

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC
Petitioner,

v.

WILDSEED MOBILE LLC
Patent Owner.

IPR2023-00245
U.S. Patent No. 10,959,040

**DECLARATION OF DR. HENRY HOUH,
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW**

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I, Henry Houh, do hereby declare as follows:

I. INTRODUCTION

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters stated herein.

2. I have been asked by Google LLC (“Google”) to provide my expert opinion connection with the *Inter Partes* Review of U.S. Patent No. 10,959,040 (“the ’040 patent”) to Feldman *et al* concerning whether the ’040 patent is unpatentable over certain prior art. This declaration is a statement of my opinions on issues relating to the patentability of claims 1–20 (“the Challenged Claims”) of the ’040 patent. As I explain more fully below, it is my opinion that all of the Challenged Claims would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention.

3. I am being compensated for my work in this matter at my standard hourly rate. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony.

4. I have reviewed and considered the following documents in connection with my analysis of the ’040 patent:

- a) the ’040 patent, Ex.1001;
- b) the prosecution history of the ’040 patent (“’040 File History”),

Ex.1002;

c) U.S. Published Application US2006/0250994 to Sasaki et al.

(“Sasaki”), Ex.1004;

d) U.S. Published Application US2005/0020223 to Ellis et al.

(“Ellis”), Ex.1005;

e) U.S. Published Application US2006/0195362 to Jacobi et al.

(“Jacobi”), Ex.1006;

f) U.S. Published Application US2006/0143214 to Teicher et al.

(“Teicher”), Ex. 1007;

g) U.S. Patent No. 6,169,899 to Havinis et al. (“Havinis”), Ex.

1008.

h) U.S. Published Application US2006/0268667 to Jellison et al.

(“Jellison”), Ex. 1009.

i) U.S. Published Application US 2007/0100787 to Lim et al.

(“Lim”), Ex. 1010.

j) U.S. Published Application US2006/0258289 to Dua et al.,

(“Dua”), Ex.1011

5. In forming the opinions expressed below, I have considered:

a) the documents listed above;

b) the relevant legal standards, including the standard for

obviousness, and any additional authoritative documents as cited in the body of this declaration; and

- c) my own knowledge and experience based upon my work in the field of networking as described below, as well as the following materials.

6. Unless otherwise noted, all emphasis in any quoted material has been added.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

7. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1019. The following is a brief summary of my relevant qualifications and professional experience.

8. I received a Ph.D. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (“MIT”) in 1998. Beforehand, I received a Master of Science degree in Electrical Engineering and Computer Science in 1991, a Bachelor of Science degree in Electrical Engineering and Computer Science in 1989, and a Bachelor of Science degree in Physics in 1990, all from MIT.

9. I am currently self-employed as an independent technical consultant. I was also president of a company that provides supplemental science, technology,

engineering, and mathematics (“STEM”) education to children of all ages. |

10. I first entered telecommunications in 1987 when I worked as a summer intern at AT&T Bell Laboratories as part of a five-year dual degree program at MIT. I continued to work at AT&T Bell Laboratories as part of this MIT program. While at MIT, I was a teaching assistant (“TA”) in the Electrical Engineering and Computer Science Department’s core Computer Architectures course. I first was a TA as a senior for a role typically reserved for graduate students. I later became head TA. The course covered various topics in computer architectures. As a TA, I helped write homework assignments, lab assignments, and exams. I also taught in the recitation sections.

11. Later, as part of my doctoral research at MIT from 1991-1998, I was a research assistant in the Telemedia Network Systems (“TNS”) group at the Laboratory for Computer Science. The TNS group built a high-speed gigabit network and created applications that ran over the network. Example applications included ones for remote video capture, processing, and display of video on computer terminals. In addition to working on the design of core network components (which was based on FPGAs), designing and building the high-speed links (which included programmable logic devices), and designing and writing the device drivers for the interface cards (which included programmable logic devices), I also set up the group’s web server. Also, I helped to maintain, install,

and upgrade the networking devices used within the group, along with other graduate students. When I started with the TNS group, the networking infrastructure consisted of shared coaxial cable-based Ethernet, with bridges and repeaters interconnecting various network segments. I became familiar with the Ethernet specifications in order that we not configure our network improperly, typically by chaining too many repeaters together. We gradually replaced the coaxial Ethernet infrastructure with twisted pair 10BASE-T wiring that were interconnect via hub repeaters, for which we also had to mind the Ethernet specifications. Eventually, many of the hub repeaters were upgrade to switches. I also studied the various parts of the Ethernet specifications both independently and through graduate course work in networking.

12. I also helped to build the web pages that initiated the above-mentioned video sessions via a web interface. Vice President Al Gore visited our group in 1996 and received a demonstration of—and remotely drove—a radio-controlled toy car with a wireless video camera mounted on it that was built by our group. This toy car device received commands transmitted over a network from a remote computer, and video data from the toy car was transmitted wirelessly then over a computer network back to the user controller. On occasion, we allowed users visiting our web site to drive the toy car from their remote computer while they watched the video on their computer. The video stream was encoded by TNS-

designed hardware, streamed over the TNS-designed network, and displayed using TNS-designed software.

13. I defended and submitted my Ph.D. thesis, titled “Designing Networks for Tomorrow’s Traffic,” in January 1998. As part of my thesis research, I analyzed local area and wide area flows to show a more efficient method for routing packets in a network, based on traffic patterns at the time. The traffic flow data included Ethernet, IP, TCP or UDP, and RTP header information, which I analyzed to come to the conclusions in my thesis.

14. While I was in graduate school, I started a company that provided web site design services and targeted advertising opportunities. We also sold targeted advertising placements. As the web became popular first at colleges and universities, we focused initially on building college recruiting web sites and sold advertisements to companies wishing to target students to recruit at specific colleges. We developed technology that utilized the web user’s college affiliation to customize advertisements targeted to students at that college.

15. From 1997 to 1999, I was a Senior Scientist and Engineer at NBX Corporation, a start-up that made business telephone systems for streaming packetized audio over data networks instead of using traditional telephone lines. NBX was later acquired by 3Com Corporation and the phone system is still used today by numerous businesses.

16. As part of my work at NBX, I designed the core audio reconstruction algorithms for the telephones, as well as the packet transmission algorithms. I also designed and validated the core packet transport protocol used by the phone system. The protocol was used for all signaling in the phone system, including for the setup of conference calls. The NBX system also featured a computer interface for initiating phone calls, which could also initiate conference calls. The NBX system also supported the Telephony Application Programming Interface (“TAPI”) that allowed other computer programs to integrate with our system telephony features. We obtained U.S. Patent No. 6,967,963, entitled “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data,” as part of this work. The first release of the phones had integrated Ethernet repeater hubs embedded in them, and I worked with the documentation and field support people to develop sets of guidelines so that customers would not build their networks to violate the Ethernet specifications, typically by chaining too many hub repeaters and NBX phones together. The first release of the phones also worked using Ethernet-layer packets (without the use of IP). I also programmed the first prototype of our phone which communicated using IP, and I demonstrated our IP phones working over the Internet when we attended a trade show in California. The phone connected over the Internet to our headquarters in Andover, MA.

17. From 1999-2004, I was employed by Empirix or its predecessor company, Teradyne. Empirix was a leader in test tools for telecommunications protocols and systems, providing functional testing tools as well as load testing tools. From 2000-2001, I conceived and built a test platform for testing Voice-over-IP (VoIP). The first application on this new test platform was a cloud emulator for simulating the effects of transmitting VoIP over a busy network. The test platform was based on a network processor chip, which could be programmed to cut-through packets while processing packet data such as various protocol layer headers including addresses included therein and even packet data contents. I also designed a protocol analyzer built on the same platform. The application captured and performed protocol decoding at various layers in the protocol stacks of captured packets, including detailed Ethernet header decoding, IP header decoding, TCP header decoding, UDP header decoding, RTP header decoding, and many other specified protocols. The application was also designed to reconstruct entire conversations that spanned multiple packets.

18. In 2006, as part of my role at BBN Technologies, I helped found PodZinger Inc., now known as RAMP Inc. PodZinger utilized BBN's speech recognition algorithms to search through the spoken words in audio and video segments. While I was Vice President of Operations and Technology, PodZinger followed its initial prototype with a full streaming audio and video search solution.

I also created a social networking web site, which BBN sold to a venture-funded startup company. In the process of creating the web site, I designed and specified the authentication and authorization protocols.

III. LEVEL OF ORDINARY SKILL IN THE ART

19. I understand there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including (1) the levels of education and experience of persons working in the field at the time of the invention; (2) the sophistication of the technology; (3) the types of problems encountered in the field; and (4) the prior art solutions to those problems.

20. I understand that the '040 patent was filed on February 13, 2019 and claims priority to U.S. Provisional Patent Application No. 60/945,677 filed June 22, 2007. My analysis reflects the views of a person of ordinary skill in the art ("POSITA") in the field of the '040 patent as of June 22, 2007. This would have been someone knowledgeable and familiar with the field of portable devices and venue or event recommendations for a user of the portable device that are pertinent to the '040 patent. That person would have a bachelor's degree in electrical engineering, or equivalent training, and approximately two years of experience working in the field of portable devices. Lack of work experience can be remedied by additional education, and vice versa.

21. For purposes of this Declaration, in general, and unless otherwise

noted, my statements and opinions, such as those regarding my experience and the understanding of a POSITA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the earliest proper priority date of the '040 patent (i.e., June 22, 2007). Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSITA prior to the earliest alleged priority date of the '040 patent.

