

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASSA ABLOY Global Solutions, Inc., HID Global Corp.,

Petitioners,

v.

Urban Intel Inc.,

Patent Owner.

U.S. Patent No. 10,657,747

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DECLARATION OF BENJAMIN B. BEDERSON, PH.D.

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I. INTRODUCTION

1. My name is Benjamin B. Bederson, Ph.D. I am currently Professor Emeritus of Computer Science at the University of Maryland. I have been retained as an independent expert by ASSA ABLOY Global Solutions Inc. (“AAGS”) in this proceeding.

2. I have been asked to provide my opinion as to whether claims 1-14 of U.S. Patent No. 10,657,747 are patentable. This report sets forth my opinions and the bases of my opinions.

3. All of the opinions stated herein are based on my own personal knowledge and professional judgment, and my analysis of the materials and information I considered in preparing this report. The materials I reviewed in connection with preparing this report are listed below. I make the following statements based on my own personal knowledge and, if called as a witness, I could and would testify to the following. I am being paid for my work in this litigation at the rate of \$600.00 per hour, plus reimbursement of reasonable expenses. My compensation does not depend on the outcome of this proceeding, and I have no financial interest in that outcome.

II. QUALIFICATIONS

4. My qualifications for forming the opinions set forth in this report are summarized here and are addressed more fully in my CV, which is attached hereto as Exhibit 1004 with specific publications attached as Appendices.

Appendix	Description
Appx. 1	A Miniaturized Active Vision System. <i>In Proceedings of Eleventh International Conference on Pattern Recognition</i> , IEEE Press, 5861.
Appx. 2	Pocket PhotoMesa: A Zoomable Image Browser for PDAs. <i>In Proceedings of Mobile and Ubiquitous Multimedia (MUM 2004)</i> ACM Press, 19-24.
Appx. 3	SlideBar: Analysis of a Linear Input Device. <i>Journal of Behaviour and Information Technology</i> , London, Taylor & Francis, 23 (1), 1-9.
Appx. 4	Multi-Modal Text Entry and Selection on Mobile Devices, <i>Proceedings of Graphics Interface (GI 2010)</i> , 19-26.
Appx. 5	DateLens: A Fisheye Calendar Interface for PDAs, <i>Transactions on Computer-Human Interaction</i> , New York: ACM, 11 (1), 90-119.
Appx. 6	Understanding One Handed Use of Mobile Devices. Lumsden, Jo (Ed.), <i>Handbook of Research on User Interface Design and Evaluation for Mobile Technology</i> , Idea Group Reference, 86-101.
Appx. 7	Audio Augmented Reality: A Prototype Automated Tour Guide. In <i>Proceedings of Human Factors in Computing Systems (CHI 95)</i> New York: ACM Press, (Short Paper), 210-211.

5. Based on my education, research, and work experience, I am knowledgeable about the subject matter of the '747 patent and the related prior art. I am currently Professor Emeritus of Computer Science at the University of Maryland ("UMD"). From 2014 to 2018, I was the Associate Provost of Learning Initiatives and Executive Director of the Teaching and Learning Transformation Center at UMD. I am a member and previous director of the Human-Computer

Interaction Lab (“HCIL”), the oldest and one of the best-known Human-Computer Interaction (“HCI”) research groups in the country. I was also co-founder and Chief Scientist of Zumobi, Inc. from 2006 to 2014, a Seattle-based startup that is a publisher of content applications and advertising platforms for smartphones. I am also co-founder and co-director of the International Children's Digital Library (“ICDL”), a web site launched in 2002 that provides the world's largest collection of freely available online children’s books from around the world with an interface aimed to make it easy for children and adults to search and read children's books online. I am also co-founder and prior Chief Technology Officer of Hazel Analytics, a data analytics company to improve food safety and better public health whose product sends alerts in warranted circumstances. In addition, I have for more than twenty-five years consulted for numerous companies in the area of user interfaces, including EPAM, Hillcrest Labs, Lockheed Martin, Logitech, Microsoft, NASA Goddard Space Flight Center, the Palo Alto Research Center, and Sony.

6. For more than thirty years, I have studied, designed, and worked in the field of computer science and HCI. That includes teaching, research, entrepreneurship, and administration in HCI and the software and technology underlying interactive computing systems. I have worked on the design and implementation of hardware and software systems including the use of capacitive,

resistive, optical and IR among other sensors, and interactive applications on a range of devices, including embedded systems, controllers, smart phones, and PDAs for 2D and 3D interfaces.

7. In 1992, I completed my Ph.D. dissertation at New York University titled “A Miniature Space-Variant Active Vision System: Cortex-I” in which I built a custom small motor that aimed a custom camera along with a custom DSP-based computing system. Collectively, these worked together to create a miniature computer vision system that one could carry in one hand—dramatically smaller than other computer vision systems of the day. This system included the ability to generate a real-time video signal with the result of the image processing. Appx. 1.

8. In my dissertation work, I described a custom two degree of freedom motor that I designed and built called a “Spherical Pointing Motor.” I was issued U.S. Patent No. 5,204,573 in 1993 for this work, which included this figure illustrating the motor. A photograph of the actual motor I built was included in Figure 4.1 of my dissertation.

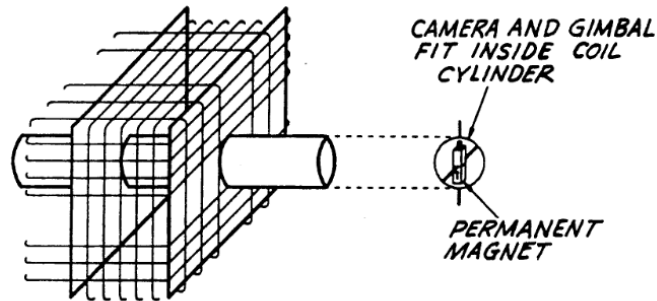


FIG 5

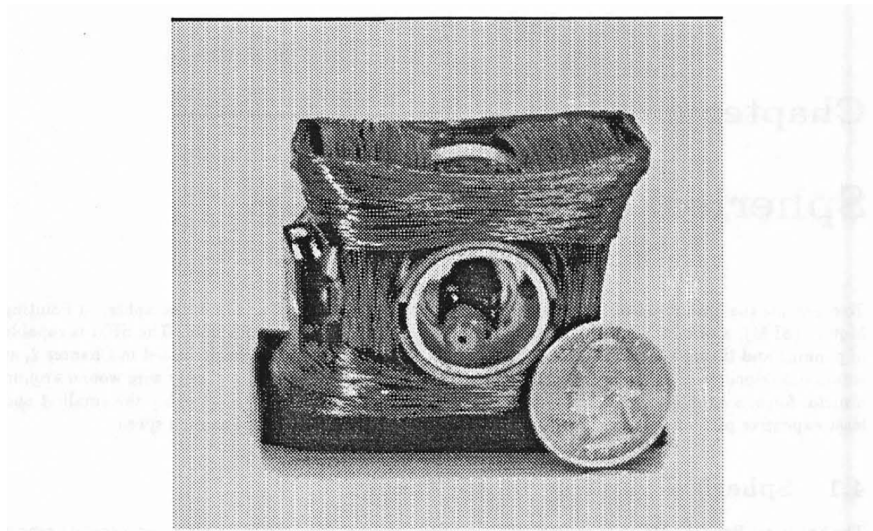


Figure 4.1: The Spherical Pointing Motor. At the center is a miniature camera consisting of a single CCD sensor chip and a lens assembly that fits on the rotor of this motor.

9. As described in my dissertation, I controlled the motor by generating a set of pulse width modulation signals for each of the three coils. I then calibrated those signals by using the camera in the motor to determine exactly where each set of signals ended up pointing in the motor. Because the motor used an open loop control system, the device would oscillate in response to the input signals generated. I reduced this oscillating response by measuring its movement in response to the

control signals I generated and then creating complementary signals to dampen the oscillation. The following figure from my dissertation demonstrates the uncontrolled and controlled motor movement in response to the control system I built.

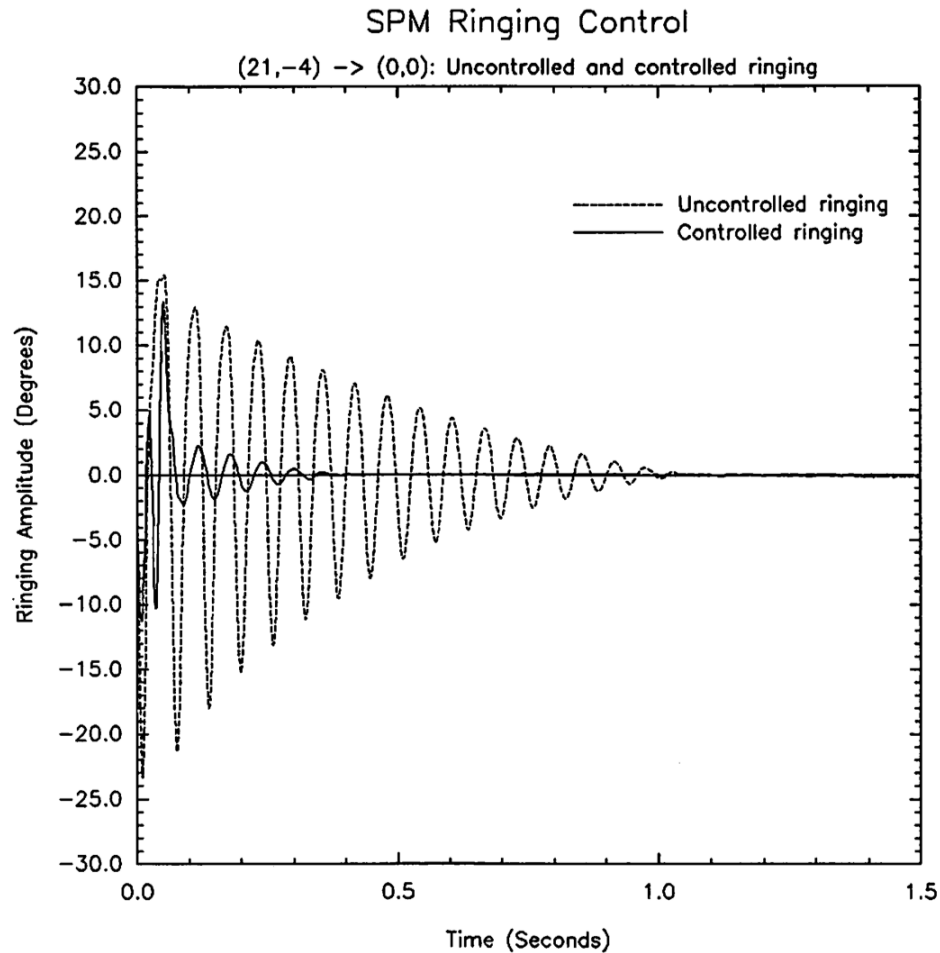


Figure 4.14: Measurement of two-step open-loop control strategy to reduce SPM ringing. Results are shown for the same movement of 21.4° with and without control. The motor currents are changed to hold the motor at the final position when the motor is expected to have zero velocity. Because the midpoint and timing are not exactly correct, the ringing is not completely eliminated.

10. In 1995, I built an “audio augmented reality” system for use in an art museum that identified and announced which piece of art a person was standing in front of. Appx. 7. This worked by installing infrared (IR) transmitters in the ceiling above each piece of art which was identified by an infrared (IR) receiver controlled by a microcontroller. As depicted in Figure 1 from that paper below, when a person wearing the receiver walked around, the microcontroller they were carrying would identify the code from the transmitter they were standing under.

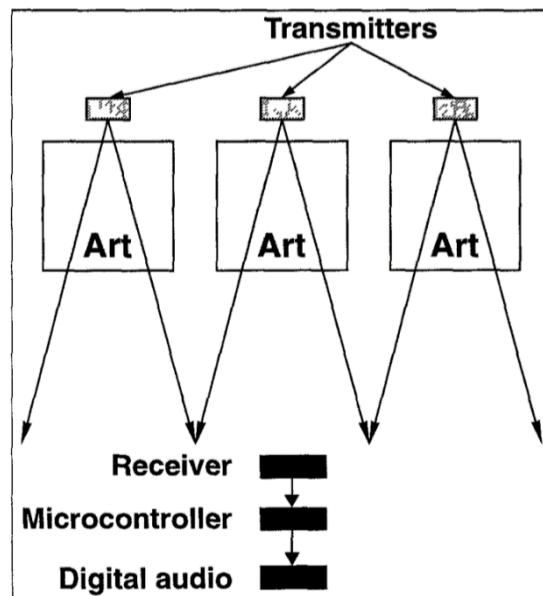


Figure 1: Schematic of automated tour guide prototype.

11. Starting in the mid-1990s and going through the 2000s, I worked on a range of “zoomable user interfaces” (ZUIs) that supported users in navigating large information spaces by zooming in and out of the information on the screen. I built several different ZUI systems over the years, including Pad++, Jazz, and Piccolo.

Starting in the early 2000s, I adapted that work for mobile devices including PDAs, tablets, and mobile phones. Appx. 2.

12. I was heavily involved in the research and development of mobile device applications during the early 2000s. For example, I envisioned, designed, and built DateLens in 2002-2004 to create a richer calendar for the Microsoft PocketPC platform as well as desktops as described in a 2004 paper. Appx. 5. One of its innovations was its design that enabled it to scale between small (mobile) and large (desktop) computers. It also had a special double-headed scroll bar that allowed a user to touch scroll and also control how much information was presented on the screen at a time. I started DateLens as a research project and eventually sold it commercially. DateLens displayed calendar data that came from the Microsoft PocketOutlook database and allowed modification and viewing of appointments. The research website from that time period that describes DateLens is still available at <http://www.cs.umd.edu/hcil/datelens/> which shows screenshots and a picture of me demonstrating DateLens to Bill Gates. The commercial website from that time period is also available at <http://www.windsorinterfaces.com/datelens.shtml>, which shows a number of news articles reviewing DateLens at that time.

13. That work led to my co-founding of Zumobi, where I was responsible for investigating new software platforms and developing new user interface designs

that provide efficient and engaging interfaces for mobile touchscreen platforms including the iPhone and Android-based devices. For example, I designed and implemented software called “Ziibii,” a “river” of news for iPhone, software called “ZoomCanvas,” a zoomable user interface for several iPhone apps, and iPhone apps including “Inside Xbox” for Microsoft and Snow Report for REI. All of these applications included touch-based zooming and scrolling.

14. My work has often integrated hardware and software systems as I explained above where I described my work on the spherical pointing motor of my dissertation and my work on audio augmented reality. Some other work of mine that involved the combination of hardware and software included the development of “SlideBar” in 2004, a linear input device used for absolute linear position control. Appx. 3. Another project from 2010 used input from an accelerometer, a foot pedal and voice to allow multi-modal text entry and selection on a mobile device. Appx. 4. And in 2007, I built a custom sensing device to understand how people grasped and used mobile devices with one hand, as illustrated in the figure below from a paper describing that work. Appx. 6.

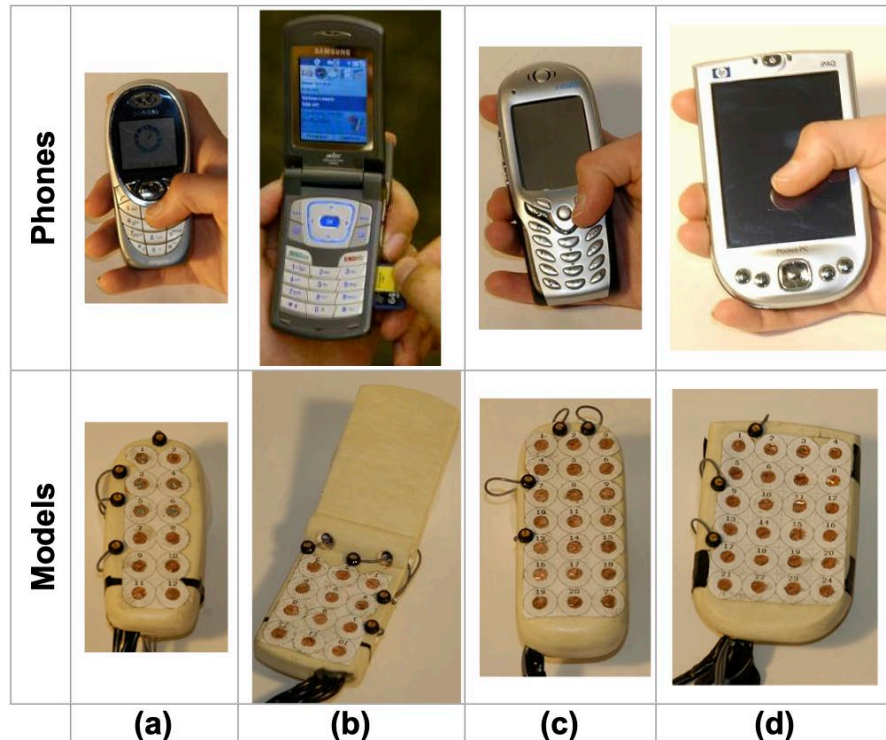


Figure 4. Devices we chose to represent a range of sizes and forms (top row) together with their study-ready models (bottom row): (a) SMALL, (b) FLIP, (c) LARGE, and (d) PDA.

15. At UMD, I have been focused primarily on the area of HCI, a field that relates to the development and understanding of computing systems to serve users' needs. Researchers and practitioners in this field are focused on making universally usable, useful, efficient, and appealing systems to support people in their wide range of activities. My approach is to balance the development of innovative technology that serves people's practical needs. Example systems following this approach that I have built include Cortex-I (1992 embedded computer vision system that sensed licensed plates with custom motor, camera, and controller), Audio Augmented Reality (1995 embedded system for sensing a user's location and playing audio

suited to that location), Fisheye Menus (2000 software for sensing movement within and selection of a linear list of items in a menu), PhotoMesa (2001 software for end users to browse personal photos), DateLens (2002 software for end users to use their mobile devices to efficiently access their calendar information), SlideBar (2005 linear sensor to control scrolling), LaunchTile (2005 “home screen” software for mobile devices to allow users to navigate apps in a zoomable environment), SpaceTree (2001 software for end users to efficiently browse very large hierarchies), ICDL (2002 International Children’s Digital Library), and StoryKit (a 2009 iPhone app for children to create stories).

