunities. This included algorithm model tuning and decisions about data sources and usage.

In 2021, Christensen joined his current employer, YouMail, as VP of Business Development. In this role, he is responsible for driving new business development and channel relationships for enterprise, service providers, and strategic partners. He develops new business strategies and execute sales plans in alignment with corporate goals. He also develops and executes against revenue plans that leverage unique market positioning as well as operationalize plans for solution adoption and growth with measurable business metrics and success criteria.

Gerry Christensen

Information and Communications Technology Expert

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