IV. RELEVANT LEGAL STANDARDS

22. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '040 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

23. I understand that prior art to the '040 patent includes patents and printed publications in the relevant art that predate the proper priority date of the alleged invention recited in the '040 patent.

24. I have been informed that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art,

the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

25. I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

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

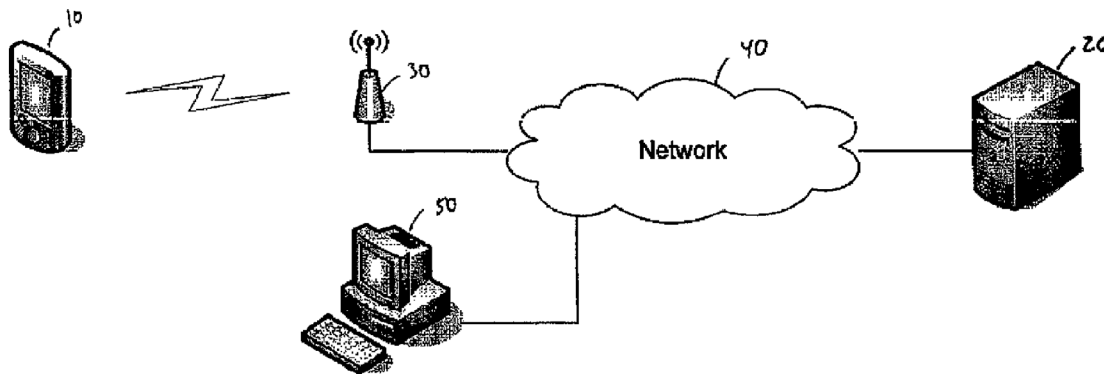
alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I understand that there must be a nexus—a connection—between any such secondary considerations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

27. I am not aware of any allegations by the named inventor of the '040 patent or any assignee of the '040 patent that any secondary considerations are relevant to the obviousness analysis of any Challenged Claim of the '040 patent.

V. SUMMARY OF THE '040 PATENT

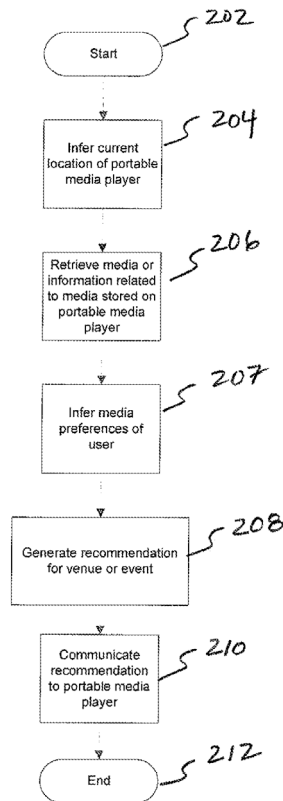
28. The '040 patent is directed to a method and system that “may generate information related to the current location or a recommendation for a venue or an event of interest to the user based at least in part on the one or more media preferences and the inferred current location of the user.” '040 patent, Abstract. The event or venue recommendation is “based at least in part on . . . one or more media preferences” of the user, which a server determines based on media that the user’s portable media device player has stored or accessed. '040 patent, Abstract. The patent explains that a server “may transmit one or more recommendations for a venue or event, or information of interest to the user, e.g. to portable media device.” '040 patent, 4:16-18.

29. Figure 1 of the '040 patent illustrates a recommendation system having (i) a portable media player with a plurality of stored media files, (ii) a server that exchanges information with the portable media player, and (iii) a communications medium, e.g., wireless access point. '040 patent, 3:60-4:10.



'040 patent, Fig. 1

30. The '040 patent further describes a method of providing a recommendation “generated and provided based at least in part on an inferred current location of the user, and inferred entertainment interest of the user.” '040 patent, 4:20-28.



'040 patent, Fig. 2

31. As depicted in Fig. 2, the server “infers a current location of the user. The inference may include receiving or determining a current location (or successively receiving a series of locations) of a portable media player device associated with the user.” ’040 patent, 4:42-46. The server may use one of a plurality of methods to determine the user’s current location. The server “may estimate the current location of the portable media player device based on a location of a wireless access point through which the portable media player device establishes a network connection to the server.” ’040 patent, 4:48-52. Also, the server may “estimate the current location of the portable media player device based

upon the results of triangulating signals from various signal towers,” or the server may “receive the current location of the portable media player device from a global positioning system (GPS) module located within the portable media player device,” or “the current location may be manually entered by the user into the portable media player device or other communication devices (such as a mobile phone) for transmission to the server.” ’040 patent, 4:52-64.

32. The server also “infer[s] an entertainment interest of the user” by analyzing “the media and the information about the media stored on or accessed using the portable media player device.” ’040 patent, 5:10-13. The “server can analyze the media and the information about the media stored on or accessed using the portable media player device to identify user preferences for particular genres of media.” ’040 patent, 5:33-36. The ’040 patent does not describe any algorithm or method to infer the user’s entertainment interest, other than stating that the inference is based on media or information about media stored on or accessed by the user’s portable media player device.

33. After the server determines one or more media preferences, “the server may make a recommendation for a venue or event (or provide information) based at least in part on the inferred current location of the user and the determined media preference of the user of the portable media player device.” ’040 patent, 5:58-65. The “server may compare a user’s preference for a particular genre of

music to a database that includes citywide events or venues that are hosting or typically host bands which play music of that particular genre.” ’040 patent, 6:10-13. For example, “the server may transmit a recommendation (or information) to a user, e.g. his portable music player device having jazz music stored on or accessed using the portable music player device for a club that plays live jazz or blues within a convenient walking or driving distance to the current location of the user and the portable media player device.” ’040 patent, 6:16-22.

34. After the server generates the recommendation, the “server may communicate the recommendation to the user by transmitting the recommendation (or information) to e.g., the portable media player device.” ’040 patent, 6:32-36.

35. However, prior to the ’040 patent, it was well-known to POSITAs to collect information about a device’s location and use it to recommend events or facilities to the user. It was likewise well-known to collect information about a user’s likes and dislikes and use that information to target events or facilities to recommend to a user.

VI. CLAIM CONSTRUCTION

36. It is my understanding that in order to properly evaluate the ’040 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this inter partes review, the claims are to be construed under the so-called Phillips standard, under which claim terms are given their ordinary and

customary meaning as would have been understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. For the purposes of this declaration, it is my opinion that none of the claim terms requires a specific construction and all will be given their plain and ordinary meaning. It is my understanding that the parties in the corresponding district court litigation dispute the meaning of certain claim terms. Below, I identify the constructions proposed in the district court litigation by Petitioner and other defendants. Whether or not these constructions are adopted does not affect by analysis because the cited art renders the claims obvious under these constructions as well.

VII. CLAIMS 1-20 ARE UNPATENTABLE

37. I have been asked to provide my opinion as to whether the Challenged Claims of the '040 patent would have been obvious in view of the prior art. The discussion below provides a detailed analysis of how the prior art references identified below teach the limitations of the Challenged Claims of the '040 patent.

38. As part of my analysis, I have considered the scope and content of the prior art and any differences between the alleged invention and the prior art. I describe in detail below the scope and content of the prior art, as well as any differences between the alleged invention and the prior art, on an element-by-element basis for each Challenged Claims of the '040 patent.

39. As described in detail below, the alleged invention of the Challenged Claims would have been obvious in view of the teachings of the identified prior art references as well as the knowledge of a POSITA.

Grounds	Claim(s)	Basis
#1	1-4, 7-10, 12-13 and 15-19	35 U.S.C. § 103 Sasaki, Ellis, and Jacobi
#2	5-6, 14 and 20	35 U.S.C. § 103 Sasaki, Ellis, Jacobi, and Havinis
#3	3 and 11	35 U.S.C. § 103 Sasaki, Ellis, Jacobi, and Teicher

A. Ground 1: Claims 1-4, 7-10, 12-13, and 15-19 are obvious under 35 U.S.C. § 103 over Sasaki in view of Ellis and further in view of Jacobi.

1. Summary of Sasaki

40. Sasaki relates to “a system, device, and method for providing recommendation information concerning various types of content, such as music content and audio/visual (AV) content.” Sasaki, [0003]. Sasaki’s “content recommendation system includes first and second communication devices which are connected to each other and in which content recommendation information is transmitted and received between both devices.” Sasaki, Abstract.

The present invention relates to a system, device, and method for providing recommendation information concerning various types of content, such as music content and audio/visual (AV) content, which have become abundantly provided through various recording media and through communication media Such as the Internet.

Sasaki, [0003].

A content recommendation system includes first and second communication devices which are connected to each other and in which content recommendation information is transmitted and received between both devices. The first communication device includes a storage section for storing pieces of content recommendation information to be transmitted, a selecting section for selecting a piece of content recommendation information to be transmitted from the storage section, and a transmitting section for transmitting the selected piece of content recommendation information. The second communication device includes a receiving section for receiving the piece of content recommendation information transmitted from the first communication device, and a storage section for storing the received piece of content recommendation information.

Sasaki, Abstract.

41. An example for the first communication device is a “server.” Sasaki, [0113]. The “server provides content recommendation information to a user’s terminal device and the terminal device receives and stores the content recommendation information.” Sasaki, [0115].