16. My work has been published extensively in more than 160 technical publications, and I have given about 100 invited talks, including 9 keynote lectures. I have won a number of awards including the Brian Shackel Award for “outstanding contribution with international impact in the field of HCI” in 2007, and the Social Impact Award in 2010 from the Association for Computing Machinery's (“ACM”) Special Interest Group on Computer Human Interaction (“SIGCHI”). ACM is the primary international professional community of computer scientists, and SIGCHI is the primary international professional HCI community. I have been honored by both professional organizations. I am an “ACM Distinguished Scientist,” which “recognizes those ACM members with at least 15 years of professional experience

and 5 years of continuous Professional Membership who have achieved significant accomplishments or have made a significant impact on the computing field.” I am a member of the “CHI Academy,” which is described as follows: “The CHI Academy is an honorary group of individuals who have made substantial contributions to the field of HCI. These are the principal leaders of the field, whose efforts have shaped the disciplines and/or industry, and led the research and/or innovation in human-computer interaction.” The criteria for election to the CHI Academy are: (1) cumulative contributions to the field; (2) impact on the field through development of new research directions and/or innovations; and (3) influence on the work of others. I have received two “Test of Time” awards from IEEE InfoVis for my 2001 and 2002 work on visualizing hierarchies, including those containing digital photos.¹

17. I have appeared on radio shows numerous times to discuss issues relating to user interface design and people’s use and frustration with common technologies, web sites, and mobile devices. My work has been discussed and I have been quoted by mainstream media around the world over 120 times, including by the New York Times, the Wall Street Journal, the Washington Post, Newsweek, the

¹ <https://ieevis.org/year/2021/info/awards/test-of-time-awards;>

[https://ieevis.org/year/2022/info/awards/test-of-time-awards.](https://ieevis.org/year/2022/info/awards/test-of-time-awards)

Seattle Post Intelligencer, the Independent, Le Monde, NPR's All Things Considered, New Scientist Magazine, and MIT's Technology Review.

18. I have designed, programmed, and publicly deployed dozens of user-facing software products that have cumulatively had millions of users. My work is cited by several major companies, including Amazon, Apple, Facebook, Google, and Microsoft. I am a named inventor on 14 U.S. patents and 20 U.S. patent applications. The patents are generally directed to user interfaces and experience.

19. I received a B.S. degree in Computer Science with a minor in Electrical Engineering in 1986 from the Rensselaer Polytechnic Institute. I received M.S. and Ph.D. degrees in Computer Science in 1989 and 1992, both from New York University.

III. MATERIALS CONSIDERED

20. In forming my opinions, I have reviewed the following documents, and any other document cited in this declaration:

Exhibit	Description
Ex-1001	U.S. Patent No. 10,657,747 (the '747 patent)
Ex-1002	Prosecution File History of U.S. Patent No. 10,657,747
Ex-1004	Curriculum Vitae of Benjamin B. Bederson
Ex-1005	WO Publication No. 2008/076074 A1 to Knutsson et al. (" <i>Knutsson</i> ")
Ex-1006	Jayant, N. et al., Broadband: Bringing Home the Bits (2002).
Ex-1008	U.S. Patent Publication No. 2009/0219133 to Woodard et al. (" <i>Woodard</i> ")
Ex-1013	JP Patent Publication No. 2002/083087 to Inoue et al. (" <i>Inoue</i> ")

Ex-1014	Translation of <i>Inoue</i> and Certificate of Translation
Ex-1016	U.S. Patent Publication No. 2008/0066167 A1 to Andri
Ex-1018	National Institute of Standards and Technology, An Introduction to Graphical User Interfaces and Their Use by CITIS (July 1992).

21. I have also relied on my education, experience, research, training, and knowledge in the relevant art, and my understanding of any applicable legal principles described in this declaration.

22. All of the opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my understanding of how a person of ordinary skill in the art would have understood the claims of the '747 patent at the time of the alleged invention. For the purposes of this declaration, I have been asked to assume that the date of the alleged invention is the earliest claimed priority date: March 2, 2010.

23. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

IV. LEGAL PRINCIPLES

24. It is my understanding that there are two ways that prior art references can render a patent claim unpatentable: anticipation and obviousness. Counsel has informed me that the petitioner has the burden in an inter partes review to show unpatentability by a preponderance of the evidence.

25. I also understand that there is a set process as follows: (a) the claims of a patent are properly construed, (b) then, you must compare the claim language to the prior art on a limitation-by-limitation basis. If the prior art reference contains all the elements of the claim language (explicitly or inherently), arranged as in the claims, then that is considered anticipation.

26. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. For this reason, I have been asked to consider the level of ordinary skill in the field that someone would have had at the time of the claimed invention.

27. Counsel has also instructed me that in an obviousness determination, the factors to consider are (1) the scope and content of the prior art, (2) the differences between the prior art and the asserted claims, (3) the level of ordinary skill in the pertinent art, and (4) the existence of secondary considerations of nonobviousness. Secondary considerations include a long-felt need, commercial success, unexpected results, praise of the invention, licensing, copying, failure of others, and skepticism by experts.

28. Counsel has also instructed me that an obviousness inquiry may involve assessing the motivation of a person of ordinary skill to combine references. The prior art references themselves may provide a suggestion, motivation, or reason to combine, but other sources may also support a rationale for combining two or more prior art references.

29. It is also my understanding through counsel that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee.

30. I have been informed that, in this proceeding, claim terms in the '747 patent must be given the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention in light of the patent specification.

31. I have been asked to assume that March 2, 2010, is the date of the purported invention, as that is the earliest date to which the '747 patent claims priority. I have not conducted a separate analysis to determine whether the challenged claims are entitled to this priority date, as I understand that the prior art

references discussed below qualify as prior art even if all claims are deemed to be entitled to the March 2, 2010, date.

V. THE '747 PATENT

32. The '747 patent was filed on July 12, 2018, and claims priority to U.S. provisional application no. 61/309,813, filed March 2, 2010. I have been asked to assume that March 2, 2010 is the '747 patent's earliest possible priority date.

33. The '747 patent describes a smart phone or terminal to active a door lock using a web site or server, and that a door lock receives a reservation certificate presented by the terminal through a communication module. Ex-1001, Abstract. Representative claim 1 of the '747 patent is listed below:

	Claim Limitation
1p	An access control system comprising:
1A	an access device comprising a communication module connected to a processor having control of a door lock;
1B	a secure reservation interface to receive a reservation request from a first device for a reservation at a given destination, the reservation interface comprising one or more screens for receiving a selection of a location at the destination and an interval of the reservation;
1C(i)	a reservation server, in communication with the reservation interface and network, to:
1C(ii)	receive the reservation request for the destination, the reservation request including a selected location at the destination and an interval of the reservation;

1C(iii)	issue a reservation certificate describing the interval of the reservation based on the reservation request and the selected location;
1C(iv)	transmit, via the network from the reservation server to a second device distinct from the first device, the reservation certificate and a communication setting corresponding to the access device;
1D(i)	an application installed on the second device to receive the reservation certificate and the communication setting corresponding to the access device,
1D(ii)	wherein the application wirelessly transmits the reservation certificate to the access device using the communication setting upon receipt of a command to activate the door lock;
1E	wherein the access device receives the reservation certificate from the application based on use by the application of the communication setting, and the processor activates the door lock based on at least the receipt of the reservation certificate.

VI. LEVEL OF ORDINARY SKILL IN THE ART

34. In rendering the opinions set forth in this declaration, I have been asked to consider the '747 Patent's claims and the prior art through the eyes of a person of ordinary skill in the art ("POSA"). I considered factors such as the educational level and years of experience of those working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents and publications of other persons or companies, and the sophistication of the technology.

35. I have been instructed to assume a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

36. Taking these factors into consideration, it is my opinion that a person of ordinary skill in the art (“POSA”) at the time of the purported invention would have had a Bachelor of Science degree in Computer Science or an equivalent field, with two to three years of academic or industry experience with wireless systems or comparable experience. Additional education could substitute for professional experience and vice versa.

37. By March 2, 2010, as evidenced by my qualifications outlined in Section II, I was at least a person of ordinary skill in the art at the relevant time. In this declaration, and for all of my opinions herein, I have applied the knowledge of a person of ordinary skill in the art as of March 2, 2010.

38. In forming my opinions, I have also relied on my education and experience.

VII. CLAIM CONSTRUCTION

39. I understand that in *inter partes* review, the U.S. Patent and Trademark Office construes terms according to their plain and ordinary meaning, in view of the specification, as would have been understood by a person of ordinary skill in the art. I understand that no terms have been proposed for construction in any case. Based on my review of the claims and my personal knowledge and experience, I have considered and applied the plain and ordinary meaning of all terms of the ’747 Patent

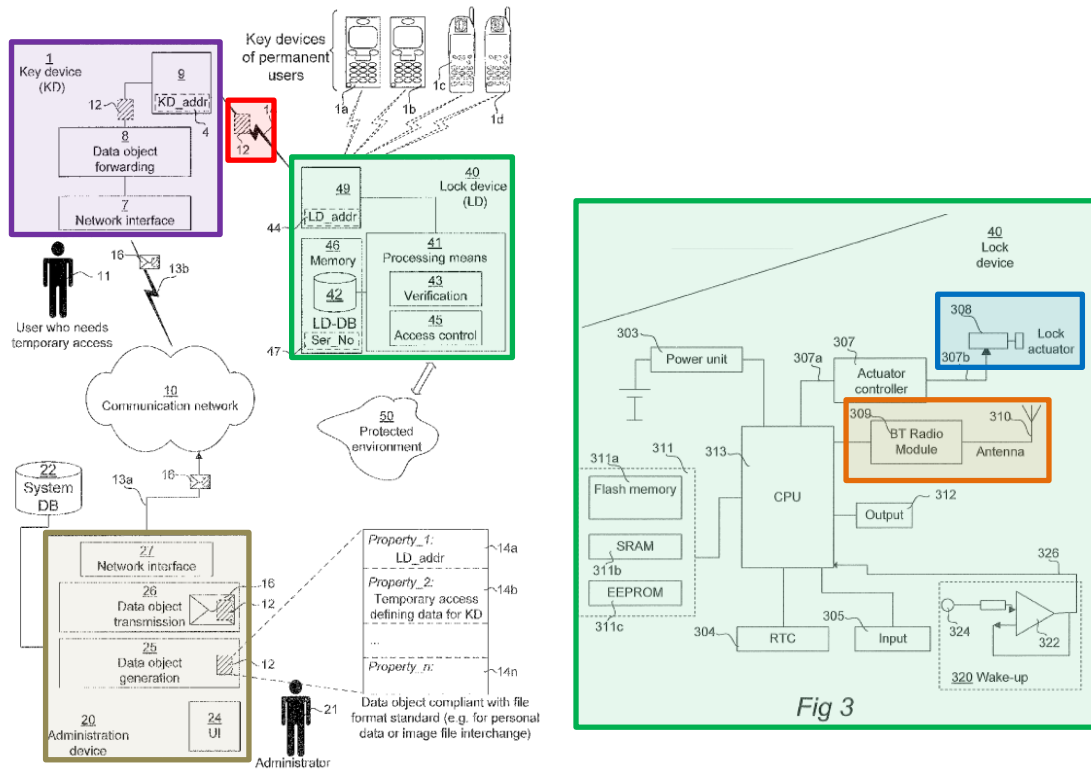
as they would have been understood by one skilled in the art in view of the specification as of March 2, 2010.

VIII. SUMMARY OF OPINIONS

40. *Knutsson*, the primary Petitioner-owned reference relied upon, discloses that, based on a reservation, input using a graphical user interface, the reservation, including a destination and a time interval, processors of access devices with communication modules that receive a reservation certificate including a communication setting from a server, by way of a key device with an application, determine whether to unlock a door lock, like those claimed by the '747 patent.

41. *Knutsson* discloses or renders obvious almost all limitations of the independent claims and many dependent claims of the '747 patent (**Grounds 1, 3**). *Knutsson* discloses, an “access control system” that includes an administration device, or server, that creates and sends a data object with the temporary access defining data to a key device to forward to the lock device to gain access. *Knutsson*, 10:13-21 (emphasis added). *Knutsson* that its “lock device 40 will be integrated with or coupled to a lock mechanism in the lockable door or garage port and in particular have a controllable lock actuator configured to unlock the lock mechanism upon detection and successful authorization of the key device 1.” *Id.*, 10:24-28 (emphasis

added). *Knutsson*’s “the lock device 40 has a Bluetooth® radio module 309 with an antenna 310.” *Id.*, 17:18-19 (emphasis added).



Knutsson, FIGS. 1, 3 (annotated).

42. Certain dependent claim limitations further require the processor generating a record indicating that the processor activated the door lock (claim 6, **Grounds 2, 4**). While *Knutsson* does not expressly disclose a generated record, *Woodard* does. *Woodard* discloses “accessing said lockbox and recording each access event in an access record, each of said access events comprising an access time.” *Woodard*, [0015].

43. Certain claim limitations further require a first device with a reservation interface that receives a reservation request including a selection of a location at a given destination and a reservation server (claims 1-5, 7-13, **Ground 3**). To the extent it is argued that *Knutsson* does not disclose a reservation request of a specific location at a destination, *Inoue* does. *Inoue* discloses “a reservation for a hotel stay by using the data send/receive function of a mobile phone to access the reservation server of the hotel operator, to receive in advance, on the mobile-phone side, data corresponding to a key for opening the door of a room reserved in advance.” *Inoue*, [0004]. Certain dependent claim limitations further require selecting amenities through the reservation interface (claims 10, 11, 14, **Ground 3**). While *Knutsson* does not expressly disclose a reservation interface for selecting amenities, *Inoue* does. *Inoue* discloses “the reservation server 7, which received the inquiry from the mobile-communication network 1 side, searches the database 8 for room-availability information at the requested check-in and check-out dates.” *Inoue*, [0023]. Then, “[o]n the mobile device 10 side, the room-availability information is received and displayed on the display part 19. That is, as shown in FIG. 5, for example, ‘Single ¥ 18,000’, ‘Twin ¥ 23,000’, ‘Super twin ¥ 35,000’ and ‘Royal twin ¥ 80,000’ are displayed.” *Id.*

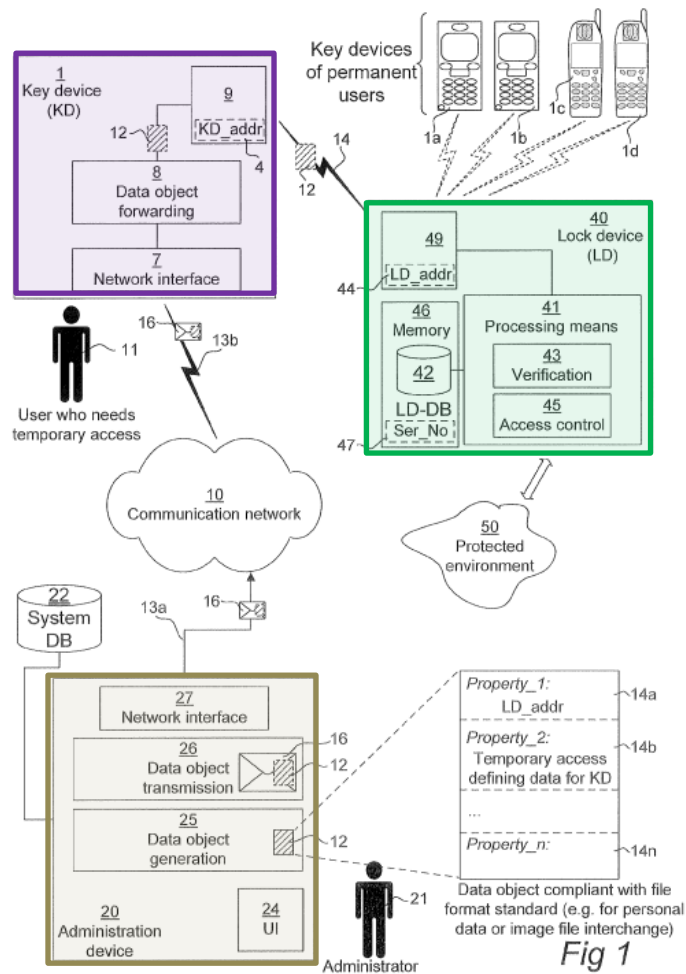
IX. GROUND 1: CLAIMS 1-5, 7-9, 12, AND 13 ARE RENDERED OBVIOUS BY *KNUTSSON*

A. Claim 1

44. *Knutsson* renders obvious claim 1.

1. [1p] “An access control system comprising:”

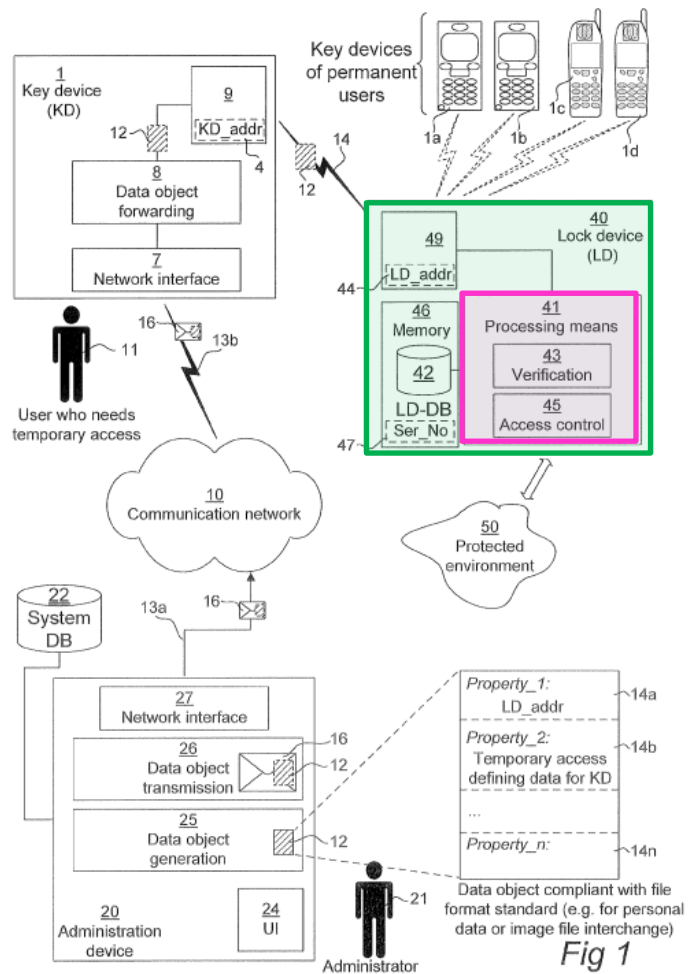
45. *Knutsson* renders obvious [1p] because *Knutsson* discloses “[a]n access control system ... to provide temporary access for a wireless key device to a lock device.” *Knutsson*, Abstract. *Knutsson* discloses “Fig 1 is a schematic illustration of an access control system, including an administration device, a wireless key device and a lock device.” *Id.*, 9:27-28 (emphasis added).



Knutsson, FIG. 1 (annotated).

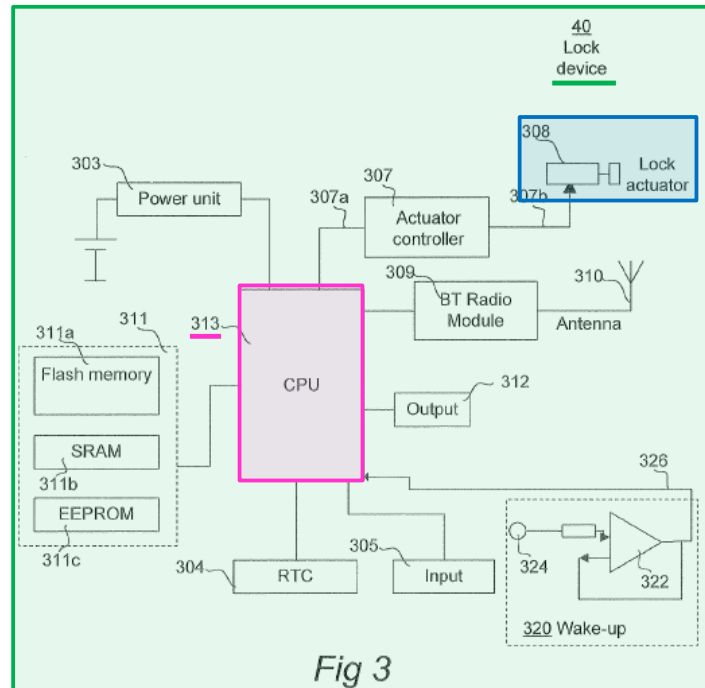
2. [1A] “a) an access device comprising a communication module connected to a processor having control of a door lock;”

46. *Knutsson* renders obvious [1A] because *Knutsson*’s “lock device 40 has processing means 41” such as a CPU (processor) for controlling a door lock. *Knutsson*, 16:6-8, 17:11-13, 20:8-11 (emphasis added). This is shown in figure 1 below.



Knutsson, FIG. 1 (annotated).

47. *Knutsson*’s “FIG 3 is a schematic block diagram illustrating internal components and modules of a lock device.” *Id.*, 9:31-32 (emphasis added).



Knutsson, FIG. 3 (annotated).

48. *Knutsson*'s **lock device 40** (access device) includes a processor because it includes processing means 41 or CPU 313, which are "identical." *Id.*, 17:11-13. *Knutsson* discloses "[t]he CPU 313 is programmed to read and execute program instructions stored in a memory 311 so as to perform a method for wireless automatic unlocking in response to the appearance and proper authentication of a **key device**." *Id.*, 17:9-11 (emphasis added). *Knutsson*'s CPU 313 (processor) controls the door lock because *Knutsson* discloses that "[a]n actuator controller 307 is coupled to the lock actuator 308 and is adapted to provide a control signal 307b for engaging or disengaging the lock actuator 308" (*id.*, 17:4-6), and "**CPU 313** ... generates the

control signal 307a to the actuator controller 307 ... [to] cause unlocking of the lock, etc, and allow opening of the door, etc, to the protected environment.” *Id.*, 20:8-11 (emphasis added).

49. *Knutsson*’s communication means 49 corresponds to the claimed, “communication module.” *Knutsson* discloses, “the lock device 40 has short-range wireless data communication means 49 in the form of a Bluetooth® transceiver.” *Id.*, 12:3-4 (emphasis added). *Knutsson* discloses, “the lock device 40 has a Bluetooth® radio module 309 with an antenna 310. The Bluetooth® radio module 309 may be identical to the aforementioned communication means 49.” *Id.*, 17:18-20 (emphasis added). Further, *Knutsson* discloses the lock device’s processor is connected to its communication means because, “the lock device compris[es]: short-range wireless data communication means ... capable of receiving from said key device a data object which originates from said administration device ... [and] processing means, associated with said short-range wireless data communication means.” *Id.*, 7:5-12 (emphasis added); FIG. 1. The connection of the processing means (e.g., processing means 41 or CPU 313) and the short-range wireless communication means (e.g., means 49 or radio module 309) are shown in figures 1 and 3.

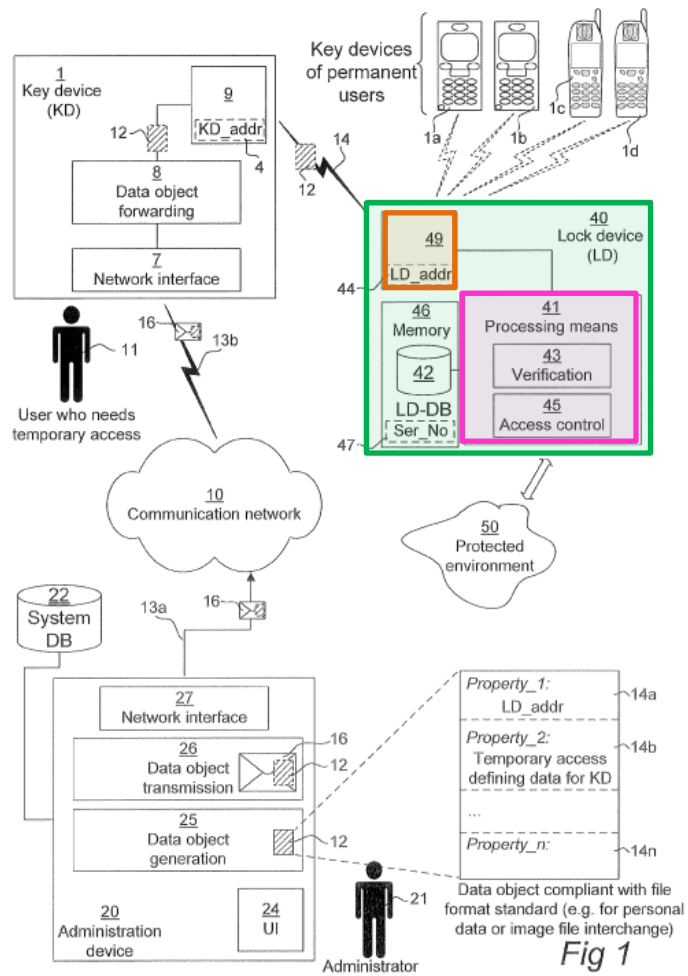
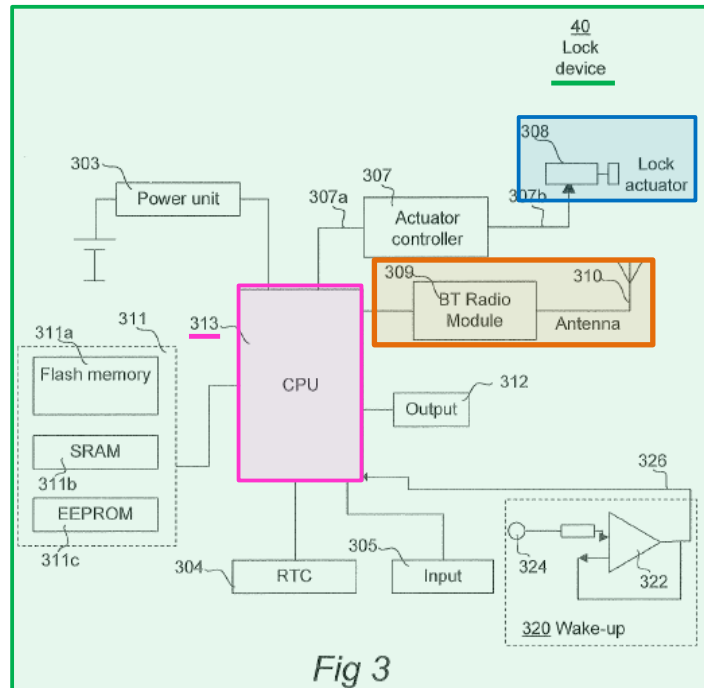


Fig 1



Knutsson, FIGS. 1, 3 (annotated).

3. [1B(i)] “b) a secure reservation interface to receive a reservation request from a first device for a reservation at a given destination,”

50. *Knutsson* renders obvious [1B(i)].

51. *Knutsson*’s computer with a graphical user interface that is used to grant temporary access when requested corresponds to the claimed “a secure reservation interface to receive a reservation request from a first device for a reservation... the reservation interface comprising one or more screens.” For example, *Knutsson* discloses its “administration device 20 is a computer, such as a personal computer, workstation or server computer, having a user interface 24 in the form of input devices such as keyboard and mouse, an output device such as a display (e.g., liquid

crystal display monitor or cathode ray tube monitor), and an operating system with a graphical user interface (GUI).” *Id.*, 11:1-6. *Knutsson* discloses its administration device 20 has “functionality for creating, packaging and transmitting the temporary access defining data for the key device 1 and its user 11 who is to get temporary access to the lock device 40.” *Id.*, 11:16-20. The ’747 patent states a user “can confirm the reservation 26, which initiates a reservation request to the server.” Ex-1001, 8:14-16. Similar to the ’747 patent, *Knutsson* discloses software for its administrative device 20 has “functionality [that] includes a data object generation module 25 which is configured to invite the administrator 21 to specify the temporary access defining data through interaction with the user interface 24.” *Knutsson*, 11:20-23.

52. *Knutsson*’s user interface 24 corresponds to the claimed “secure reservation interface” because it discloses “the administrator 21 may control which users (or more specifically which key devices held by such users) that shall have access to the protected environment.” *Knutsson*, 11:7-10. *Knutsson*’s control through an administrator of a reservation interface ensures security. Further, *Knutsson* discloses forwarding information from an administrative device to the lock device “in a secure manner,” *Knutsson*, 1:24-26, and encrypting communications of the administrative device, 6:13-17, thus reinforcing that *Knutsson*’s administrative

device is a secure station. Further, in my opinion, a POSA would have found it obvious that administrator 21 would have the control *Knutsson* describes through an administrator password or even physical access limitations to exert control over who could access administration device 21. Furthermore, in my opinion, at the time of the priority date of the '747 patent, a POSA would have understood using a password to control access to a computer was a commonly known technique for limiting access to secure information. Ex-1016, [0002]. Thus, *Knutsson*'s controlled user interface renders obvious the claimed "secure reservation interface."

53. *Knutsson*'s temporary access of a commercial or public premises corresponds to the claimed "a reservation at a given destination." *Knutsson* discloses its access system's purpose is "to grant the intended temporary access for the user 11 to the protected environment 50." *Knutsson*, 10:20-21. *Knutsson* explains its protected environment can be "a room, apartment, commercial or public premises, garage, cabinet, locker, etc, with a controllable physical access interface in the form of a lockable door, garage port, hatch, etc." *Id.*, 10:22-24. In other words, *Knutsson* discloses obtaining temporary access to a commercial or public premises, such as a hotel or storage facility.

54. *Knutsson*'s display graphical user interface operable by keyboard/mouse corresponds to the claimed "one or more screens for receiving a

selection of a location at the destination and an interval of the reservation.” *Knutsson* discloses its administration device 20 has “a data object generation module 25 which is configured to invite the administrator 21 to specify the temporary access defining data through interaction with the user interface 24.” *Knutsson*, 11:20-23. “**The created data object 12** is [] assigned the data which is necessary for the lock device 40 to be able to **grant temporary access for the key device 1**,” where “[t]his necessary data includes a communication identifier (‘LD _ addr’ in Fig 1) of the lock device 40.” *Id.*, 11:32-35 (emphasis added). The structure of data object 12 is shown below in FIGS. 4A-4B.

Structure of generated data object 12:

```

begin:vcard
14c~fn:Temp access for <user 11> to <LD 40>.
14d~uid:<Unique identifier for the generated vCard>
14a~x-phoniro;LD_addr:<Bluetooth address of lock device 40>
14e~x-phoniro;Name:<Name of user 11>
14b~{
    x-phoniro;Valid_from:<Start date, Start_time>
    x-phoniro;Valid_until:<End date, End time>
    x-phoniro;Max_usage:<Integer value for maximum No of
    accesses available for user 11>
14f~x-phoniro;Checksum:<Checksum to prevent manipulation>
end:vcard

```

Fig 4a

Example of generated data object 12:

```

begin:vcard
14c~fn:Temp access for Olle to Elm Street 12.
14d~uid:20061127-099045-99990F192713-0052
14a~x-phoniro;LD_addr:0x00281ec3
14e~x-phoniro;Name:Olle
14b~{
    x-phoniro;Valid_from:20061128,090000
    x-phoniro;Valid_until:20061128,150000
    x-phoniro;Max_usage:3
14f~x-phoniro;Checksum:1EA450FFC76D8233
end:vcard

```

Fig 4b

Knutsson, FIGS. 4A-4B.

4. **[1B(ii)] “the reservation interface comprising one or more screens for receiving a selection of a location at the destination and an interval of the reservation;”**

55. *Knutsson* renders obvious [1B(ii)]. *Knutsson*’s graphical user interface corresponds to the claimed “reservation interface comprising one or more screens” because the graphical user interface is a visual way of allowing inputs in a computer.

The '747 specification refers to a “screen” or “screens” in the context of allowing inputs into an application. Ex-1001, 7:1-2, 7:42-43, 7:50-60, 8:6-14, 8:25-37, 8:42-60. Similarly, *Knutsson*’s graphical user interface allows the administrator to specify the temporary access data. Moreover, a GUI comprises software components that give users “the ability to interact with their systems and application programs in a graphical and consistent manner,” for example, allowing “a user to input commands into a system through the use of menus or by pointing to icons that picture commands.” Ex-1018, 6; Ex-1019. In my opinion, a POSA thus would have found it obvious that *Knutsson*’s graphical user interface corresponds to the “one or more screens.”

56. *Knutsson*’s selected physical access interface or lock device corresponds to the claimed “a selection of a location at the destination.” *Knutsson* discloses “the lock device 40 will be integrated with or coupled to a lock mechanism in the lockable door or garage port and in particular have a controllable lock actuator configured to unlock the lock mechanism upon detection and successful authorization of the key device 1, based on the temporary access defining data.” *Knutsson*, 10:25-28. *Knutsson* discloses a protected environment that corresponds to the claimed “destination.” *Knutsson*’s lock device, located at the protected environment, corresponds to the claimed “location” because it has a physical

location, as part of a door or, alternatively, a Bluetooth address which reflects a wireless location corresponding to a physical location of the lock device. *Knutsson* discloses the administration device 20 controls which users “have access to the protected environment of the lock device 40.” *Id.*, 11:9-10. For example, each lock device has a “unique Bluetooth communication address which is assigned to every Bluetooth transceiver chip in conjunction with the manufacture thereof or later.” *Id.*, 3:31-33.

57. *Knutsson*’s time frames correspond to the claimed “interval of the reservation.” *Knutsson* discloses “[i]n the disclosed embodiment of Figs 4a and 4b, the temporary access defining data assigned to the second vCard property 14b includes temporal data which defines one or more time frames during which access is permitted for the key device 1 to the protected environment 50.” *Knutsson*, 12:21-26. “[S]uch temporal data is specified in a calendar data format, for instance in the form of one of more dates and/or times which define **start and end points for permitted temporary access.**” *Id.*, 6:1-6 (emphasis added), 12:24-26; FIGS. 5-6. Figures 4a-4b show that the “the temporary access defining data assigned to the second vCard property 14b includes **temporal data.**” *Id.*, 12:21-24 (emphasis added).

Structure of generated data object 12:

```

begin:vcard
14c~fn:Temp access for <user 11> to <LD 40>.
14d~uid:<Unique identifier for the generated vCard>
14a~x-phoniro;LD_addr:<Bluetooth address of lock device 40>
14e~x-phoniro;Name:<Name of user 11>
14b~{
    x-phoniro;Valid_from:<Start date, Start_time>
    x-phoniro;Valid_until:<End date, End time>
    x-phoniro;Max_usage:<Integer value for maximum No of
    accesses available for user 11>
14f~X-phoniro;Checksum:<Checksum to prevent manipulation>
end:vcard

```

Fig 4a

Example of generated data object 12:

```

begin:vcard
14c~fn:Temp access for Olle to Elm Street 12.
14d~uid:20061127-099045-99990F192713-0052
14a~x-phoniro;LD_addr:0x00281ec3
14e~x-phoniro;Name:Olle
14b~{
    x-phoniro;Valid_from:20061128,090000
    x-phoniro;Valid_until:20061128,150000
    x-phoniro;Max_usage:3
14f~X-phoniro;Checksum:1EA450FFC76D8233
end:vcard

```

Fig 4b

Knutsson, FIGS. 4A-4B (annotated).