Specifically, the second embodiment is realized such that, in the above-described first embodiment, one terminal device (e.g., terminal device A) is replaced by a server at a service spot, and communication is performed between the server and terminal device B. Since, in this case,

the server does not need to have audio and video playback systems, the server has a configuration without the audio output processor 8, speaker 9, LCD driver 10, and LCD 11 of the terminal device shown in FIG. 1. Terminal device B used in the second embodiment is similar in configuration to the terminal device whose configuration is shown in FIG. 1, and has similar functions.

Sasaki, [0113].

At the service spot, the installed server provides content recommendation information to a user's terminal device and the terminal device receives and stores the content recommendation information in the HDD 4 of the terminal device. The content recommendation information stored in the HDD 4 of the terminal device is later played back in response to an instruction of the user, whereby the user of the terminal device can obtain and use recommended content information for determining whether or not to purchase the content. Accordingly, by using content recommendation information provided from the server at the service spot to each terminal device, guidance can be performed so that content purchase is facilitated.

Sasaki, [0115].

42. An example for the second communication device is “terminal device B.” Sasaki, [0113], [0115]. The terminal device is “portable,” “can be carried” and plays “various types of content, such as music and images.” Sasaki, [0021].

Further, Sasaki teaches that the portable media player device may include a “built-

in GPS” to “specify the place of transmission.” Sasaki, [0069].

The terminal device of the above embodiment is of a so-called “portable type”, as described above. The terminal device has reduced size and weight, and can be carried, with it put in a location such as a pocket of user's clothes or a bag. Accordingly, also in a place such as a location where the user is out, various types of content, such as music and images, can be played back for use.

Sasaki, [0021].

In this case, as the date and time of transmission, the present time that is acquired from a clock circuit of a terminal device that transmits the content recommendation information may be used. Regarding the place of transmission, for example, if the terminal has a built-in GPS (global positioning system), the GPS information may be used to specify the place of transmission, and the specifying information may be used. Alternatively, information representing the latitude and longitude (detected by the GPS) of the place of transmission which indicate the present position can directly be transmitted. In addition, the owner name of the terminal may be used as the recommender.

Sasaki, [0069].

43. The content recommendation information “represents various types of information concerning a piece of content the user likes (desires to recommend) among pieces of content owned by the user of the terminal device, for example, CD music, still pictures such as electrophotographs [sic] and CG (computer

graphics) images, DVD video, and text data such as novels.” Sasaki, [0074].

Regarding the content recommendation information described with reference to FIGS. 3A to 3C, main information contains recommendation comment information and sample-data storage-location information. However, the main information is not limited thereto. The content recommendation information represents various types of information concerning a piece of content the user likes (desires to recommend) among pieces of content owned by the user of the terminal device, for example, CD music, still pictures such as electrophotographs [sic] and CG (computer graphics) images, DVD video, and text data such as novels.

Sasaki, [0074].

44. Sasaki also discloses that it was known to provide many different types of information to a user’s communication device, including “traffic information, map information, guidance information concerning scenic spots and places of historical interest.” Sasaki, [0139].

2. Summary of Ellis

45. Ellis describes modular content recommendation techniques that “monitor the content listened to by the user, and automatically determine the groups liked and disliked by the user” in order to “create recommendations.” Ellis, [0212], [0042].

The system may compare information about the user's likes and dislikes with information about radio stations to create

recommendations. The user may enter information about her **likes and dislikes**, or this information **may be obtained automatically by monitoring the content she listens to.** For example, a recommendation may be provided in any of the following ways: there may be a list of stations that the user may choose from; the system may automatically set one or more presets based on the recommendations; or the system may automatically tune to the recommended stations.

Ellis, [0042].

In step 1810, items of audio content may be grouped. Groups may be created by the user, programmer, or advertiser, based on a number of criteria. In step 1820, a user may be allowed to rate a group. **The user may specify a like or dislike, or a level of like or dislike,** for a specific group of content. **The system may also monitor the content listened to by the user, and automatically determine the groups liked and disliked by the user.** ... In step 1840, the **system may automatically skip over an item that is recognized to be a member of a group that the user dislikes,** when it occurs on a radio station currently being listened to by the user. For example, a parent may define a group in a child's ERS based on an unacceptable parental advisory level, and the system may be configured to skip over all content in that group. In step 1850, the system may notify the user when it recognizes an item that is a member of a group liked by the user when it occurs on a station not being listened to by the user but that is being monitored by the system. If desired, this notification may occur even when the user is performing an activity other than listening to the radio, for example when the ERS is turned off, or when the user is listening to an audiotape or compact

disk. In step 1860, the system may automatically switch to the radio station broadcasting an item of interest when it is recognized on a station not being listened to by the user but that is being monitored by the system, if that item is a member of a group liked by the user. Additionally, the system may automatically skip-back to the start of the recognized item so that the user may hear it in its entirety. If desired, the automatic switching may occur even when the user is performing an activity other than listening to the radio, for example when the ERS is turned off, or when the user is listening to an audiotape or compact disk.

Ellis, [0212].

46. Ellis discloses that its techniques can be used in many embodiments. *See, e.g.*, Ellis, Fig. 1, Figs 6A-6D, and Fig. 42-43. Ellis's techniques can be implemented in "individual network components" and "[d]evices may be added or removed to change the functions of the system." Ellis, [0162]. Ellis also discloses that its techniques can be configured to work in "multiple environments." Ellis, [0160].

In step 740, the user may configure the system to be used in multiple environments, so that, for example, a single ERS may be used both portably or in the car, or in the car or at home. The steps in this process may be performed in any order, and all steps are optional.

Ellis, [0160].

The ERS may also be implemented as components in a modular personal network system, as disclosed in U.S. patent application Ser. No. 10/645,713 "Modular Personal Network Systems and Methods," by Michael D. Ellis and Caron S. Ellis, which is hereby incorporated by reference in its entirety. In that invention, multiple personal devices may be connected via a wireless network. Devices may be added or removed to change the functions of the system. For example, a radio receiver and digitizer may be one individual network component. The controller and memory may be another individual network component. Other individual network components may also include user controls, display device, and digital-to-analog converter/audio output. In such embodiments, the user may change individual network components to use the invention in different environments. For example, the user controls for a portable ERS may be worn on the person, while the user controls for a car ERS may be mounted in the car. Similarly, the audio output for the personal ERS may be portable headphones, while in the car the car's audio system may be used. In such embodiments, software, audio, and other data may be downloaded into the system from a base station or personal computer.

Ellis, [0162].

47. In one embodiment, Ellis discloses that a user uses a portable media player device to access music and other content, whether by storing data on the portable media player device or by connecting directly to a network-based radio station. Ellis, [0156], [0136]-[0137], [0274].

If desired, the user may be allowed to scan in either direction (i.e., through higher radio frequencies or lower radio frequencies). The user may also be allowed to scan across multiple radio sources (e.g., both Internet and radio frequency broadcasts).

Ellis, [0274].

FIG. 6B shows an enhanced radio embodiment 650 configured to be used portably. It includes a main unit 652, which may include controls 654 and mounting means 656. Controls 654 may be substantially similar to controls shown in FIG. 6A. Mount may be configured, for example, to attach to a user's clothing. Embodiment 650 may also include speakers (e.g., headphones) 658, antenna (not shown), and connection 659 (e.g., wireless or wired) for sending audio signals from main device 652 to speakers 658. It may also include connector 662 for connecting to communications device 155 (FIG. 1).

Ellis, [0156].

Radio listener 4202 may have access to many new features. Multiple radio stations 4204 from one or more radio sources may be available. Multiple receivers 4206 may simultaneously receive the multiple radio stations 4204, and store them digitally into buffers 4208 in computer digital storage device 4209, storing the most recent several minutes of each. One of the buffers may be used to provide an audio output 4210 for the listener 4202. The listener may choose a subset of the available radio stations 4204 and assign them to presets 4216, and the system will continuously monitor those favorite stations, storing recent content from each into buffers 4206. The system may continuously monitor the

most recently listened station or stations 4215, storing recent content from each into buffers 4206. And the system may allow the listener to scan through all available stations, while tuning ahead to each before it is played for the listener, and storing its content into the one of the buffers 4206. The listener may use audio controls 4212 on the audio from any station as it is played. The listener may pause and resume play. The listener may skip back to earlier content, even content that was broadcast prior to when the user started listening to the station. And the listener may skip forward over content that is not of interest.

Ellis, [0136].

[0137] The listener may record songs 4218 and other content from the radio and replay them later, or download songs from other sources. The listener may rate songs 4248. At a later time, the system may use the listener ratings to act on songs and other content that are broadcast. If a song that the listener likes 4246 is broadcast on a station that the user is not listening to, the system may notify the user or automatically switch to the song, and the listener may hear the song from the beginning. If a song that the listener does not like 4247 is broadcast, the system may automatically skip over it. The system may provide a karaoke mode 4240, allowing the listener to sing along with a song.

Ellis, [0137].

48. Fig. 43 shows a block diagram of an implementation of Ellis's system.

Ellis, [0278]:

FIG. 43 shows a block diagram of one embodiment of an ERS. Radio frequency (RF) input 4301 provides a radio signal to ERS 4300. This signal may be, for example from an FM antenna, an AM antenna, or any other suitable source or combination of sources.

Ellis, [0278].