58. *Knutsson's* data object 12 specifying start and end times of temporary access is an “interval of a reservation” because an interval is defined by a starting point and an end point. By providing start and end times, an interval is presented by

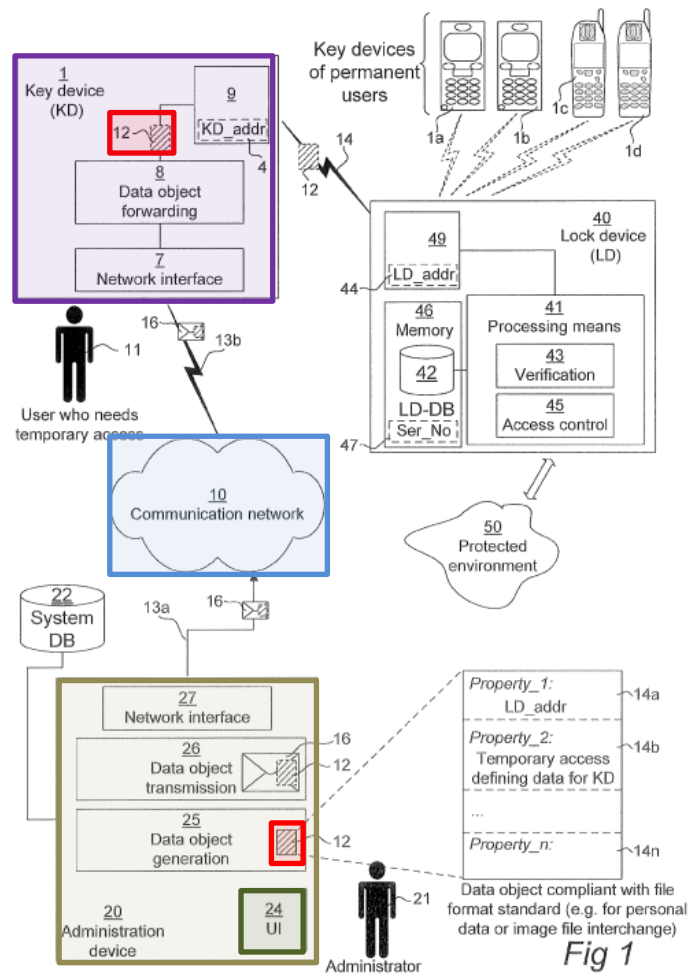
Knutsson's graphical user interface. The interval can be calculated by subtracting the start time from the end time, such that $\text{interval} = \text{end time} - \text{start time}$. This would have been obvious to a POSA because given any two of start time, end time, or interval, the third can be calculated using the simple, useful formula above.

5. [1C(i)] “c) a reservation server, in communication with the reservation interface and a network, to:”

59. *Knutsson* renders obvious [1C(i)]. *Knutsson*'s “administration device 20” corresponds to the claimed “reservation server,” because *Knutsson* discloses its “administration device may advantageously be a server computer or a mobile terminal.” *Knutsson*, 5:11-12. In fact, the '747 Patent equates a “reservation server” and a “server,” assigning both terms to identifier number “15.” Ex-1001, 3:62-3:66, 4:15-21, 7:33-36.

60. *Knutsson*'s administration device 20 corresponds to the claimed “server,” because *Knutsson* discloses “**the administration device may advantageously be a server computer.**” *Knutsson*, 5:11-12 (emphasis added). Administration device 20 is a reservation server computer “having a **user interface 24** in the form of input devices such as keyboard and mouse, an output device such as a display ... and an operating system with a graphical user interface.” *Id.*, 11:1-5 (emphasis added). In my opinion, a POSA would have understood that a server can run on a computer, Ex-1006, 74, such as *Knutsson*'s administrative device, to accept

information from connected computers such as over the Internet. Indeed, before the time the application leading to the '747 patent was filed, it was common for users to operate servers from their computers to share information to such a great extent that some internet service providers (ISPs) even prohibited users in residential areas from running servers on their computers to avoid broadband issues. Ex-1006, 69. In *Knutsson*'s access system, it is my opinion that a POSA would have found it obvious that a server operating on *Knutsson*'s administrative device would receive information from users over the communication network 10 that is "a part of the Internet." *Knutsson*, 13:15-16. In my opinion, a POSA would have understood the users inputting the reservation data into *Knutsson*'s sever would be administrators at the hotel, *Knutsson*, 11:34-12:1, or customers who have access to the Internet. Because the server computer 20 receives inputs from the user interface 24 and/or users over the Internet when the temporary access defining data (reservation) is specified, the server is in communication with the user interface 24 or similar interfaces connected to the Internet. Server computer 20 also has a network interface 27 that "communicat[es]" the data object 12 "to the key device 1 over a communication network 10." *Id.*, 13:3-6 (emphasis added). *Knutsson* displays administration device 20 in FIG. 1 (emphasis added).



Knutsson, FIG. 1 (annotated).

6. [1C(ii)] “receive the reservation request for the destination, the reservation request including a selected location at the destination and an interval of the reservation;”

61. *Knutsson* renders obvious [1C(ii)].

62. *Knutsson*’s user interface 24 corresponds to the claimed, “one or more screens for receiving a selection of a location at the destination and an interval of the reservation.” *Knutsson* discloses, “functionality for creating, packaging and

transmitting the temporary access defining data for the key device 1 and its user 11 who is to get temporary access to the lock device 40.” *Id.*, 11:16-20. Further, “this functionality includes a data object generation module 25 which is configured to invite **the administrator 21 to specify the temporary access defining data** through interaction with the user interface 24.” *Id.*, 11:20-23 (emphasis added).

63. *Knutsson’s* lockable door correspond to the claimed, “a selected location at the destination.” *Knutsson* discloses “the lock device 40 will be integrated with or coupled to a lock mechanism in the lockable door or garage port and in particular have a controllable lock actuator configured to unlock the lock mechanism upon detection and successful authorization of the key device 1, based on the temporary access defining data.” *Knutsson*, 10:24-30. *Knutsson* discloses the administration device 20 controls which users “have access to the protected environment of the lock device 40.” *Id.*, 11:9-10. *Knutsson’s* lock device corresponds to the claimed, “a location” because it has a physical location, as part of a door, premises or room. *Knutsson*, 10:22-24. *Knutsson* discloses that these locations are at destinations, giving examples of physical places such as “Elm Street 12.” *Id.*, FIGS. 4A, 4B. Similarly, the ’747 Patent discloses locations as car charger or “parking location[s]” that could “be entered ... from a map,” *e.g.*, at a street address. Ex-1001, 5:17-20. The ’747 Patent makes clear that “[t]he destination may

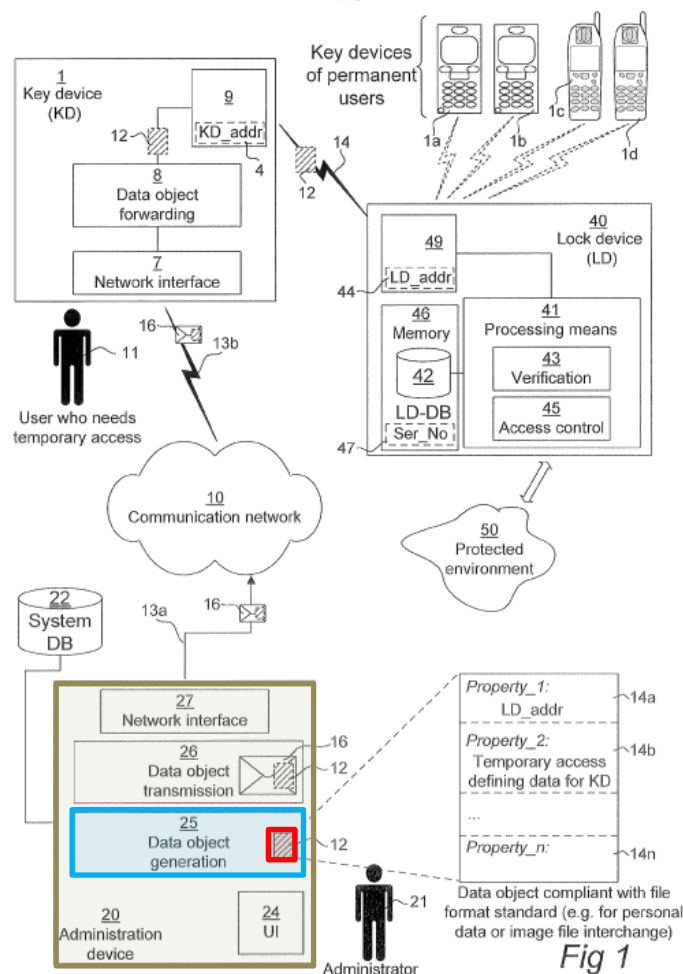
be an actual ... location,” confirming that disclosing the location also discloses the destination. Ex-1001, 7:47-49. *Knutsson* similarly discloses a lock device located at a protected environment such as a room, *Knutsson*, 10:22-24, which is a location, that is found at a destination such as a street address. Just like the '747 Patent, *Knutsson*'s lock device location such as a public premises, *Knutsson*, 10:22-24, can be the destination.

64. *Knutsson*'s time frames correspond to the claimed, “interval of the reservation.” *Knutsson* discloses “[i]n the disclosed embodiment of Figs 4a and 4b, the temporary access defining data assigned to the second vCard property 14b includes temporal data which defines **one or more time frames during which access is permitted** for the key device 1 to the protected environment 50.” *Id.*, 12:21-26 (emphasis added). An interval is defined by a starting point and an end point. By providing start and end times, an interval is presented by *Knutsson*'s key device (portable terminal), *id.*, as confirmed by *Knutsson*'s CPU 313 determining whether the current time, which the CPU 313 has access to, falls within a “time-slot.” *Knutsson*, 17:21-22; 20:4-7; 20:14. The duration can be calculated by subtracting the start time from the end time, such that duration = end time - start time. This would have been obvious to a POSA because it is simple to calculate and

useful because given any two of start time, end time, or duration, the third can be calculated using the formula above.

7. [1C(iii)] “issue a reservation certificate describing the interval of the reservation based on the reservation request and the selected location; and”

65. *Knutsson* renders obvious this limitation because *Knutsson* discloses, the administration device 20 includes “[t]he data object generation module 25 [that] is configured to create a data object 12.” *Id.*, 11:24-26 (emphasis added).



Knutsson, FIG. 1 (annotated).

66. As discussed above, temporary access defining data of data object 12 is specified to include start and end times and lock device information that corresponds to a physical lock device including the lock device in 14c and the Bluetooth address of the lock device in 14a. *Knutsson*, 8:4-8, 12:8-11, 12:21-24, 14:12-17. As illustrated below, *Knutsson*'s data object 12 thus includes start and end times and the location, described as both a name of a physical place such as "Elm Street 12" or "LD 40," and a Bluetooth address. *Id.*, FIGS. 4A-4B

Structure of generated data object 12:

```

begin:vcard
14c~fn:Temp access for <user 11> to <LD 40>.
14d~uid:<Unique identifier for the generated vCard>
14a~x-phoniro;LD_addr:<Bluetooth address of lock device 40>
14e~x-phoniro;Name:<Name of user 11>
14b~{
    x-phoniro;Valid_from:<Start date, Start_time>
    x-phoniro;Valid_until:<End date, End time>
    x-phoniro;Max_usage:<Integer value for maximum No of
    accesses available for user 11>
14f~X-phoniro;Checksum:<Checksum to prevent manipulation>
end:vcard

```

Fig 4a

Example of generated data object 12:

```

begin:vcard
14c~fn:Temp access for Olle to Elm Street 12.
14d~uid:20061127-099045-99990F192713-0052
14a~x-phoniro;LD_addr:0x00281ec3
14e~x-phoniro;Name:Olle
14b~{
    x-phoniro;Valid_from:20061128,090000
    x-phoniro;Valid_until:20061128,150000
    x-phoniro;Max_usage:3
14f~X-phoniro;Checksum:1EA450FFC76D8233
end:vcard

```

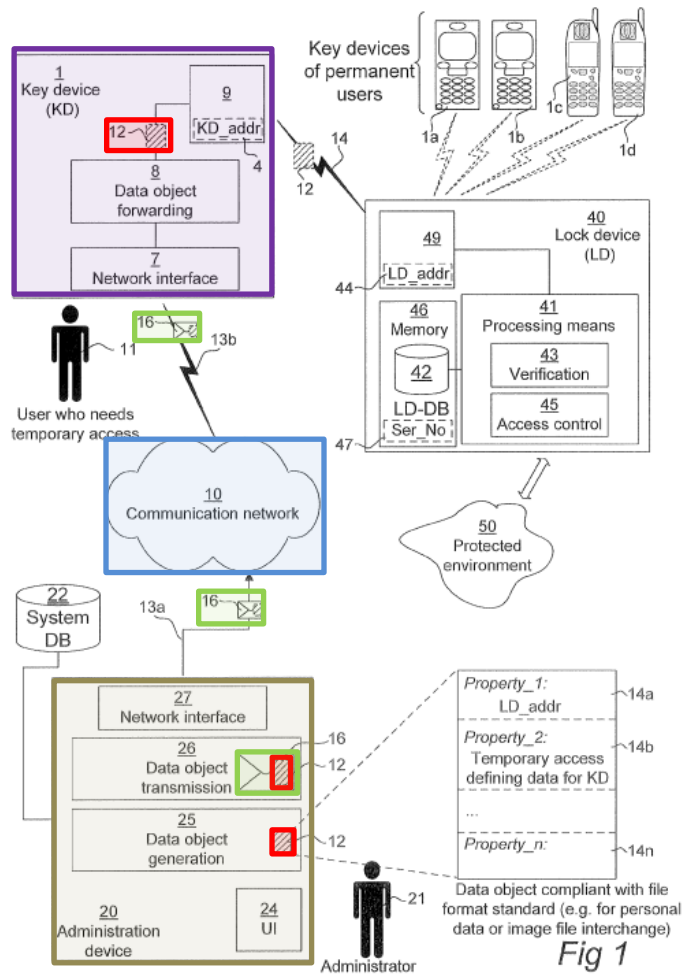
Fig 4b

Knutsson, FIGS. 4A-4B (annotated).

8. [1C(iv)] “transmit, via the network, from the reservation server to a second device distinct from the first device, the reservation certificate and a communication setting corresponding to the access device;”

67. *Knutsson* renders obvious [1C(iv)].

68. *Knutsson* renders obvious the claimed “transmit, via the network, from the reservation server to a second device distinct from the first device,” because *Knutsson* discloses the digital message 16 from its administration device 20 to the key device 1 as attached to “data object 12 (vCard).” *Knutsson*, 13:3-9 (emphasis added). And “[t]he key device also has data object forwarding functionality 8 capable of receiving the digital message 16.” *Id.*, 13:31-34 (emphasis added). The communication between administration device 20 and key device 1 occurs over communication network 10. *Id.*, 13:3-6. Key device 1, a mobile phone or mobile terminal, *id.*, 13:12-15, FIG. 2, is different from administration device 20, a server computer. *Id.*, 5:11-12.



Knutsson, FIG. 1 (annotated).

In my opinion, a POSA would have found it obvious that *Knutsson*'s administration device 20, a server computer, would include “a user interface 24 in the form of input devices such as keyboard and mouse,” *Knutsson*, 11:1-5, and also that it is a server capable of interacting with a communicating device through communications network 10 that is part of the Internet. *Id.*, 5:5-12, 13:15-16.

69. *Knutsson* renders obvious the claimed “reservation certificate and a communication setting corresponding to the access device” because *Knutsson* discloses **data object 12** (reservation certificate) is assigned data “necessary for the lock device 40 to be able to **grant temporary access for the key device 1**,” where “[t]his necessary data includes a communication identifier (‘LD_addr’ in Fig 1) of the lock device 40.” *Knutsson*, 11:32-35 (emphasis added). The ’747 patent gives examples of communications settings “such as the network SSID, passcodes, IP addresses, Bluetooth ID, etc.” Ex-1001, 4:65-66. *Knutsson* discloses the same example, teaching that “the communication identifier may ... be the unique **Bluetooth communication address**,” *i.e.*, its Bluetooth ID. *Knutsson*, 3:27-33 (emphasis added). *Knutsson*’s communication identifier of its lock device thus corresponds to the claimed “communication setting corresponding to the access device.”

9. [1D(i)] “**d) an application installed on the second device to receive the reservation certificate and the communication setting corresponding to the access device,**”

70. *Knutsson* renders obvious [1D(i)].

71. *Knutsson*’s software application is the claimed “application.” *Knutsson* discloses that “**a mobile terminal** is used as **the wireless key device**.” *Knutsson*, 5:15-17 (emphasis added). *Knutsson* discloses “the mobile terminal” in FIG. 2 that

includes “a graphical user interface 206 ... which may be used by a user of the mobile terminal to **control the terminal's functionality** and get access to any of the telecommunications services referred to above, or to **any other software application** executing in the mobile terminal.” *Id.*, 13:25-28 (emphasis added). *Knutsson* discloses its mobile interface includes “a messaging application and a contacts application (or in the form of a **combined application** for messaging and contacts)” where its application “receives... and detects the attached vCard 12,” shows properties of the vCard 12, allows storage of the vCard 12, and allows a command of sending the vCard 12. *Id.*, 14:6-17, 14:20-23 (emphasis added).

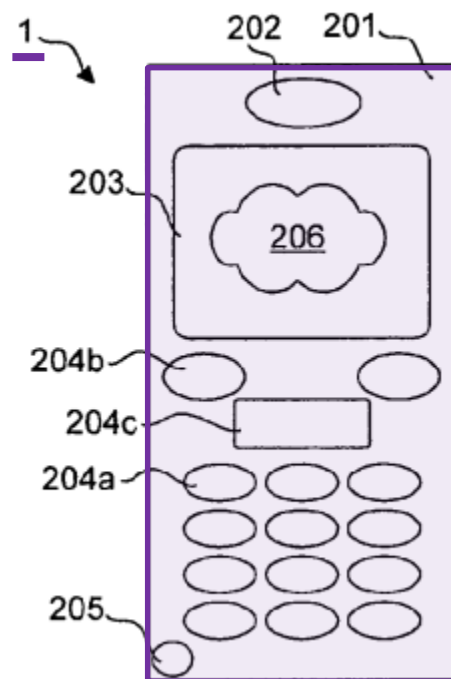
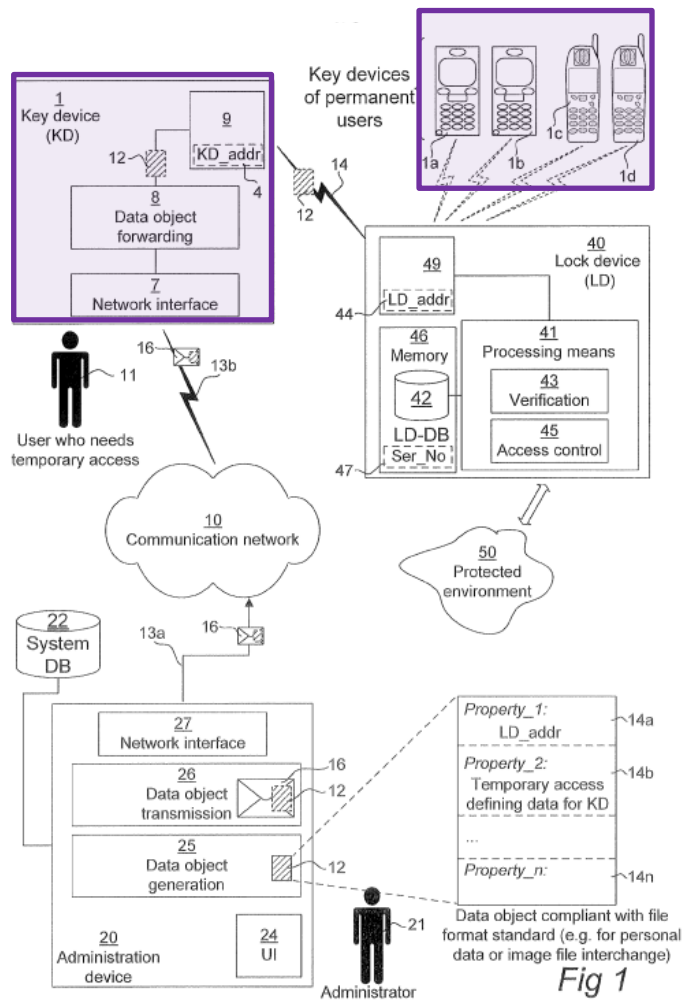


Fig 2

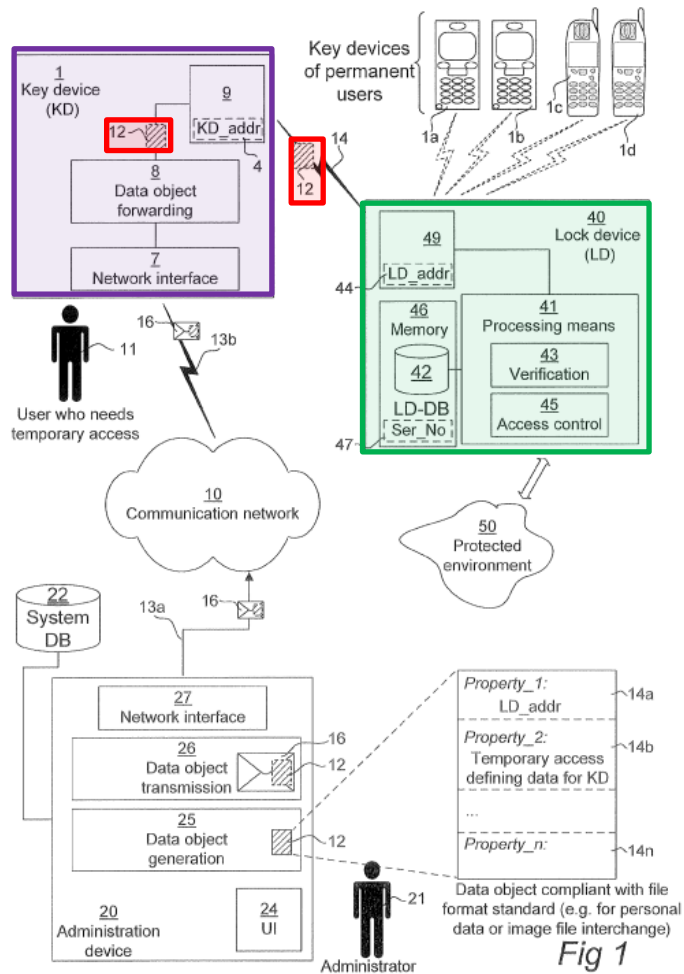


Knutsson, FIGS. 1, 2 (annotated).

72. *Knutsson's* key device is the claimed “second device.” *Knutsson* discloses “the wireless key device is advantageously a mobile terminal, such as a mobile phone.” *Id.*, 5:1-2. *Knutsson's* “key devices 1a-1d” are portrayed in Figure 1 as mobile phones. *Id.*, FIG. 1, 10:30. Further, *Knutsson* builds on a previous reference, WO Publication 2006/0986590 that, like *Knutsson*, discloses as using “high-end mobile phones” that handle, “their appropriate authentication via short-range wireless data communication (Bluetooth communication) with the lock

device.” *Id.*, 1:19-22, 2:26-29. *Knutsson*’s software application is operable on its key device 1 and is thus “installed” on key device 1. *Id.*, 14:12-17, 14:20-23. In my opinion, a POSA would have found it obvious that software applications would regularly be installed on phones like *Knutsson*’s phones for the applications to be operable, and in particular *Knutsson*’s phones that have a processor capable of a wide range of functions and running applications (i.e., smartphones).

73. *Knutsson* renders obvious the claimed “an application installed on the second device to receive the reservation certificate and the communication setting corresponding to the access device” because *Knutsson*’s key device with applications receives data object 12 (reservation certificate) that includes the communication identifier (communication setting). *Knutsson* discloses its **key device** is “capable of **receiving the digital message 16**” that includes **data object 12**. *Knutsson*, 13:6-9, 13:31-35 (emphasis added).



Knutsson, FIG. 1 (annotated).

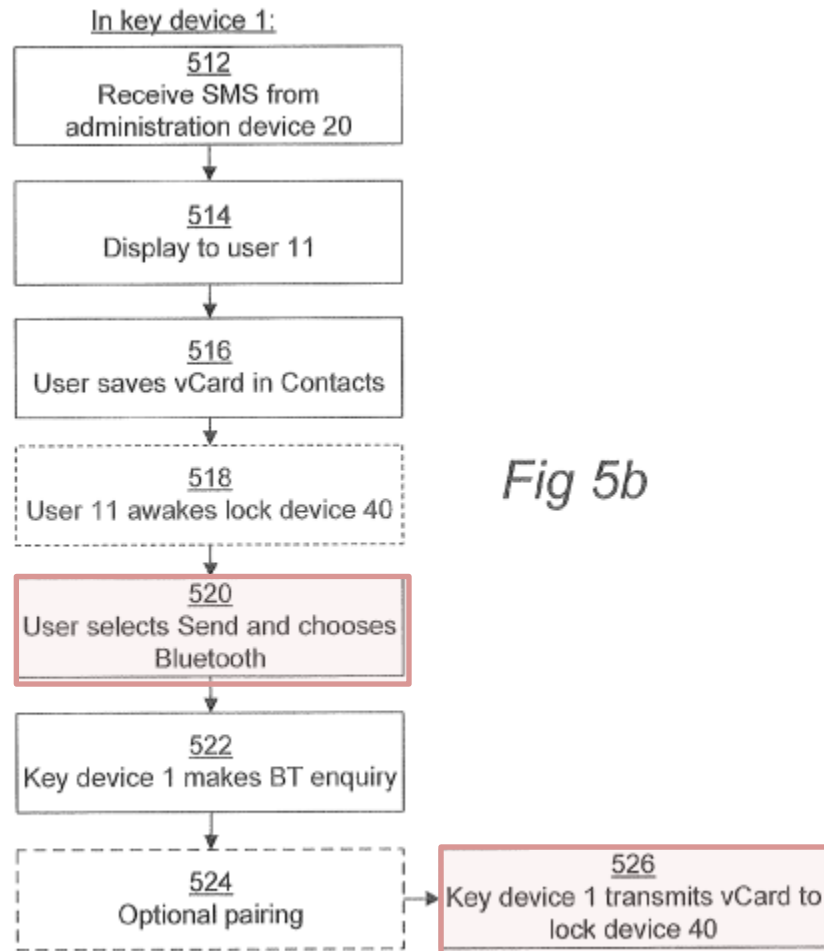
74. As I discuss above, *Knutsson* discloses “a graphical user interface 206 ... which may be used by a user of the mobile terminal to **control the terminal's functionality.**” *Id.*, 13:25-28 (emphasis added). The reception of data object 12 would have been one of the terminal’s functions controlled by the key device’s software application. *Knutsson*, 14:3-10.

10. [1D(ii)] “wherein the application wirelessly transmits the reservation certificate to the access device using the communication setting upon receipt of a command to activate the door lock; and”

75. *Knutsson* renders obvious [1D(ii)]. *Knutsson* discloses the claimed “wherein the application wirelessly transmits the reservation certificate to the access device using the communication setting” because *Knutsson* discloses the data object 12 is transmitted from key device 1 to lock device 40 through “short-range wireless data communication.” *Knutsson*, 3:5, 3:27, 4:24-27, 7:6. *Knutsson* discloses “a wireless key device and a lock device of a type having a short-range wireless data communication means capable of short-range wireless data communication based on a communication identifier of said lock device.” *Id.*, 5:25-27.

76. *Knutsson* renders obvious the claimed “application wirelessly transmits the reservation certificate to the access device using the communication setting upon receipt of a command to activate the door lock” because *Knutsson* discloses “[w]hen the appropriate time comes to enter the protected environment 50, the user 11 will bring his wireless key device 1 to the correct lock device 40 and.... [b]y selecting an option like ‘Send by Bluetooth®’, in **step 520**, the user 11 will cause the key device 1 to attempt to establish short-range data communication 14 with the lock device 40 in step 522 by making a Bluetooth® enquiry,” and the data object 12 is

“transmit[ted]” in **step 526**. *Knutsson*, 14:18-23, FIG. 5B (emphasis added). These steps are shown below.

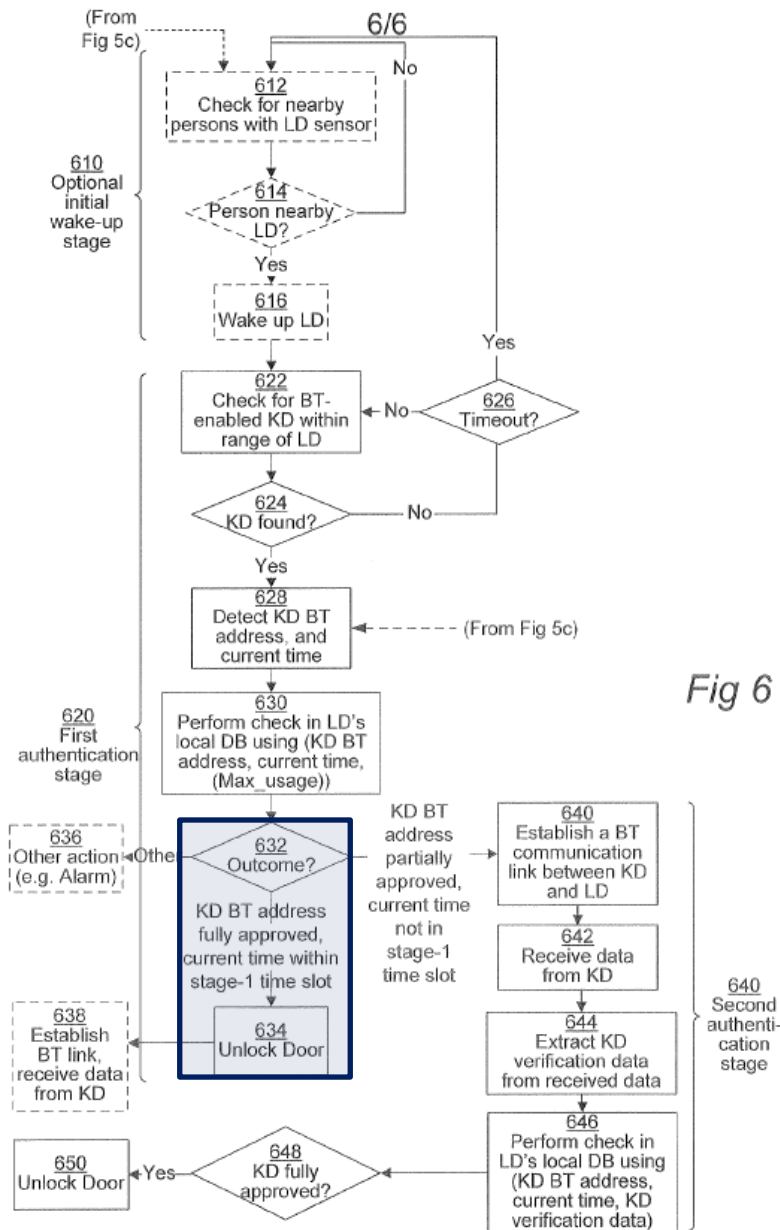


Knutsson, FIG. 5B (annotated).

77. *Knutsson*’s communication identifier is used as part of the data object 12 from *Knutsson*’s key device 1 to lock device 40. *Id.*, 11:32-35. Alternatively, *Knutsson* uses its communication identifier in its communication from key device 1 to lock device 40 so that lock device 40 can verify the access data and open the lock.

Id., 16:11-16. In both cases, *Knutsson*'s short-range data communication, caused by user 11, leads to "CPU 313 ... perform[ing] a method for wireless automatic unlocking in response to the appearance and proper authentication of a key device."

Id., 17:9-11. "If the outcome of these checks is fully positive, as checked in [step 632](#), the CPU 313 proceeds to [step 634](#) and generates the control signal 307a to the actuator controller 307 ... [and] this will cause unlocking of the lock." *Id.*, 20:7-11.



Id., FIG. 6 (annotated).

78. As discussed above in Section IX.A.9, *Knutsson* discloses “a graphical user interface 206 ... which may be used by a user of the mobile terminal to **control the terminal's functionality.**” *Id.*, 13:25-28 (emphasis added). The transmission of

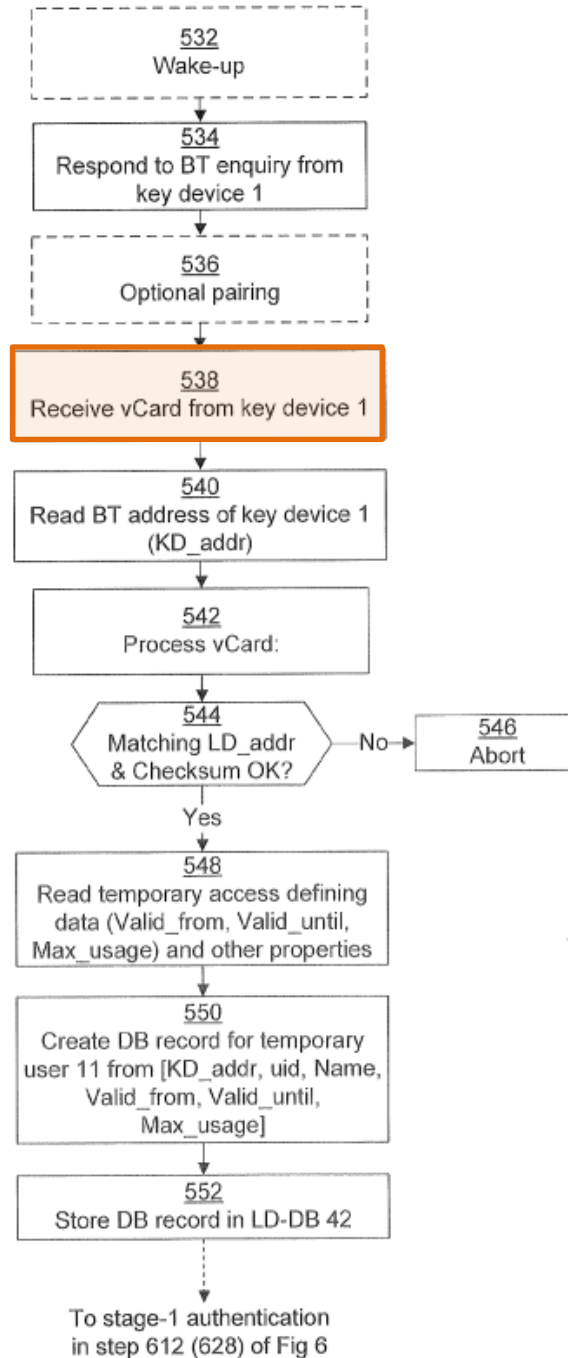
data object 12 to *Knutsson*'s lock device would have been one of the terminal's functions controlled by the key device's software application. *Knutsson*, 14:3-10. *Knutsson*'s software application on its key device 1 transmits the data object 12 to lock device 40 because *Knutsson*'s disclosed telecommunication capabilities of the key device 1 are controlled by the software application.

11. [1E] “e) wherein the access device receives the reservation certificate from the application based on use by the application of the communication setting, and the processor activates the door lock based on at least the receipt of the reservation certificate.”