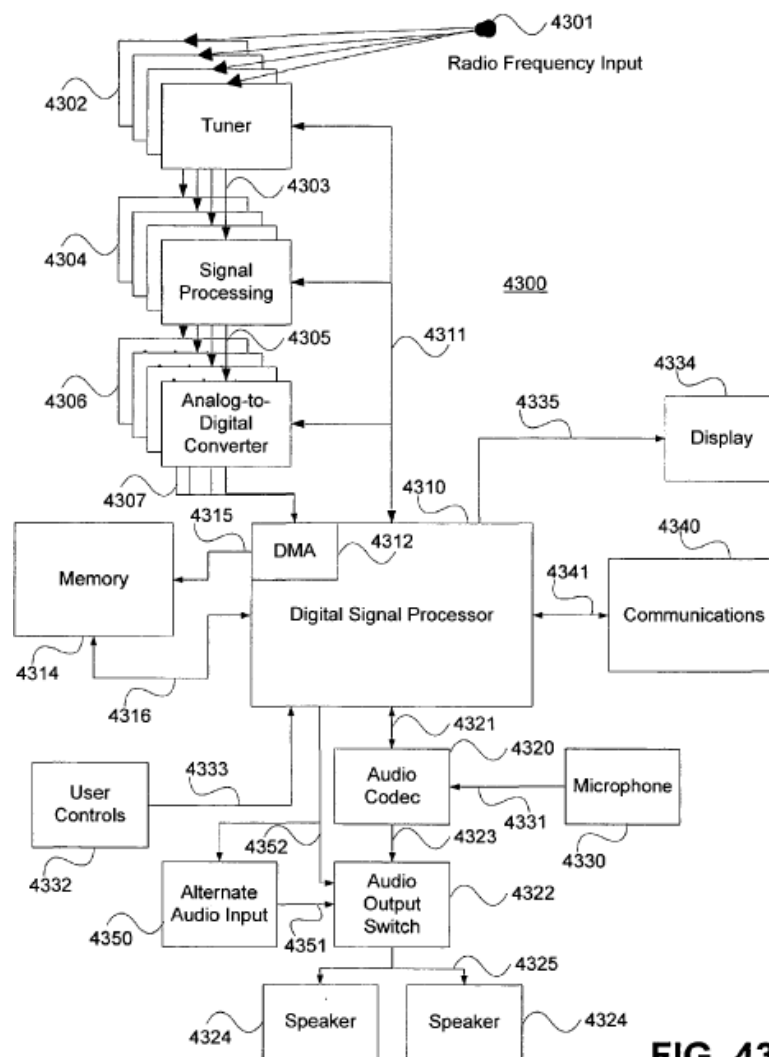


FIG. 43

Ellis, Fig. 43.

49. Ellis describes techniques for collecting information about the user's listening habits. Ellis, [0263].

FIG. 37 shows flowchart 3700 of an illustrative **process to collect and report enhanced radio usage data**. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. **In step 3710, the system may collect information on radio stations that the user listens to.** The information may include information on **days and times that stations were listened to.** It may also include **information on particular songs, commercials, shows, and other content that the user may have actually heard,** as well as indications of **content the user may have skipped over.**

Ellis, [0263]

Ellis's system also collects information about features accessed by the user:

In step 3720, the **system may collect information on enhanced radio features accessed by the user.** For example, the system may log each feature used, and the day and time the feature was selected.

Ellis, [0264].

50. The user may “specify a like or dislike for a particular song or commercial, or to indicate a level of interest. The user may also to be able to rate a specific musical artist, station, radio show, and other sets of content.” Ellis, [0039]. The user preferences and other information also may include a user's media content ratings:

The **system may allow the user to rate a piece of content.** For example, the **user may be able to specify a like or dislike** for a particular song or commercial, or to indicate a level of interest. The user

may also to be able to **rate a specific musical artist, station, radio show, and other sets of content**. The system may be configured to skip over undesirable content. The system may be configured to automatically save a copy of desirable content.

Ellis, [0039].

51. Further, the information about the user's interests can be "obtained automatically by monitoring the content she listens to." Ellis, [0042].

The system may compare information about the user's likes and dislikes with information about radio stations to create recommendations. **The user may enter information about her likes and dislikes, or this information may be obtained automatically by monitoring the content she listens to.**

Ellis, [0042].

52. Ellis teaches an implementation that uses a "central facility" for gathering a user's usage data. Ellis, [0236].

In step 3010, the system may download a user profile, which may include user preferences and other user information. In step 3015, the system may synchronize data between two ERSs, for example by copying user preferences, station presets, and other information from one system to the other. In step 3020, the system may access an enhanced radio web site to perform functions such as retrieve data, upload data, or present a web page to the user. In step 3025, the system may download information about local events and local facilities ... In

step 3045, the system may download a software update. In step 3050, the system may allow a user to download a song or other audio content to store in memory 120 and play back later. In step 3055, **the system may report usage data to a central facility.**

Ellis, [0236].

53. Ellis teaches a technique that uses geographic position information to acquire information about local events. Ellis, [0233]. After Ellis's technique acquires the local events and facilities, the technique identifies an event or facility that closely matches the user's preferences:

FIG. 28A shows illustrative process 2800 for recommending local events to a user, and is illustratively discussed in conjunction with FIG. 1. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. In step 2805, the system may acquire user information, such as user preferences. Flowchart 2110 of FIG. 22, discussed above, shows an illustrative process for acquiring user preferences. In step 2810, the system may **acquire geographic position information**, for example using global positioning system monitor 160, or by monitoring which radio stations are available and comparing them with a database of radio stations and geographical regions served by them. In step 2815, the system may **acquire information about local events**. Events may include concerts, celebrity appearances, signings, radio station events, contests, etc. Event information may be acquired using communications device 155. In step 2820, the system may select one or more recommended events.

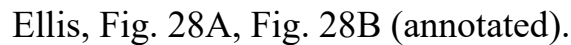
Events may be selected by comparing information about each event with user information, and selecting events that most closely match user preferences. In step 2825, the system may present one or more recommended events to the user, for example on display device 150.

Ellis, [0233].

54. Ellis's system uses the same process for facilities:

FIG. 28B shows illustrative process 2850 for recommending local facilities to a user, and is illustratively discussed in conjunction with FIG. 1. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. In step 2855, the system may acquire user information, such as user preferences. Flowchart 2110 of FIG. 22, discussed above, shows an illustrative process for acquiring user preferences. In step 2860, the system may acquire geographic position information, for example using global positioning system monitor 160, or by monitoring which radio stations are available and comparing them with a database of radio stations and geographical regions served by them. In step 2865, the system may acquire information about local facilities. Facilities may include concert venues, tourist attractions, radio stations, stores, hotels, restaurants, other local businesses, etc. Facility information may be acquired using communications device 155. In step **2870**, the system may select one or more recommended facilities. **Facilities may be selected by comparing information about each facility with user information, and selecting facilities that most closely match user preferences.**

Ellis, [0234].



55. Ellis's technique discloses the controller communicating the identified

In step 2825, the system may present one or more recommended

Ellis, [0233].

3. Summary of Jacobi

56. Jacobi relates to “to information filtering and recommendation

The present invention relates to information filtering and

methods for predicting the interests of individual users based on the known interests of a community of users.

Jacobi, [0002].

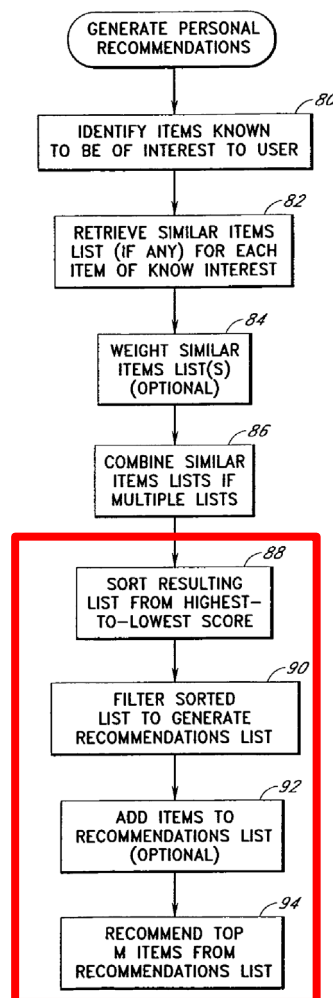
57. Jacobi employs a technique for generating recommendations, illustrated in Fig. 2, which includes weighting the items in a recommendations list based on the user's most recent ratings and purchases. The recommendation list is reordered from highest-to lowest weighted score. Jacobi, [0072]. The top items of the sorted list are sent to the web server and added to the recommended message to be sent to the user. Jacobi, [0073].

If multiple similar items lists 64 are retrieved in step 82, the lists are appropriately combined (step 86), such as by merging the lists while summing the scores of like items. The resulting list is then sorted (step 88) in order of highest-to-lowest score. In step 90, the sorted list is filtered to remove unwanted items. The items removed during the filtering process may include, for example, items that have already been purchased or rated by the user, and items that fall outside any product group (such as music or books), product category (such as non-fiction), or content rating (such as PG or adult) designated by the user. The filtering step could alternatively be performed at a different stage of the process, such as during the retrieval of the similar items lists from the table 60. The result of step 90 is a list ("recommendations list") of other items to be recommended to the user.

Jacobi, [0072].

Finally, in step 94, a list of the top M (e.g., 15) items of the recommendations list are returned to the Web server 32 (FIG. 1). The Web server incorporates this list into one or more Web pages that are returned to the user, with each recommended item being presented as a hypertextual link to the item's product information page. The recommendations may alternatively be conveyed to the user by email, facsimile, or other transmission method. Further, the recommendations could be presented as advertisements for the recommended items.