79. *Knutsson* renders obvious [1E]. *Knutsson* renders obvious “the access device receives the reservation certificate from the application based on use by the application of the communication setting,” because its key device 1 “forward[s] the attached vCard data object 12 through short-range wireless data communication means 9 to the lock device 40.” *Knutsson*, 13:31-35. This is shown in FIG. 5C shown below at [step 538](#).

In lock device 40:

Fig 5c

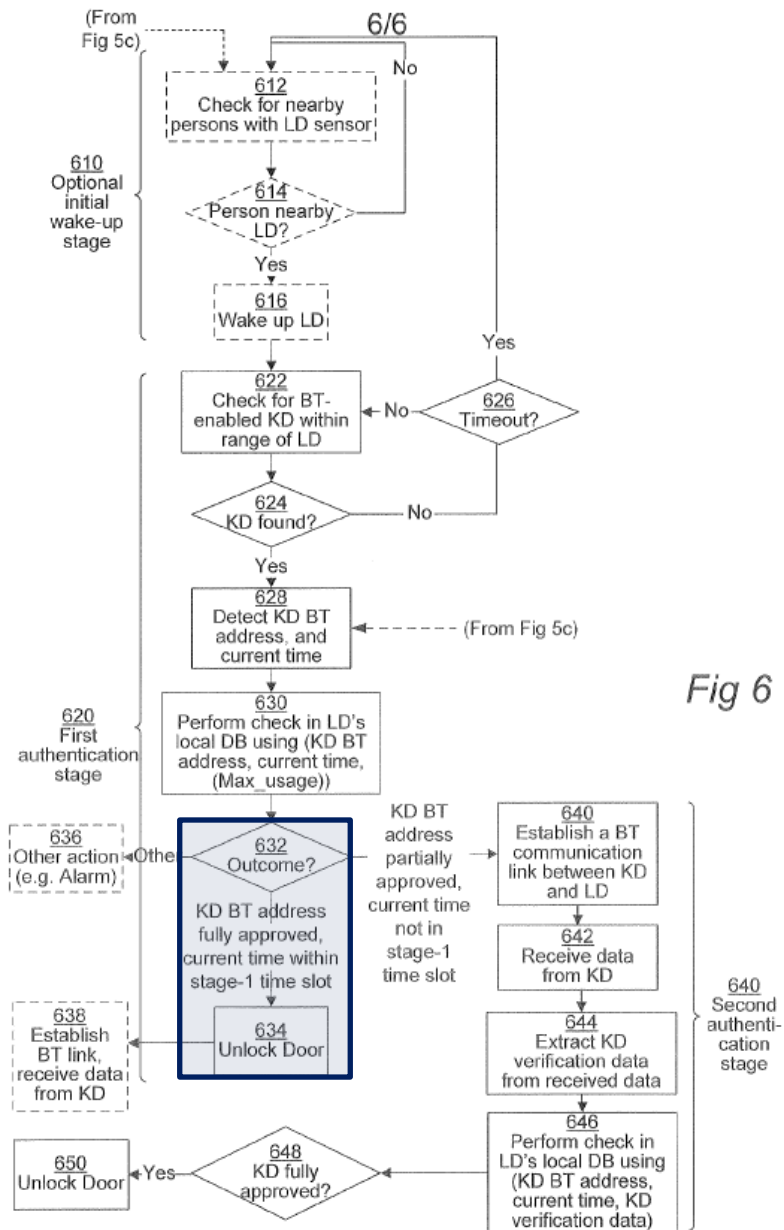


Knutsson, FIG. 5C (annotated).

80. As I discussed above in Section IX.A.9, *Knutsson* discloses “a graphical user interface 206 ... which may be used by a user of the mobile terminal

to **control the terminal's functionality.**” *Knutsson*, 13:25-28 (emphasis added). The transmission of data object 12 including the Bluetooth address to *Knutsson*’s lock device and use of Bluetooth would have been one of the terminal’s functions controlled by the key device’s software application. *Knutsson*, 14:3-10, 14:20-23. Indeed, *Knutsson*’s software application on its key device 1 transmits the data object 12 including the Bluetooth address to lock device 40 through Bluetooth and using the Bluetooth address as a result of a command to connect via Bluetooth. *Knutsson*, 14:20-23.

81. *Knutsson*’s short-range data communication, caused by user 11, leads to “CPU 313 ... perform[ing] a method for wireless automatic unlocking in response to the appearance and proper authentication of a key device.” *Knutsson*, 17:9-11. “If the outcome of these checks is fully positive, as checked in [step 632](#), the CPU 313 proceeds to [step 634](#) and generates the control signal 307a to the actuator controller 307. As described above, this will cause unlocking of the lock.” *Id.*, 20:7-11.



Knutsson, FIG. 6 (annotated).

82. Communication occurs between the lock device 40 and the key device 1 because *Knutsson* discloses “authorization is based solely on the key device's Bluetooth® address and the current time, both of which are detected automatically

by the lock device 40 and require no interaction from the user (other than bringing the key device near the lock device 40).” *Id.*, 18:1-4. Because the communication identifier which can be a Bluetooth address (communication setting) is conferred to the lock device 40 (access device), and the used communication means is a short-range communication such as Bluetooth. In my opinion, a POSA would have found it obvious that *Knutsson*’s software on a mobile terminal unlocks the door when it communicates the Bluetooth address through Bluetooth. *Id.* Because the communication identifier which can be a Bluetooth address (communication setting) is conferred to the lock device 40 (access device), and the used communication means is a short-range communication such as Bluetooth, in my opinion, a POSA would have found it obvious that *Knutsson*’s software on mobile terminal unlocks the door when it communicates the Bluetooth address through Bluetooth.

B. [Claim 2] “The system of claim 1 wherein the access device comprises a unique identifier, and wherein at least the reservation certificate or the communication setting contains the unique identifier.”

83. *Knutsson* renders obvious claim 2. As explained in Section VI.B.5 for [1C], *Knutsson* discloses “[t]he created data object 12 is then assigned the data which is necessary for the lock device 40 to be able to **grant temporary access for the key device 1**,” where “[t]his necessary data includes a communication identifier (‘LD_addr’ in Fig 1) of the lock device 40.” *Knutsson*, 11:32-35 (emphasis added).

Knutsson discloses “the communication identifier of the lock device may advantageously be the **unique** Bluetooth communication address which is assigned to every Bluetooth transceiver chip in conjunction with the manufacture thereof or later.” *Id.*, 3:30-33 (emphasis added).

84. *Knutsson*’s temporary access defining data of data object 12 includes the **unique Bluetooth address** of lock device 40 as shown below. *Id.*, 12:8-11.

Structure of generated data object 12:

```

begin:vcard
14c~fn:Temp access for <user 11> to <LD 40>.
14d~uid:<Unique identifier for the generated vCard>
14a~x-phoniro;LD addr:<Bluetooth address of lock device 40>
14e~x-phoniro;Name:<Name of user 11>
14b~{
    x-phoniro;Valid_from:<Start date, Start_time>
    x-phoniro;Valid_until:<End date, End time>
    x-phoniro;Max_usage:<Integer value for maximum No of
    accesses available for user 11>
14f~X-phoniro;Checksum:<Checksum to prevent manipulation>
end:vcard

```

Fig 4a

Example of generated data object 12:

```

begin:vcard
14c~fn:Temp access for Olle to Elm Street 12.
14d~uid:20061127-099045-99990F192713-0052
14a~x-phoniro;LD addr:0x00281ec3
14e~x-phoniro;Name:Olle
14b~{
    x-phoniro;Valid_from:20061128,090000
    x-phoniro;Valid_until:20061128,150000
    x-phoniro;Max_usage:3
14f~X-phoniro;Checksum:1EA450FFC76D8233
end:vcard

```

Fig 4b

Knutsson, FIGS. 4A-4B (annotated).

C. [Claim 3] “The system of claim 2 wherein at least a portion of the reservation certificate is encrypted.”

85. *Knutsson* renders obvious claim 3. *Knutsson* discloses “encrypt[ing] at least one of said first and second properties of said data object using an encryption key which includes said communication identifier of said lock device.” *Id.*, 6:10-12. *Knutsson* discloses “enhanced security is obtained by configuring the administration device to encrypt the contents of the generated data object, using as encryption key the communication address (Bluetooth® address) of the lock device's radio transceiver as well as a serial No of the lock device.” *Id.*, 6:13-16. As discussed above in Sections VI.A.7-VI.A.8, *Knutsson*'s data object corresponds to the claimed “reservation certificate,” and so encrypting at least one property of *Knutsson*'s data object corresponds to the claim limitation.

D. [Claim 4] “The system of claim 3 wherein the access device decrypts the encrypted portion of the reservation certificate.”

86. *Knutsson* renders obvious claim 4. *Knutsson* discloses, “[t]he lock device 40 has processing means 41 for processing the received data object 12.” *Knutsson*, 16:6-7. *Knutsson* discloses “[t]he processing means may be configured to decrypt at least one of said first and second properties of said data object using a decryption key which includes said communication identifier of said lock device.” *Id.*, 8:19-21. The reception of data object 12 would have been one of the terminal's

functions controlled by the key device's software application. *Knutsson's* software application on its key device 1 decrypts the data object 12 because *Knutsson's* disclosed telecommunication capabilities of the key device 1 are controlled by the software application.

E. [Claim 5] "The system of claim 3 wherein the application installed on the second device decrypts the encrypted portion of the reservation certificate."

87. *Knutsson* renders obvious claim 5.

88. *Knutsson* discloses, "[t]he lock device 40 has processing means 41 for processing the received data object 12." *Knutsson*, 16:6-7. *Knutsson* discloses "[t]he processing means may be configured to decrypt at least one of said first and second properties of said data object using a decryption key which includes said communication identifier of said lock device." *Id.*, 8:19-21. In my opinion, a POSA would have found it obvious that *Knutsson's* key device would access information within data object 12 for *Knutsson's* key device so the user can, through graphical user interface 206, "control the terminal's functionality and get access to any of the telecommunications services referred to above, or to any other software application executing in the mobile terminal." *Id.*, 13:25-28. One of those telecommunications services is receiving "the temporary access defining data for the key device 1," and "detects the attached vCard 12," *id.*, 11:16-20, 14:12-13, 16:1-3, which can be

encrypted. Thus, in my opinion, a POSA would have found it obvious that *Knutsson*'s software application would decrypt part of the data object 12 to derive its properties. In my opinion, a POSA would be able to implement *Knutsson*'s key device performing decryption because *Knutsson*'s key device is a mobile terminal with a processor capable of receiving encrypted messages like data object 12. *Id.*, 14:3-6.

F. **[Claim 7] "The system of claim 1 wherein the reservation certificate automatically expires at the end of the interval of the reservation."**

89. *Knutsson* renders obvious claim 7.

90. *Knutsson* discloses "[t]he created data object 12 is then assigned the data which is necessary for the lock device 40 to be able to **grant temporary access for the key device 1.**" *Knutsson*, 11:32-35 (emphasis added). *Knutsson* discloses "temporal data is specified in a calendar data format, for instance in the form of one of more dates and/or times which define start and end points for permitted temporary access." *Id.*, 6:4-6. Further, the temporal data is "one of more dates and/or times which define start point ("Valid from") and end point ("Valid to") for the temporary access permitted." *Id.*, 12:24-26. In my opinion, a POSA would have found it obvious that the temporary access ends at the end point or end time.

G. [Claim 8] “The system of claim 1 wherein the second device comprises a smartphone.”

91. *Knutsson* renders obvious claim 8. *Knutsson* discloses that “**a mobile terminal** is used as **the wireless key device.**” *Knutsson*, 5:16-17 (emphasis added). *Knutsson* discloses “mobile terminals are very often provided with standard utility software which includes a messaging application and a contacts application. Therefore, such standard utility software in the mobile terminal will conveniently implement the required data interchange means of the wireless key device.” *Id.*, 5:18-23. *Knutsson* discloses “the mobile terminal” in FIG. 2 that includes “a graphical user interface 206 ... which may be used by a user of the mobile terminal to **control the terminal's functionality** and get access to any of the telecommunications services referred to above, or to **any other software application** executing in the mobile terminal.” *Id.*, 13:25-28 (emphasis added). *Knutsson* discloses “mobile terminals” that are “the wireless key device.” *Id.*, 5:18-23.

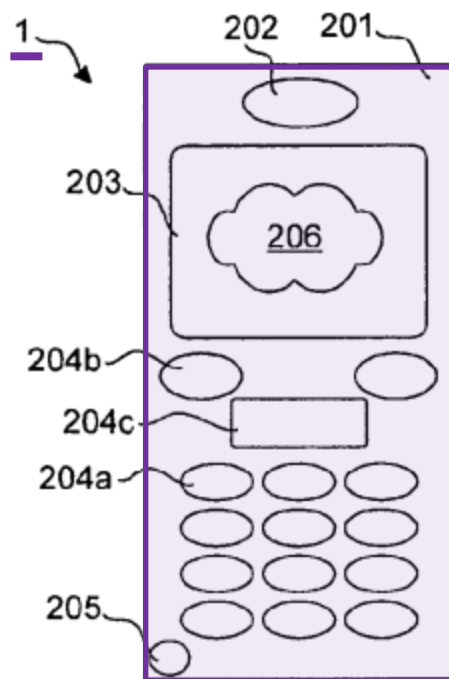


Fig 2

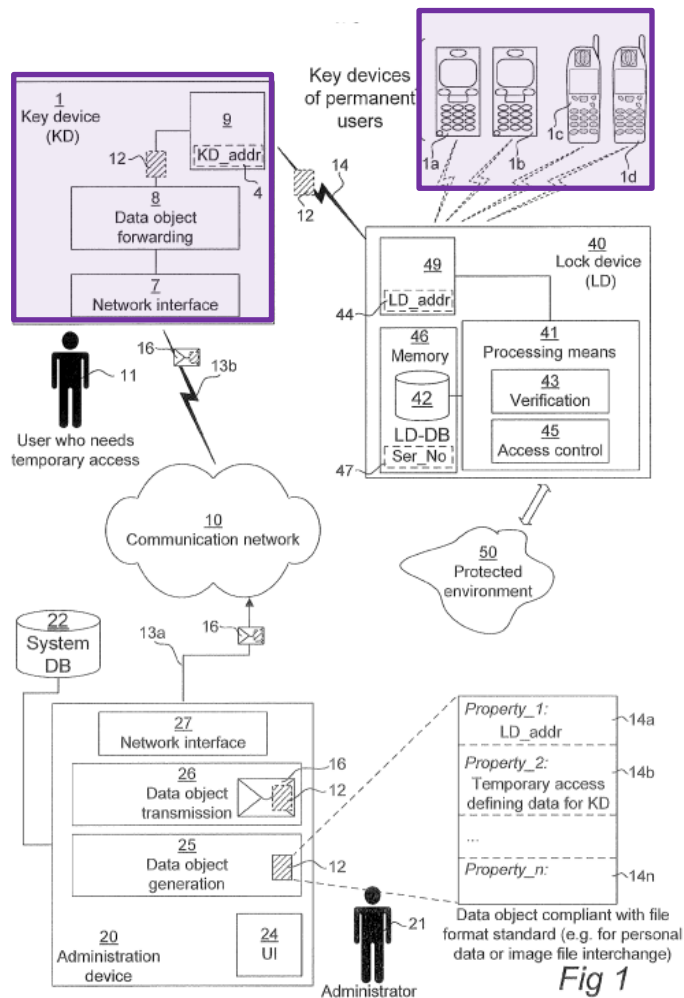


Fig 1

Knutsson, FIGS. 1, 2 (annotated).

92. *Knutsson*'s key device is the claimed, "smartphone." *Knutsson* discloses "the wireless key device is advantageously a mobile terminal, such as a mobile phone." *Id.*, 5:1-2. *Knutsson*'s "key devices 1a-1d" are portrayed in Figure 1 as mobile phones. *Id.*, FIG. 1, 10:30. Further, *Knutsson* builds on a previous reference, WO Publication 2006/0986590 that, like *Knutsson*, discloses as using "high-end mobile phones" that handle, "their appropriate authentication via short-

range wireless data communication (Bluetooth communication) with the lock device.” *Id.*, 1:19-22, 2:26-29. Because *Knutsson*’s “mobile phone” include “a graphical user interface (GUI),” “software applications[s],” and complex functionality like encrypting, decrypting, and accepting user inputs to transmit data objects, *Knutsson*’s mobile phone corresponds to the claimed “smart phone.” *Knutsson*, 5:1-2.

H. [Claim 9] “The system of claim 1 wherein the access device comprises a Bluetooth transceiver.”

93. *Knutsson* renders obvious claim 9.

94. *Knutsson* discloses, “the lock device 40 has short-range wireless data communication means 49 in the form of a Bluetooth® **transceiver**.” *Id.*, 12:3-4. *Knutsson* discloses, “the lock device 40 has a Bluetooth® radio module 309 with an antenna 310. The Bluetooth® radio module 309 may be identical to the aforementioned communication means 49.” *Id.*, 17:18-20. As discussed above in Section IX.A.2, *Knutsson*’s lock device 40 is the claimed “access device.”

I. [Claim 12] “The system of claim 1 wherein the reservation detail interface comprises one or more screens for selecting at least a start time and a stop time, or a duration for the reservation.”

95. *Knutsson* renders obvious claim 12.

96. *Knutsson* discloses “[t]he **created data object 12** is then assigned the data which is necessary for the lock device 40 to be able to **grant temporary access**

for the key device 1.” *Knutsson*, 11:32-35 (emphasis added). *Knutsson* discloses “temporal data is specified in a calendar data format, for instance in the form of one of more dates and/or times which define start and end points for permitted temporary access.” *Id.*, 6:4-6. Further, the temporal data is “one of more dates and/or times which define start point (‘Valid_from’) and end point (‘Valid_to’) for the temporary access permitted.” *Id.*, 12:24-26. As discussed above for [1B(ii)] in Section IX.A.4, *Knutsson* discloses its administration device 20 has “a data object generation module 25 which is configured to **invite the administrator 21 to specify the temporary access defining data** through interaction with the user interface 24.” *Id.*, 11:20-23 (emphasis added). *Knutsson*’s graphical user interface allows the administrator to specify the temporary access data. Moreover, a GUI comprises software components that give users “the ability to interact with their systems and application programs in a graphical and consistent manner,” for example, allowing “a user to input commands into a system through the use of menus or by pointing to icons that picture commands.” Ex-1018, 6. The different menus or icons that are part of a graphical user interface correspond to the claimed “one or more screens.”