Jacobi, [0074].



Jacobi, Fig. 2 (annotated)

4. Reasons to Combine Sasaki and Ellis

58. A POSITA would have been motivated to combine the teachings of Sasaki and with those of Ellis because Sasaki discloses a recommendation system using a server in communication with portable media player device and Ellis discloses details known to POSITAs on how to implement a recommendation system.

59. As an initial matter, a POSITA, considering the problem purportedly solved by the '040 patent, would have looked to the teachings of Sasaki and Ellis. The field of endeavor of the '040 patent is “venue or event recommendations for a user of a portable media player device.” '040 patent, 1:21-22. Sasaki is also analogous art because it relates to “interests and preference tendencies of the users, for each user, content that matches the user's interest and preference is selected and recommended.” Sasaki, [0007]. Ellis is analogous art because it relates to “recommend[ing] local events and facilities to a listener.” Ellis, [0022].

In other words, by storing, in units of users, user information Such as information of the results of questionnaires in the past, and goods-purchase-history information, and analyzing the stored user information to analyze interests and preference tendencies of the users, for each user, content that matches the user's interest and preference is selected and recommended.

Sasaki, [0007].

Other aspects of this invention relate to the collection and use of user preferences. A listener may be allowed to rate specific content or groups of content. The system may recognize and notify the listener of preferred content when it is broadcast on a station that the listener is not currently listening to. The system may recognize and automatically skip over disliked content when it is played on a station the user is listening to. The system may recommend radio stations to a listener. The system may recommend local events and facilities to a listener.

Ellis, [0022].

60. Sasaki's system would benefit from incorporating Ellis's techniques for providing recommendations. Sasaki's system already teaches providing recommendations based on the user's preferences. Sasaki, [0115].

At the service spot, the installed server provides content recommendation information to a user's terminal device and the terminal device receives and stores the content recommendation information in the HDD 4 of the terminal device. The content recommendation information stored in the HDD 4 of the terminal device is later played back in response to an instruction of the user, whereby the user of the terminal device can obtain and use recommended content information for determining whether or not to purchase the content. Accordingly, by using content recommendation information provided from the server at the service spot to each terminal device, guidance can be performed so that content purchase is facilitated.

Sasaki, [0115].

61. Ellis provides enhanced features for a recommendation system, such as monitoring the content accessed by the user to “automatically” determine the user’s preferences. Ellis, [0212].

In FIG. 18, flowchart 1800 shows an illustrative process for supporting groups of items of audio content. All steps in this process are each optional, and may be performed in any suitable order. In step 1810, items of audio content may be grouped. Groups may be created by the user, programmer, or advertiser, based on a number of criteria. In step 1820, a user may be allowed to rate a group. The user may specify a like or dislike, or a level of like or dislike, for a specific group of content. The system may also monitor the content listened to by the user, and automatically determine the groups liked and disliked by the user. In step 1830, the system may automatically recognize an item in the group when it has been broadcast. For example, the system may recognize a specific item as described above, using an audio signature, unique identifier, information broadcast with the item in the radio signal, program schedule, or other means. The system may then determine the groups in which the recognized item is a member. Alternatively, the system may directly recognize the group itself, for example based on a published schedule or on information broadcast with the radio signal. In step 1840, the system may automatically skip over an item that is recognized to be a member of a group that the user dislikes, when it occurs on a radio station currently being listened to by the user. For example, a parent may define a group in a child's ERS

based on an unacceptable parental advisory level, and the system may be configured to skip over all content in that group. In step 1850, the system may notify the user when it recognizes an item that is a member of a group liked by the user when it occurs on a station not being listened to by the user but that is being monitored by the system. If desired, this notification may occur even when the user is performing an activity other than listening to the radio, for example when the ERS is turned off, or when the user is listening to an audiotape or compact disk. In step 1860, the system may automatically switch to the radio station broadcasting an item of interest when it is recognized on a station not being listened to by the user but that is being monitored by the system, if that item is a member of a group liked by the user. Additionally, the system may automatically skip-back to the start of the recognized item so that the user may hear it in its entirety. If desired, the automatic switching may occur even when the user is performing an activity other than listening to the radio, for example when the ERS is turned off, or when the user is listening to an audiotape or compact disk.

Ellis, [0212].

62. Monitoring the content that the user consumes and determining the user's preferences automatically captures the user's preferences in near real-time, rather than waiting for the user to manually supply her preferences (which she may never do). A further benefit would be that, as the user's preferences change over time, Ellis's technique would update the recommendations to that user accordingly.

Ellis, [0230], [0233]. And by recommending events and venues in addition to other content, the system would provide additional useful information to the user.

FIG. 25 shows illustrative data structure 2500 for storing user preferences. It may include field 2510 for storing information about music formats the user likes. It may include field 2520 for storing information about music formats the user does not like. It may include field 2530 for storing information about talk formats the user likes. It may include field 2540 for storing information about talk formats the user does not like. It may include field 2550 for storing information about performing artists the user likes. It may include field 2560 for storing information about performing artists the user does not like. It may also include one or more fields 2570 for storing information about how the user's preferences change over time, for example if the user likes listening to different types of content on different days of the week or at different times of the day. All fields shown are optional, and other information relating to the user's preferences may be stored. If desired, the ERS may store the preferences for multiple users.

Ellis, [0230].

FIG. 28A shows illustrative process 2800 for recommending local events to a user, and is illustratively discussed in conjunction with FIG. 1. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. In step 2805, the system may acquire user information, such as user preferences. Flowchart 2110 of FIG. 22, discussed above, shows an illustrative process for acquiring user preferences. In step 2810, the system may acquire geographic

position information, for example using global positioning system monitor 160, or by monitoring which radio stations are available and comparing them with a database of radio stations and geographical regions served by them. In step 2815, the system may acquire information about local events. Events may include concerts, celebrity appearances, signings, radio station events, contests, etc. Event information may be acquired using communications device 155. In step 2820, the system may select one or more recommended events. Events may be selected by comparing information about each event with user information, and selecting events that most closely match user preferences. In step 2825, the system may present one or more recommended events to the user, for example on display device 150.

Ellis, [0233].

63. A POSITA would have found the combination of Sasaki with Ellis predictable and would have had a reasonable expectation of success, for several reasons. For example, Sasaki and Ellis are the same type of system, in that both systems use a portable media player device, acquire and save user preferences, and provide recommendations based on user preferences and location. Sasaki's techniques are used in the same scenario as described in Ellis—"content recommendation information ... providing various types of information concerning information and things which are useful for the terminal device's user." Sasaki, [0141].

The content recommendation information may be information that can promote use and purchase of various types of goods such as food, electronic devices, books, sporting goods, and commodities. In other words, the content recommendation information includes varieties for providing various types of information concerning information and things which are useful for the terminal device's user.

Sasaki, [0141].

64. Moreover, Sasaki teaches a server that provides recommendations and a POSITA would be motivated to learn implementation details for such a server. Correspondingly, Ellis specifically teaches that its techniques can be implemented in a “network component” and/or a “central facility.” Ellis, [0162], [0236]. Further, the teachings of Ellis are designed to work in a “wireless network” and “multiple environments” and thus, would be directly usable in a networked event recommendation system, such Sasaki’s system. *See* Ellis, [0162], [0160].

In step 740, the user may configure the system to be used in multiple environments, so that, for example, a single ERS may be used both portably or in the car, or in the car or at home. The steps in this process may be performed in any order, and all steps are optional.

Ellis, [0160].

The ERS may also be implemented as components in a modular personal network system, as disclosed in U.S. patent application Ser. No. 10/645,713 "Modular Personal Network Systems and Methods," by

Michael D. Ellis and Caron S. Ellis, which is hereby incorporated by reference in its entirety. In that invention, multiple personal devices may be connected via a wireless network. Devices may be added or removed to change the functions of the system. For example, a radio receiver and digitizer may be one individual network component. The controller and memory may be another individual network component. Other individual network components may also include user controls, display device, and digital-to-analog converter/audio output. In such embodiments, the user may change individual network components to use the invention in different environments. For example, the user controls for a portable ERS may be worn on the person, while the user controls for a car ERS may be mounted in the car. Similarly, the audio output for the personal ERS may be portable headphones, while in the car the car's audio system may be used. In such embodiments, software, audio, and other data may be downloaded into the system from a base station or personal computer.

Ellis, [0162].

FIG. 30 shows flowchart 3000 of a process to provide communication features in an ERS, and is discussed illustratively in conjunction with FIG. 1. Any steps from this process may be performed in any suitable order if desired and any of the steps may be omitted. The system may use communications device 155 to provide these features. In step 3005, the system may download information about radio stations, such as a radio station database. In step 3010, the system may download a user profile, which may include user preferences and other user information. In step 3015, the system may synchronize data between two ERSs, for

example by copying user preferences, station presets, and other information from one system to the other. In step 3020, the system may access an enhanced radio web site to perform functions such as retrieve data, upload data, or present a web page to the user. In step 3025, the system may download information about local events and local facilities. In step 3030, the system may allow a user to respond to radio content, such as automatically telephoning a radio station or advertiser. In step 3035, the system may allow the user to send a message to another enhanced radio user. In step 3040, the system may receive a message from another enhanced radio user and present the message to the user. In step 3045, the system may download a software update. In step 3050, the system may allow a user to download a song or other audio content to store in memory 120 and play back later. In step 3055, the system may report usage data to a central facility.

Ellis, [0236].

65. Accordingly, a POSITA would have found it obvious to apply Ellis's teachings to Sasaki because the combination would use known techniques (Ellis's implementation details of a recommendation system) to improve a similar system (Sasaki's recommendation system) in the same way (providing recommendations to a portable media player device with respect to a plurality of media content types and locations).

5. Reasons to Combine Sasaki and Ellis with Jacobi

66. A POSITA would have been motivated to combine the teachings of

Sasaki-Ellis with Jacobi because Sasaki-Ellis disclose a recommendation system that identifies and displays recommendations to the user via a portable media player device, and Jacobi discloses techniques for generating and displaying recommendations to the user.

67. As an initial matter, a POSITA considering the problem purportedly solved by the '040 patent, would have looked to the teachings of Jacobi. The field of endeavor of the '040 patent is “venue or event recommendations for a user of a portable media player device.” '040 patent, 1:21-22. Jacobi is analogous art because it relates to “methods for generating personalized recommendations.” Jacobi, [0011].

The present invention addresses these and other problems by providing a computer-implemented service and associated methods for generating personalized recommendations of items based on the collective interests of a community of users. An important benefit of the service is that the recommendations are generated without the need for the user, or any other users, to rate items. Another important benefit is that the recommended items are identified using a previously-generated table or other mapping structure which maps individual items to lists of “similar items. The item similarities reflected by the table are based at least upon correlations between the interests of users in particular items. Jacobi, [0011].

68. A POSITA would have been specifically motivated to apply Jacobi's

implementation details about generating a recommendation message to Sasaki-Ellis. For example, the Sasaki-Ellis system identifies “radio station, local events, and local facilities” that would be of interest to the user. Ellis, [0138], [0233].

The system may interface with a telephone 4244. The telephone 4244 may use the radio's speakers and microphone. The radio broadcast may be automatically muted or paused when a call is in progress. The listener may send messages 4242 to other listeners and receive messages from other listeners, and the messages 4242 may include text, voice, and content recorded from the radio. The listener may respond to radio content, such as contests 4224, commercials, call-in shows, pledge drives, and other radio content. When traveling 4220, the system may recommend radio station, local events, and local facilities. The listener may be able to access features of this invention on the Internet 4226, including setting preferences, and downloading a listener profile.

Ellis, [0138].

FIG. 28A shows illustrative process 2800 for recommending local events to a user, and is illustratively discussed in conjunction with FIG. 1. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. In step 2805, the system may acquire user information, such as user preferences. Flowchart 2110 of FIG. 22, discussed above, shows an illustrative process for acquiring user preferences. In step 2810, the system may acquire geographic position information, for example using global positioning system monitor 160, or by monitoring which radio stations are available and comparing them with a database of radio stations and geographical

regions served by them. In step 2815, the system may acquire information about local events. Events may include concerts, celebrity appearances, signings, radio station events, contests, etc. Event information may be acquired using communications device 155. In step 2820, the system may select one or more recommended events. Events may be selected by comparing information about each event with user information, and selecting events that most closely match user preferences. In step 2825, the system may present one or more recommended events to the user, for example on display device 150.

Ellis, [0233].

69. The Sasaki-Ellis system then displays the identified recommendation to the user but does not provide the details about the manner in which the recommendation is generated before providing it to the user. Jacobi describes that it was known to POSITAs that, once recommendations based on the user's likes are identified, that a recommendation can be generated for subsequent delivery to the user:

Finally, in step 94, a list of the top M (e.g., 15) items of the recommendations list are returned to the Web server 32 (FIG. 1). The Web server incorporates this list into one or more Web pages that are returned to the user, with each recommended item being presented as a hypertextual link to the item's product information page. The recommendations may alternatively be conveyed to the user by email, facsimile, or other transmission method. Further, the recommendations could be presented as advertisements for the recommended items.

Jacobi, [0074].

70. Jacobi's teachings about generating and transmitting the recommendation would be desirable to combine with the Sasaki-Ellis system because the identified recommendations are generated as "one or more Web pages that are returned to the user ... The recommendations may alternatively be conveyed to the user by email, facsimile, or other transmission method." Jacobi, [0074]. The Sasaki-Ellis system teaches identifying events and facilities to the user and incorporating Jacobi's additional details about generating a recommendation (such as a web page or email) and the corresponding delivery methods would expand the communication capabilities of the Sasaki-Ellis system.

71. A POSITA would have had a reasonable expectation of success when combining the teachings of Jacobi with those of Sasaki-Ellis because Sasaki already contemplates displaying text, images and icons to the user and that the user can access the server via the Internet. (Sasaki, [0039], [0128]) and Jacobi teaches generating "one or more Web pages" to provide recommendations (Jacobi, [0074]).

Finally, in step 94, a list of the top M (e.g., 15) items of the recommendations list are returned to the Web server 32 (FIG. 1). The Web server incorporates this list into one or more Web pages that are returned to the user, with each recommended item being presented as a hypertextual link to the item's product information page. The

recommendations may alternatively be conveyed to the user by email, facsimile, or other transmission method. Further, the recommendations could be presented as advertisements for the recommended items.

Jacobi, [0074]. Implementing Jacobi's technique of generating web pages containing identified recommendations to Sasaki's system where a user accesses a server via the Internet would have been within the level of skill in the art.

72. Accordingly, a POSITA would have combined the Sasaki-Ellis system with Jacobi because the combination would use known techniques (generating web pages to display recommendations to users) to improve a similar system (the Sasaki-Ellis recommendation system that provides information via the Internet) in the same way (providing recommendations by generating a web page for display using a web site).

6. Claim 1

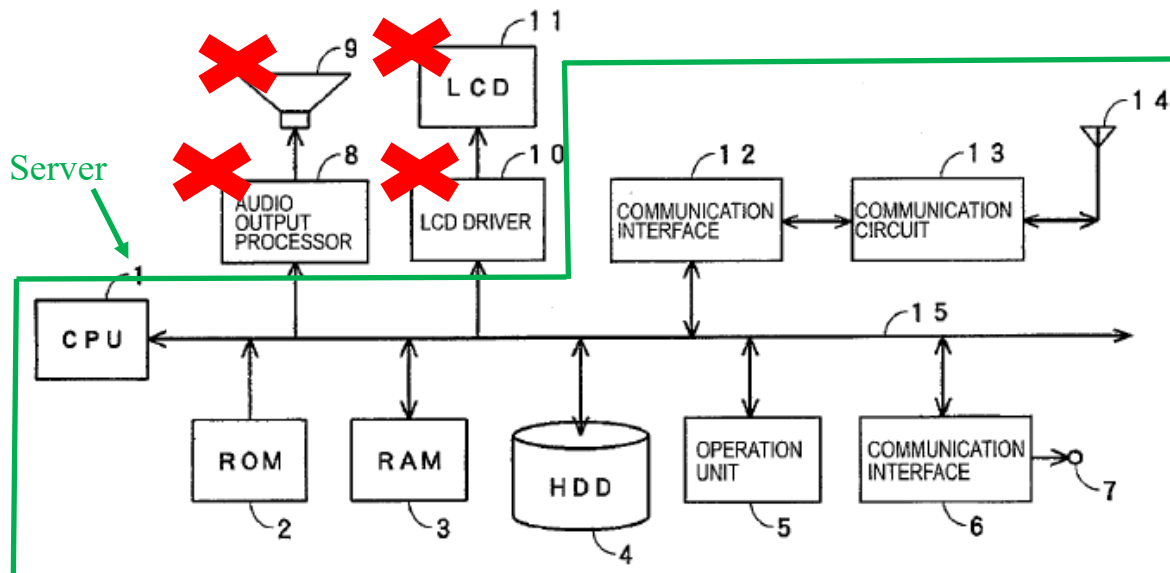
[1.0] *A server comprising:*

73. Sasaki discloses an embodiment in which "communication is performed between the server and terminal device B." The *server* "has a configuration without the audio processor 8, speaker 9, LCD driver 10 and LCD 11 of the terminal device shown in Fig. 1." Sasaki, [0113].

Specifically, the second embodiment is realized such that, in the above-described first embodiment, one terminal device (e.g., terminal device

A) is replaced by a server at a service spot, and communication is performed between the server and terminal device B. Since, in this case, the server does not need to have audio and video playback systems, the server has a configuration without the audio output processor 8, speaker 9, LCD driver 10, and LCD 11 of the terminal device shown in FIG. 1.

Sasaki, [0113].



Sasaki, Fig.1 (annotated).

74. The server communicates with a portable media player device through a “communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14” using “wireless communications standards.”

Sasaki, [0041].

The communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14 are used, whereby wireless

communication can establish connection with a terminal device of the same model, or connection between the terminal device and an external device such as a server through a predetermined network. The communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14 can be configured to use various wireless communication standards such as Bluetooth, IEEE (Institute of Electrical and Electronics Engineers) 804.11x, and UWB (Ultra Wide Band).

Sasaki, [0041].