J. Claim 13

97. *Knutsson* renders obvious claim 13.

1. **[13p] “An access control system comprising:”**

98. *Knutsson* renders obvious [13p] as discussed above for Section [1p] in Section IX.A.1.

2. **[13A] “a) an access device comprising a communication module connected to a processor having control of a door lock restricting access to a room at a given location, the access device comprising at least a Bluetooth transceiver;”**

99. *Knutsson* renders obvious [13A] as discussed above for Section [1A] in Section IX.A.2.

100. *Knutsson* renders obvious the claimed “access device comprising at least a Bluetooth transceiver” because *Knutsson* discloses “short-range wireless data communication means of the lock device may comprise a radio transceiver, preferably a **Bluetooth® transceiver.**” *Knutsson*, 3:27-28.

3. **[13B] “b) a reservation interface comprising one or more reservation screens associated with the location, the one or more reservation screens for selecting at least a room and an interval for a reservation at the location;”**

101. *Knutsson* renders obvious [13B] as discussed above for [1B(i)] and [1B(ii)] in Sections IX.A.3-IX.A.4.

4. **[13C(i)] “c) a reservation server, in communication with the reservation interface and a network, to:”**

102. *Knutsson* renders obvious [13C(i)] as discussed above for Section [1C(i)] in Section IX.A.5.

5. **[13C(ii)] “receive a reservation request comprising at least a selected room and an interval for a reservation;”**

103. *Knutsson* renders obvious [13C(ii)] as discussed above for Section [1C(ii)] in Section IX.A.6.

6. **[13C(iii)] “issue a reservation certificate, the reservation certificate describing an interval of the reservation for the room based on the reservation request; and”**

104. *Knutsson* renders obvious [13C(iii)] as discussed above for Section [1C(iii)] in Section IX.A.7.

7. **[13C(iv)] “transmit, via the network, from the reservation server to an application installed on a smartphone, the reservation certificate and a communication setting corresponding to the access device;”**

105. With the exception of the “smartphone” limitation, *Knutsson* renders obvious [13C(iv)] as discussed above for [1C(iv)] in Section IX.A.8.

106. As discussed above with respect to claim 8 in Section IX.G, *Knutsson* discloses or renders obvious the key device being a “smartphone.”

8. **[13D(i)] “d) a smartphone application installed on the smartphone to receive the reservation certificate and the communication setting corresponding to the access device,”**

107. *Knutsson* renders obvious [13D(i)] as discussed above for Section [1D(i)] in Section IX.A.9.

9. **[13D(ii)] “wherein the smartphone application wirelessly transmits, via Bluetooth, the reservation certificate to the access device using the communication setting upon receipt of a command to activate the door lock; and”**

108. *Knutsson* renders obvious [13D(ii)] as discussed above for [1D(ii)] in Section IX.A.10 except for the “via Bluetooth” limitation.

109. *Knutsson* renders obvious the claimed “smartphone application wirelessly transmits, via Bluetooth, the reservation certificate” because it discloses “a wireless key device, the lock device comprising: short-range wireless data communication means capable of short-range wireless data communication with said key device based on a communication identifier of said lock device and capable of receiving from said key device a data object.” *Knutsson*, 7:5-8. *Knutsson* discloses “us[ing] Bluetooth® for the short-range wireless data communication.” *Id.*, 22:15-16. As discussed above with respect to claim 8 in Section IX.G, *Knutsson* discloses or renders obvious the key device being a “smartphone.”

10. **[13E] “e) wherein the access device receives the reservation certificate from the smartphone application based on use by the smartphone application of the communication setting, and the processor activates the door lock based on at least the receipt of the reservation certificate.”**

110. *Knutsson* renders obvious [13E] as discussed above for [1E] in Section IX.A.11.

X. GROUND 2: CLAIM 6 IS RENDERED OBVIOUS BY *KNUTSSON* IN VIEW OF *WOODARD*

A. Motivation to Combine *Knutsson* and *Woodard*

111. As explained in Section VIII, claim 6 requires a report be generated that is not expressly disclosed by *Knutsson*. In my opinion, a POSA would have incorporated *Woodard*'s central management functionality into *Knutsson*'s access system to achieve a central management system and "complete the lockbox access record." *Woodard*, [0013]. *Woodard* discloses that its key device 104 would be able to transmit "certain access data to the central computer system/database 200 for further processing," and that the "ability to track, store and centrally process these access data are a valuable tool." *Id.*, [0004]. Thus, in my opinion, a POSA would have been motivated to combine *Woodard*'s reporting and *Knutsson*'s key device 1, administration device 20, and lock device 40 would be able to "track, store and centrally process [the] access data." *Id.*

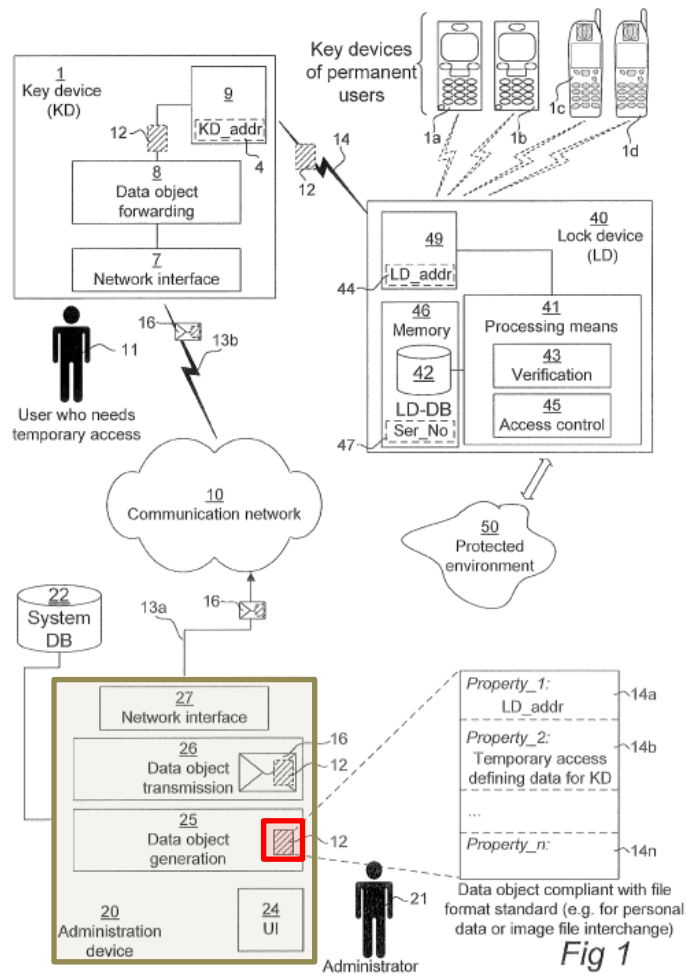
112. In my opinion, a POSA would have had a reasonable expectation of success combining *Woodard* and *Knutsson* because *Woodard* and *Knutsson* disclose similar key devices such as *Woodard*'s "electronic key device 104, which can be a PDA, a cell phone." *Woodard*, [0003], and *Knutsson*'s key device that can be a PDA or a mobile phone, *Knutsson*, 5:1-2, to actuate access devices like *Woodard*'s

lockbox 103, *Woodard*, [0048], or *Knutsson*'s lock device 40 to open a lock.
Knutsson, 10:24-30.

B. [Claim 6] “The system of claim 1 wherein the access device generates a record indicating that the processor activated the door lock.”

113. *Knutsson* in view of *Woodard* renders obvious claim 6. *Knutsson* does not disclose generating a record, but *Woodard* does.

114. *Knutsson*'s administration device 20 can be a “server computer.” *Knutsson*, 11:1-6. *Knutsson*'s administration device 20 includes, “data object generation module 25 [that] is configured to create a data object 12.” *Id.*, 11:24-26. This data object 12 is from administration device 20 as shown in Figure 1.



Knutsson, FIG. 1 (annotated).

115. *Knutsson* does not disclose that its lock device 40 has direct access to administration device 20 or that the lock device 40 reports that it was activated, but *Woodard* does. *Woodard* discloses “accessing said lockbox and recording each access event in an access record, each of said access events comprising an access time.” *Woodard*, [0015]. *Woodard* discloses that “the lockbox access records stored in the electronic lockboxes are transmitted via a communications link between the

electronic lockbox and the showing management system's servers coupled to the showing management system's database." *Id.*, [0072]. Woodard provides examples of the generated record, shown below.

Access Event	Lock- box ID	List- ing ID	Access Date	Access Time	Show- ing Agent Key ID	Showing Agent ID
L1	3453	1234	Jan. 11, 2008	9:40 AM	7655	566
L2	3453	n.a.	Jan. 11, 2008	3:10 PM	8224	582
L3	3453	n.a.	Jan. 12, 2008	11:12 AM	7655	566
L4	3453	1234	Jan. 14, 2008	2:58 PM	4357	226
L5	3453	1234	Jan. 15, 2008	10:05 AM	7790	733

Woodard, Table 3.

In my opinion, a POSA would have found it obvious to implement *Woodard's* lockbox access records stored in the lockboxes and those records being reported to the system's servers via a communications link into *Knutsson's* lock devices 40 and administration device 20. In my opinion, a POSA would have been motivated to combine *Knutsson* and *Woodard* as discussed above in Section X.A.

**XI. GROUND 3: CLAIMS 1-5, 7-14 ARE RENDERED OBVIOUS BY
KNUTSSON IN VIEW OF INOUE**

A. Motivation to Combine *Knutsson* and *Inoue*

116. As explained in Section V, claims 1 and 13 include limitations of a reservation request that includes a selection of a location at a destination. In my opinion, a POSA would have been motivated to implement *Inoue*'s selection of a room into the *Knutsson* interface because *Inoue* discloses "a reservation for a hotel stay by using the data send/receive function of a mobile phone... for opening the door of a room reserved in advance... without having to proceed to the hotel counter." *Inoue*, [0004]. In my opinion, a POSA would have incorporated *Inoue*'s selection of a room to avoid using a counter or front desk, *id.*, which is similar to *Knutsson*'s goal of providing "temporary access" to a protected environment conveniently. *Knutsson*, 2:21-24, 5:15-16. Both access systems accomplish this convenient access through "a mobile terminal [] used as the wireless key device," *id.*, and it is thus my opinion that a POSA would have been motivated to improve *Knutsson*'s access system to bypass the counter or front desk. It is further my opinion that a POSA would have been motivated to implement computerization of long-standing hotel practice of "making a reservation" by allowing a user to make a "reservation for a room" by recording "a hotel in the region where they wish to stay

and then confirm[ing] the desired dates, room availability, fee, and the like.” *Inoue*, [0003].

117. As explained in Section VIII, claims 10, 11, and 14 require the selection of amenities that is not expressly disclosed by *Knutsson*. A POSA, however, would have been motivated to implement *Inoue*’s selection of amenities into the *Knutsson* interface because *Inoue* discloses receiving “in advance, on the mobile-phone side, data corresponding to a key for opening the door of a room reserved in advance, and to open the door of the room using the data corresponding to that key, then the reserved room could be easily utilized without having to proceed to the hotel counter.” *Inoue*, [0004]. In my opinion, a POSA would have incorporated *Inoue*’s amenities selection so that users could reserve a room easily without going to the hotel counter. *Id.*

118. In my opinion, a POSA would have had a reasonable expectation of success combining *Inoue*’s reservation system, which allows advance reservation selection through a user interface, *Inoue*, [0004], into *Knutsson*’s access control system that also includes an administrative device 20, which has a similar graphical user interface for controlling access (i.e., reservations). *Knutsson*, 11:1-6, Both *Inoue* and *Knutsson* rely on a server that receives reservation information and issues access information through electronic key data, *Inoue*, [0024], or a data object with

necessary data, *Knutsson*, 11:24-26. It is further my opinion that a POSA would have found it obvious that *Inoue*'s reservation system including selection of a room and amenities would be incorporated into *Knutsson*'s graphical user interface so that *Knutsson*'s administration device 20 could receive a selection of a user's desired room selection and room requirements. *Inoue*, [0024]. Such incorporation would be a simple and obvious replacement of similar components in similar systems.

119. In my opinion, a POSA would have further had reasonable expectations of success combining *Inoue* into *Knutsson*'s key device because *Inoue* and *Knutsson*'s key devices are similar: *Knutsson* discloses its key device is a mobile phone, *Knutsson*, 5:1-2, and *Inoue* discloses a "portable telephone unit" for access to an entrance, *Inoue*, [0008]. Similarly, *Knutsson*'s access device, lock device 40, opens a lock, *Knutsson*, 10:24-30, and *Inoue*'s entrance control device 40 unlocks the door of the desired room. *Inoue*, [0024]. Thus, in my opinion, a POSA would have found it a simple matter of substitution to implement *Inoue*'s reservation server and its selection of rooms and other access benefits, with *Knutsson*'s access control system because both *Knutsson* and *Inoue* disclose similar data and reservation systems used by similar key devices to access similar lock devices.

B. Claim 1

120. *Knutsson* in view of *Inoue* renders obvious claim 1.

1. [1p]-[1A]

121. *Knutsson* renders obvious [1p]-[1A] as discussed above in Sections IX.A.1-IX.A.2.

2. [1B(i)] “b) a secure reservation interface to receive a reservation request from a first device for a reservation at a given destination,”

122. *Knutsson* renders obvious [1B(i)] because *Knutsson* discloses a graphical user interface on devices like administration device 20 (first device) used to grant temporary access to a room, a temporary, protected environment, for a set amount of time. *Knutsson*’s computer, administrative device, that includes input devices connected to a user interface 24 that includes a GUI that are used to grant temporary access when requested corresponds to the claimed “a secure reservation interface to receive a reservation request from a first device for a reservation” as discussed above in Section IX.A.3.

123. *Knutsson*’s temporary access to an environment corresponds to the claimed “a reservation at a given destination,” as discussed above in Section IX.A.3.

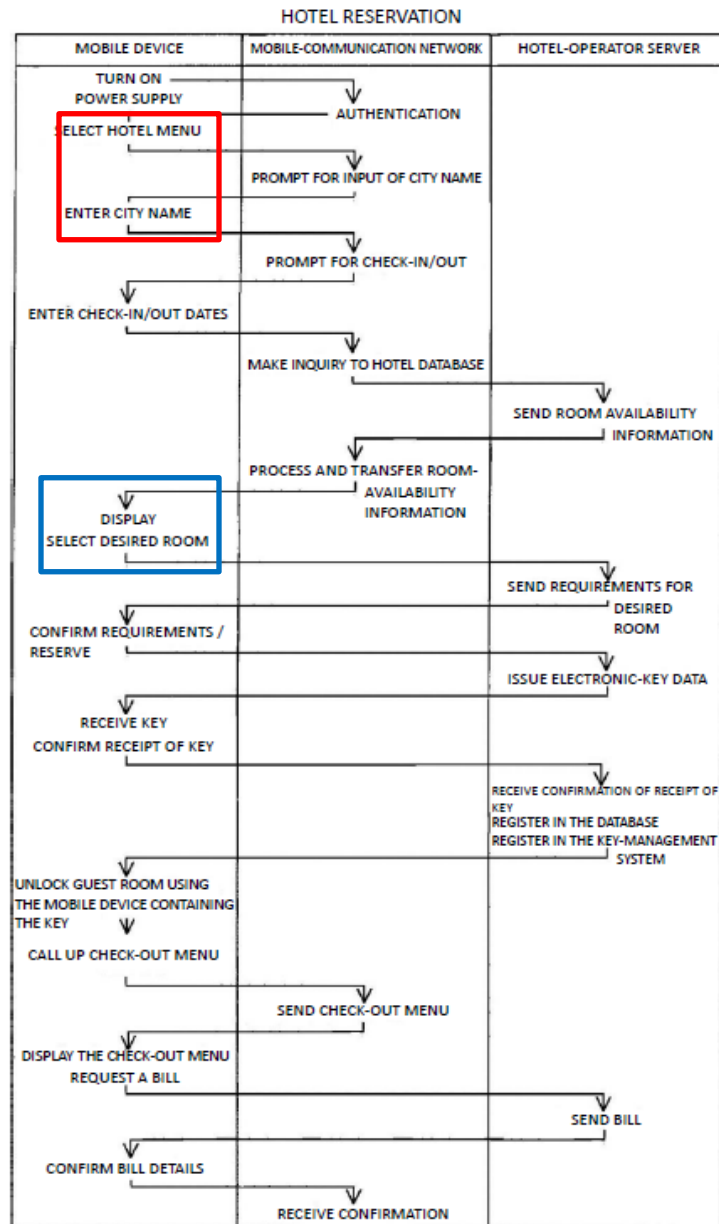
3. [1B(ii)] “the reservation interface comprising one or more screens for receiving a selection of a location at the destination and an interval of the reservation;”

124. *Knutsson* in view of *Inoue* renders obvious [1B(ii)] because *Knutsson* discloses a graphical user interface that receive access data from a user. *Knutsson*’s lockable door correspond to the claimed “selection of a location at the destination,”

as discussed above in Section IX.A.4. *Knutsson*'s time frames correspond to the claimed "interval of the reservation" as discussed above in Section IX.A.4.

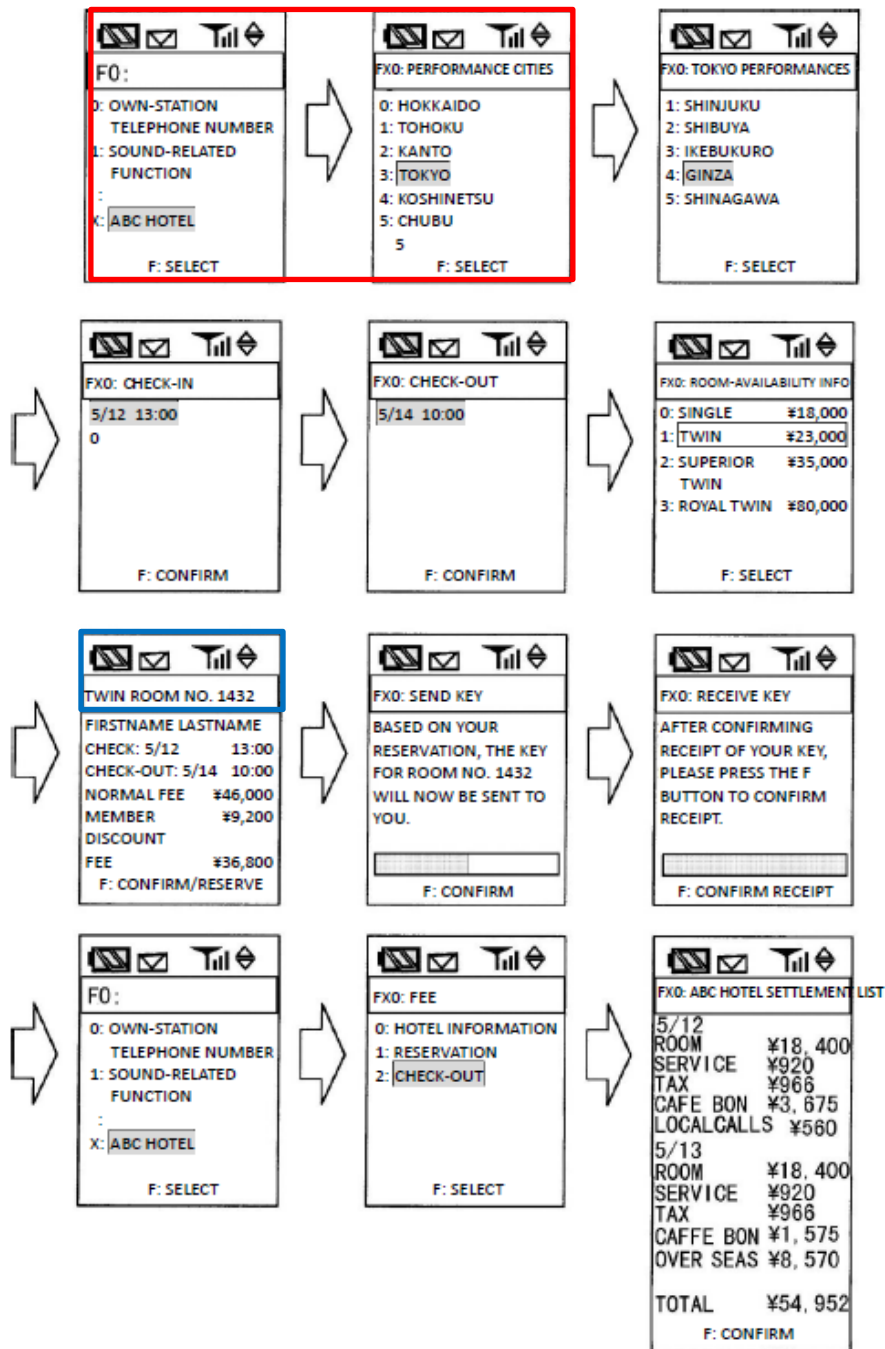
125. To the extent it is argued that *Knutsson* does not disclose "the reservation interface comprising one or more screens for receiving a selection of a location at the destination," *Inoue* does. *Inoue* discloses "a reservation for a hotel stay by using the data send/receive function of a mobile phone to access the reservation server of the hotel operator, to receive in advance, on the mobile-phone side, data corresponding to a key for opening the door of a room reserved in advance." *Inoue*, [0004]. Indeed, *Inoue* discloses "FIG. 4 is a drawing that explains a data send/receive example of a hotel reservation." *Id.*, [0048]. *Inoue* states that the reservation server 7 communicates through a mobile communication network with a mobile device 10 so that the server 7 "searches the database 8 for room-availability information at the requested check-in and check-out dates and sends that room-availability information to the mobile communication network 1 side." *Id.*, [0023]. *Inoue* discloses in Figures 4 and 5 a hotel reservation that includes selecting a hotel or city (destination) and selecting a room at the hotel in the city (location).

FIG. 4



Inoue, FIG. 4 (annotated).

FIG. 5



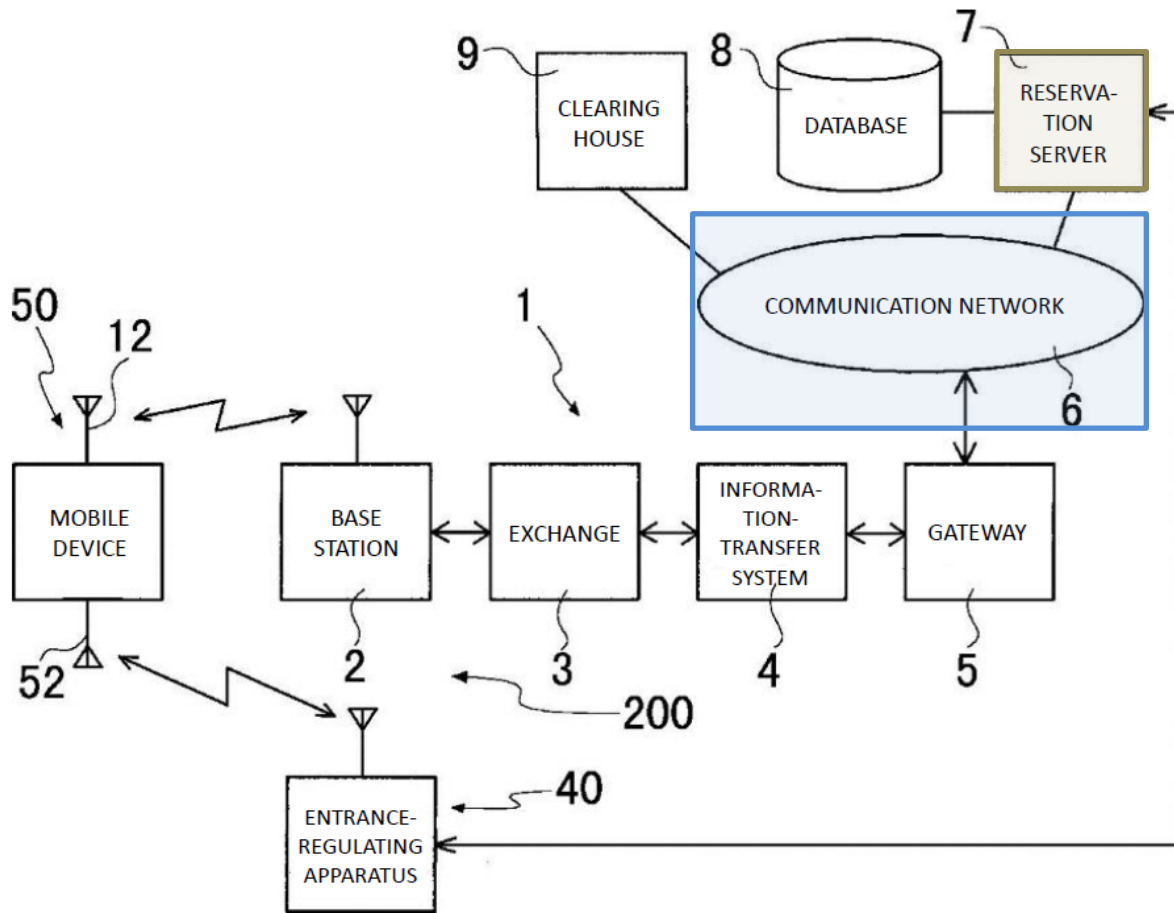
Inoue, FIG. 5 (annotated).

On the mobile device side, “the displayed desired room requirement is confirmed,” for example through a selection on a display. *Id.*, [0023]; FIG. 5. In my opinion, a POSA would have been motivated to combine *Knutsson* and *Inoue* as discussed above in Section XI.A.

4. [1C(i)] “c) a reservation server, in communication with the reservation interface and a network, to:”

126. *Knutsson* in view of *Inoue* renders obvious claim [1C(i)]. To the extent it is argued that *Knutsson* does not disclose “a reservation server” separately from the claimed “first device” and “second device,” *Inoue* does. *Inoue* discloses “communication network 6, to which... reservation server 7... [is] connected.” *Inoue*, [0044]. This is shown in FIG. 9 below.

FIG. 9



Inoue, FIG. 9.

The reservation server 7 receives a selection of room-availability information and “when the displayed desired room requirement is confirmed and a reservation is selected, information related to the reservation is sent to the reservation server 7.”

Id., [0023]. *Inoue*’s reservation server 7 receives information from “a menu... displayed on the display part 19” of mobile device 10. *Id.*, [0022]. *Inoue*’s communication network 6 is connected to reservation server 7. *Id.*, [0044].

127. In my opinion, a POSA would have found it obvious that *Inoue*'s reservation server 7 could be combined with *Knutsson*'s access system so that *Knutsson*'s access system would receive reservations "in advance, and thereby the door can be opened and the room utilized easily." *Inoue*, [0005]. It is further my opinion that a POSA would have had reasonable expectations of success in implementing *Inoue*'s reservation server 7 as a device to receive reservations rather than *Knutsson*'s administration device 20 because both devices are servers that forward messages and are connected to databases, and both devices are connected to communication networks for managing access to rooms. *Inoue*, [0014], [0024]; *Knutsson*, 11:7-11, 13:6-19. Further, reservation server 7 would have been able to receive reservation information from *Knutsson*'s administration device 20 because *Inoue* discloses its mobile device 10 includes generic parts including "key-manipulation part 18, [] display part 19, memory 20," that are used to request information from and send data to reservation server 7, *Inoue*, [0016], and *Knutsson*'s administration device 20 similarly has generic parts such as a keyboard, mouse, and display that are used to specify access data, and administration device 20 can even "be a mobile terminal." *Knutsson*, 11:1-14. In my opinion, a POSA would have been further motivated to combine *Knutsson* and *Inoue* as discussed above in Section XI.A.

5. [1C(ii)]-[1C(iv)]

128. *Knutsson* renders obvious [1C(ii)]-[1C(iv)] as discussed above in Sections IX.A.6-IX.A.8.

129. In my opinion, a POSA would have found it obvious that *Inoue*'s reservation server 7, implemented in *Knutsson*'s access control system, would be capable of the limitations of [1C(ii)]-[1C(iv)] as rendered obvious by *Knutsson*'s disclosure discussed above in Sections IX.A.6-IX.A.8.

6. [1D(i)]-[1E]

130. *Knutsson* renders obvious [1D(i)]-[1E] as discussed above in Sections IX.A.9-IX.A.11.

C. [Claim 2]-[Claim 5], [Claim 7]-[Claim 9], [Claim 12]

131. *Knutsson* renders obvious Claims 2-5, 7-9, 12 as discussed above in Sections IX.B-IX.E (claims 2-5) and IX.F-IX.I (claims 7-9, 12).

D. [Claim 10] The system of claim 1 wherein the reservation interface comprises one or more screens for selecting one or more amenities at the destination.

132. *Knutsson* in combination with *Inoue* renders obvious claim 10.

133. *Knutsson* does not expressly disclose “selecting one or more amenities,” but *Inoue* does. *Inoue* discloses “the reservation server 7, which received the inquiry from the mobile-communication network 1 side, searches the database 8 for room-availability information at the requested check-in and check-out dates.”

Inoue, [0023]. Then, “[o]n the mobile device 10 side, the room-availability information is received and displayed on the display part 19. That is, as shown in FIG. 5, for example, ‘Single ¥ 18,000’, ‘Twin ¥ 23,000’, ‘Super twin ¥ 35,000’ and ‘Royal twin ¥ 80,000’ are displayed.” *Id.* In my opinion, a POSA would have found it obvious that each of these modifications relating to the reservation would be an amenity. It is further my opinion that a POSA would have been motivated to combine *Knutsson* and *Inoue* as discussed above in Section XI.A.

134. Further, as discussed above for [1B(ii)] in Section IX.A.4, *Knutsson* discloses its administrative device 20 has “a data object generation module 25 which is configured to invite the administrator 21 to specify the temporary access defining data through interaction with the user interface 24.” *Knutsson*, 10:30-35. *Knutsson*’s graphical user interface allows the administrator to specify the temporary access data. In my opinion, a POSA would have understood that a GUI comprises software components that give users “the ability to interact with their systems and application programs in a graphical and consistent manner,” for example, allowing “a user to input commands into a system through the use of menus or by pointing to icons that picture commands.” Ex-1018, 6. It is thus my opinion that a POSA would have understood that *Knutsson*’s graphical user interface would use menus or icons, and

Inoue discloses several different screens, *Inoue*, FIG.5, for selection of amenities as discussed above, corresponding to the claimed “one or more screens.”

E. [Claim 11] “The system of claim 10 wherein the reservation server receives a request for one or more amenities at the destination.”

135. *Knutsson* in combination with *Inoue* renders obvious claim 11.

136. *Knutsson* does not expressly disclose “selecting one or more amenities,” but *Inoue* does. *Inoue* discloses “when the displayed desired room requirement is confirmed and a reservation is selected, information related to the reservation is sent to the reservation server 7.” *Inoue*, [0023]. “On the mobile device 10 side, the room-availability information is received and displayed on the display part 19. That is, as shown in FIG. 5, for example, ‘Single ¥ 18,000’, ‘Twin ¥ 23,000’, ‘Super twin ¥ 35,000’ and ‘Royal twin ¥ 80,000’ are displayed.” *Id.* In my opinion, a POSA would have found it obvious that each of these modifications relating to the reservation would be an amenity. It is further my opinion that a POSA would have been motivated to combine *Knutsson* and *Inoue* as discussed above in Section XI.A.

F. Claim 13

137. *Knutsson* in view of *Inoue* renders obvious claim 1.

1. [13p]-[13A]

138. *Knutsson* renders obvious [13p]-[13A] as discussed above in Sections IX.J.1-IX.J.2 for [13p]-[13A].

2. **[13B] “b) a reservation interface comprising one or more screens associated with the location, the one or more reservation screens for selecting at least a room and an interval for a reservation at the location;”**

139. *Knutsson* in view of *Inoue* renders obvious [13B] as discussed above in Sections XI.B.2-XI.B.3 for [1B(i)] and [1B(ii)].

3. **[13C(i)] “c) a reservation server, in communication with the reservation interface and a network, to:”**

140. *Knutsson* in view of *Inoue* renders obvious [13C(i)] as discussed above in Section XI.B.4 for [1C(i)].

4. **[13C(ii)]-[13E]**

141. *Knutsson* renders obvious [13C(ii)]-[13E] as discussed above in Sections IX.J.5-IX.J.10 for [13C(ii)]-[13E].

- G. **[Claim 14] “The system of claim 13 wherein the reservation interface comprises one or more reservation screens associated with the location, the one or more screens for selecting one or more amenities at the location.”**

142. Claim 14 is substantially similar to claim 10 aside from its dependency from claim 13. *Knutsson* in combination with *Inoue* renders obvious claim 14 for the reasons explained for claim 10 in Section XI.D.

XII. GROUND 4: CLAIM 6 IS RENDERED OBVIOUS BY *KNUTSSON* IN VIEW OF *WOODARD* AND *INOUE*

A. Motivation to Combine *Knutsson*, *Woodard*, and *Inoue*

143. As also explained in Section VIII, claim 6 requires a report be generated that is not expressly disclosed by *Knutsson* or *Inoue*. In my opinion, a POSA would have incorporated *Woodard*'s central management functionality into *Knutsson*'s access system to achieve a central management system and "complete the lockbox access record." *Woodard*, [0013]. *Woodard* discloses that its key device 104 would be able to transmit "certain access data to the central computer system/database 200 for further processing," and that the "ability to track, store and centrally process these access data are a valuable tool." *Id.*, [0004]. This is consistent with *Inoue*'s disclosure of its reservation server 7 searching for "room-availability information," *Inoue*, [0022]-[0023], that in my opinion, a POSA would have found it obvious to keep up-to-date so the information is accurate and to avoid double-booking or displaying out-of-date availabilities. A POSA thus would have been motivated to combine *Woodard*'s reporting, *Inoue*'s reservation/IT system, and *Knutsson*'s key device 1, administration device 20, and lock device 40 to "track, store and centrally process [the] access data." *Woodard*, [0004].

144. In my opinion, a POSA would have had reasonable expectations of success combining *Inoue* into the *Woodard-Knutsson* combination because all three

disclose similar key devices such as *Woodard*'s "electronic key device 104, which can be a PDA, a cell phone." *Woodard*, [0003]. *Knutsson*'s key device that can be a PDA or a mobile phone, *Knutsson*, 5:1-2, and *Inoue*'s "portable telephone unit" relating to access an entrance, *Inoue*, [0008], to actuate access devices like *Woodard*'s lockbox 103, *Woodard*, [0048], *Knutsson*'s lock device 40 to open a lock, *Knutsson*, 10:24-30, or *Inoue*'s unlocking the entrance control device 40 constituting the door of the desired room. *Inoue*, [0024].

B. [Claim 6]

145. *Knutsson* in combination with *Woodard* and *Inoue* renders obvious claim 6. *Woodard* discloses the limitations of claim 6 as discussed above in Section X.B. In my opinion, a POSA would have been motivated to combine *Knutsson*, *Woodard*, and *Inoue* as discussed above in Section XII.A.

XIII. CONCLUSION

146. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

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

Executed this 24th day of May 2023, in Windsor, MA.

Respectfully submitted