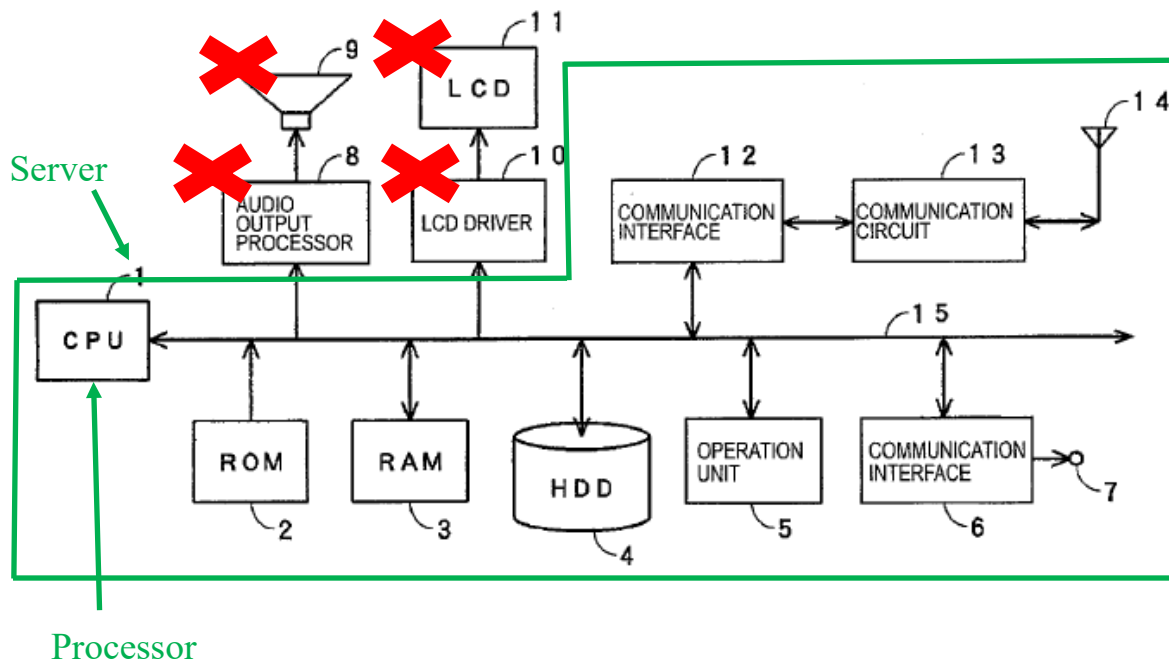
75. Thus, the server with a communication interface renders obvious a “server.”

[1.1] processor circuitry arranged to:

76. Sasaki’s server is controlled by “CPU 1” that executes “programs” stored in ROM:

The CPU 1 generates control signals by executing programs to perform processing such as various types of arithmetic operations. The CPU 1 controls the entirety of the terminal device by supplying the control signals to portions of the terminal device. The ROM 2 stores control programs that are executed by the CPU 1, unique identification (ID) information for identifying the terminal device, etc.

Sasaki, [0030].



Sasaki, Fig. 1.

77. Thus, the processor that executes programs stored in ROM renders obvious “processor circuitry arranged to.”

[1.1a] infer one or more entertainment preferences of a user of a mobile device based on retrieved information about media accessed by the mobile device and a plurality of media content types of the media, the plurality of media content types including textual media, image media, audio media, and video media:

78. First, as discussed in [1.0], Sasaki teaches a *server*. Further, Sasaki’s server stores the “preference information” provided by the members (e.g., *users*). Sasaki, [0126]. Sasaki discloses that the server is in “communication” with a “terminal device.” Sasaki, [0113].

Specifically, the second embodiment is realized such that, in the above-described first embodiment, one terminal device (e.g., terminal

device A) is replaced by a server at a service spot, and communication is performed between the server and terminal device B. Since, in this case, the server does not need to have audio and video playback systems, the server has a configuration without the audio output processor 8, speaker 9, LCD driver 10, and LCD 11 of the terminal device shown in FIG. 1.

Sasaki, [0113].

79. Second, Sasaki discloses that a “terminal device” is a *mobile device*, because it teaches that the terminal device is “portable” for playing “various types of content, such as music and images.”

The terminal device of the above embodiment is of a so-called “portable type”, as described above. The terminal device has reduced size and weight, and can be carried, with it put in a location such as a pocket of user's clothes or a bag. Accordingly, also in a place such as a location where the user is out, various types of content, such as music and images, can be played back for use.

Sasaki, [0021].

80. Ellis’s technique discloses that a user uses the mobile device to access music and other content, whether by storing data on the mobile device (e.g., “download songs”) or by accessing songs over “Internet and radio frequency broadcasts.” Ellis, [0136]-[0137], [0274]:

Radio listener 4202 may have access to many new features. Multiple radio stations 4204 from one or more radio sources may be available. Multiple receivers 4206 may simultaneously receive the multiple radio stations 4204, and store them digitally into buffers 4208 in computer digital storage device 4209, storing the most recent several minutes of each. One of the buffers may be used to provide an audio output 4210 for the listener 4202. The listener may choose a subset of the available radio stations 4204 and assign them to presets 4216, and the system will continuously monitor those favorite stations, storing recent content from each into buffers 4206. The system may continuously monitor the most recently listened station or stations 4215, storing recent content from each into buffers 4206. And the system may allow the listener to scan through all available stations, while tuning ahead to each before it is played for the listener, and storing its content into the one of the buffers 4206. The listener may use audio controls 4212 on the audio from any station as it is played. The listener may pause and resume play. The listener may skip back to earlier content, even content that was broadcast prior to when the user started listening to the station. And the listener may skip forward over content that is not of interest.

Ellis, [0136].

The listener may record songs 4218 and other content from the radio and replay them later, or download songs from other sources.

The listener may rate songs 4248. At a later time, the system may use the listener ratings to act on songs and other content that are broadcast. If a song that the listener likes 4246 is broadcast on a station that the user is not listening to, the system may notify the user or automatically

switch to the song, and the listener may hear the song from the beginning. If a song that the listener does not like 4247 is broadcast, the system may automatically skip over it. The system may provide a karaoke mode 4240, allowing the listener to sing along with a song.

Ellis, [0137].

If desired, the user may be allowed to scan in either direction (i.e., through higher radio frequencies or lower radio frequencies). The user may also be allowed to scan across multiple radio sources (e.g., **both Internet and radio frequency broadcasts**).

Ellis, [0274].

81. Third, Ellis discloses several techniques for inferring the entertainment preferences of a user of a mobile device based on media usage information (such as “information on particular songs, commercials, shows, and other content” that the user heard, and “content the user may have skipped over”). See Ellis, [0263].

82. As an initial matter, Ellis’s technique discloses that it was known, in a recommendation system, for an individual network component to “to collect ... usage data.” Ellis, [0263].

FIG. 37 shows flowchart 3700 of an illustrative **process to collect and report enhanced radio usage data**. The steps of this process may be performed in any suitable order, and any steps may be omitted if desired. In step 3710, the system **may collect information on radio**

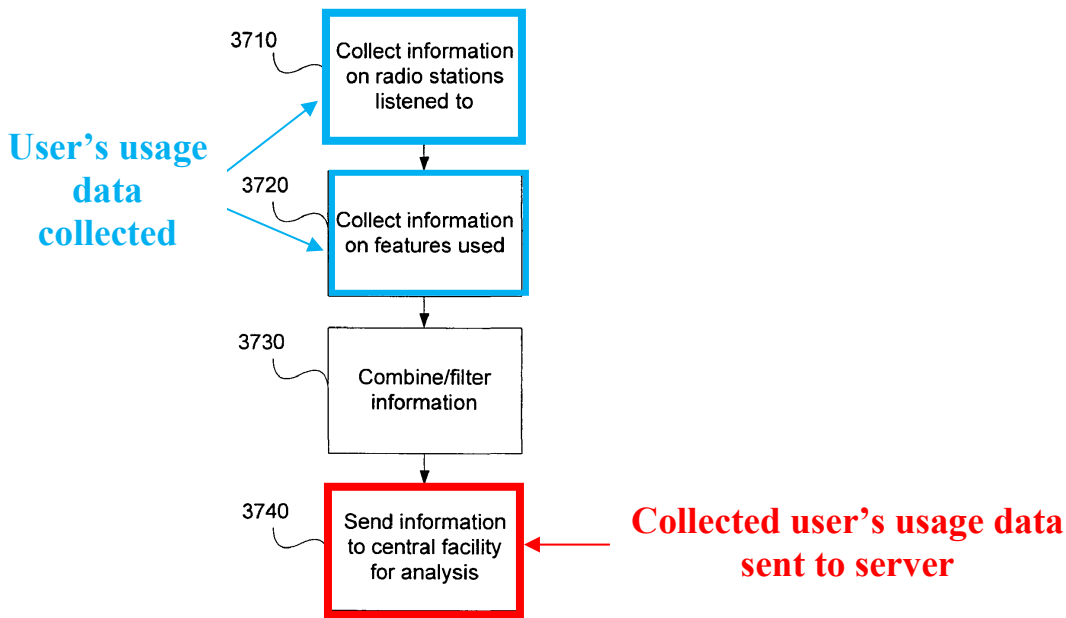
stations that the user listens to. The information may include information on days and times that stations were listened to. It may also include information on particular songs, commercials, shows, and other content that the user may have actually heard, as well as indications of content the user may have skipped over.

Ellis, [0263].

83. The usage data collected includes “information on radio stations that the user listens to,” “the days and times” of listening, “information on particular songs, commercials, shows, and other content” that the user heard, and “content the user may have skipped over,” as well as “information on enhanced radio features accessed by the user.” Ellis, [0263]-[0264]. Ellis teaches an implementation that uses a “central facility” for gathering a user’s usage data. Ellis, [0236].

In step 3720, the system may collect information on enhanced radio features accessed by the user. For example, the system may log each feature used, and the day and time the feature was selected.

Ellis, [0264]. A POSITA would understand that Ellis’s “central facility” would be a server, such as the server discussed in Sasaki.



Ellis, Fig. 37 (annotated).

In step 3010, the system may download a user profile, which may include user preferences and other user information ... In step 3050, the system may allow a user to download a song or other audio content to store in memory 120 and play back later. In step 3055, the system may report usage data to a central facility.

Ellis, [0236].

84. Then, in one example, Ellis automatically determines (*inferring*) the user's entertainment preferences by monitoring the media content listened to by the user on her mobile device (*retrieved information about media accessed by the mobile device*):

In step 1820, a user may be allowed to rate a group. The user may specify a like or dislike, or a level of like or dislike, for a specific group

of content. **The system may also monitor the content listened to by the user, and automatically determine the groups liked and disliked by the user.**

Ellis, [0212].

85. In another example, Ellis teaches a technique where the system “may also determine user preferences automatically” (*inferring*) by “monitoring what content the user listens to” in order to find “content of interest, i.e., content that matches the user's preferences.” Ellis, [0185].

The system may also **keep track of user radio preferences**, and may **have the ability to recognize specific content items, such as songs, that the user may like.** In step 1350, the **system may monitor favorite stations** (e.g., preset stations and recently tuned stations) **for content of interest, i.e., content that matches the user's preferences.** This may include step 1352 in which the user is allowed to specify content preferences. For example, a user may specify specific songs, artists, radio shows, types of content (e.g., traffic or weather reports), categories of music, or other content, and specify a level of like or dislike for that content ... **User preferences may be loaded using communications device 155. The system may also determine user preferences automatically by monitoring what content the user listens to.**

Ellis, [0185].

86. In a further example, Ellis monitors the content to which the user is

listening to and automatically determines (*inferring*) a user's preference for a song, artist, genre, or grouping:

In step 2220, **the system may determine user information automatically by monitoring the content the user listens to.** For example, **the system may add points to a** specific song, artist, **genre**, or other type of item or **grouping**, based on the user listening to an entire item. The system may assign additional points if the user rewinds or skips back to the start of an item to hear it in its entirety or to hear it again. The system may subtract points if the user skips over an item.

Ellis, [0221].

87. Sasaki further teaches that the server receives and stores user preference information from the mobile device. [0098], [0112], [0019], [0073], [0112]. Sasaki further teaches that the server can also retrieve the user preference information from a hard drive. Sasaki, [0126].

In step S15, terminal device B transmits, to terminal device A, preference information stored in the preference information area of the HDD 4 in terminal device B.

Sasaki, [0098].

Differently from the above-described first embodiment in which content recommendation information is transmitted and received between terminal devices to which an embodiment of the present invention is applied, in a second embodiment of the present invention,

content recommendation information is transmitted and received between a server at a service spot **and a terminal device**.

Sasaki, [0112].

According to this content recommendation system, identification information of a communication terminal device (the second communication device) is transmitted to a server (the first communication device). **The server stores identification information of each communication terminal device and preference information of the user of the communication terminal device in a form in which both are associated with each other.** After receiving the identification information from the communication terminal device, the server can select content recommendation information matching preference information corresponding to the identification information, and can provide the selected information to the communication terminal device.

Sasaki, [0019].

As shown in FIG. 3C, by entering, in the preference information area of the HDD 4, **preference information including content types and preference keywords of the user of the terminal device**, and using the preference information to selectively use pieces of content recommendation information, only a piece of content recommendation information that matches user's preferences can be obtained.

Sasaki, [0073].

Differently from the above-described first embodiment in which content recommendation information is transmitted and received between terminal devices to which an embodiment of the present invention is applied, in a second embodiment of the present invention, content recommendation information is transmitted and received between a server at a service spot and a terminal device. In the second embodiment, a system and method according to embodiments of the present invention are applied.

Sasaki, [0112]

As described above with reference to FIG. 5, in the **member database formed in the HDD 4 of the server** at the service spot, **identifying signals such as terminal IDs and personal IDs of members**, and preference information of the members are stored beforehand, whereby, only by **transmitting an identifying signal from each terminal device to the server, pieces of content recommendation information can be provided** in response to the preference of the user of the terminal device.

Sasaki, [0126].

88. Fourth, Sasaki discloses that its recommendation system collects information about different media content types, such as “music,” “still pictures,” “video,” and “text.” Sasaki, [0074].

Regarding the content recommendation information described with reference to FIGS. 3A to 3C, main information contains recommendation comment information and sample-data storage-

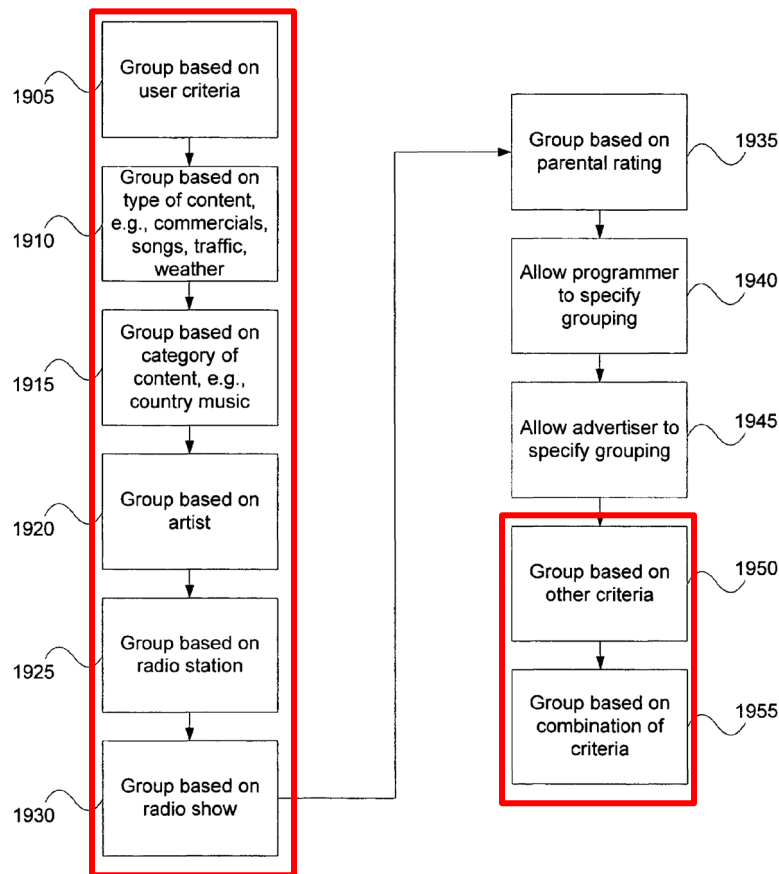
location information. However, the main information is not limited thereto. The content recommendation information represents various types of information concerning a piece of content the user likes (desires to recommend) among pieces of content owned by the user of the terminal device, for example, CD music, still pictures such as electrophotographs [sic] and CG (computer graphics) images, DVD video, and text data such as novels.

Sasaki, [0074]. Further, Ellis teaches determining the user's preferences a "specific group of content" that "may be based on type of content." Groups of content can include songs, commercials, genre, artist or other criteria. Ellis, [0212], [0214].

Media content items are grouped based on content, e.g., songs, commercials, genre, artist, or other criteria:

In step 1910, a **group may be based on type of content**, such as grouping all commercials, all songs, etc. In step 1915, a group may be based on a **category of content**, such as bluegrass music, alternative rock, or other **music genre**. In step 1920, a group may be based on a **specific performing artist**, and may contain all songs performed by that artist. In step 1925, a group may be based a **particular radio station**, and may contain all content broadcast by that station. In step 1930, a group may be based on a **specific radio show**, and may contain all content broadcast in that show.

Ellis, [0214]. Using the groups, the **“system may automatically skip over an item that is recognized to be a member of a group that the user dislikes.”** Ellis, [0212].



Ellis, Fig. 19 (annotated)

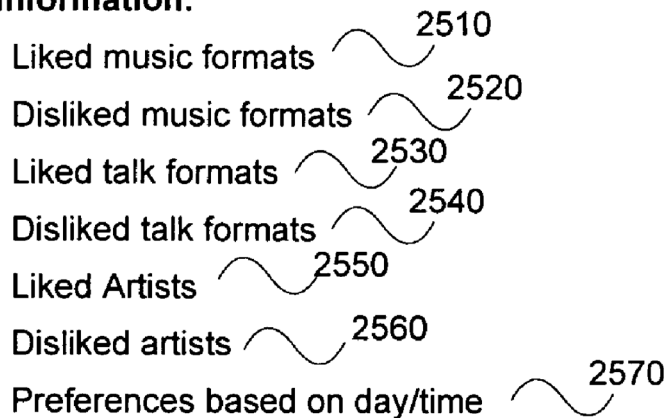
89. Ellis’s technique saves user preferences and other information collected including information about user’s likes and dislikes about a plurality of media, e.g., music formats, talk formats, artists, music, etc. (information about media):

FIG. 25 shows illustrative data structure 2500 for storing **user preferences**. It may include field 2510 for **storing information about music formats the user likes**. It may include field 2520 for storing

information about music formats the user does not like. It may include field 2530 for **storing information about talk formats the user likes**. It may include field 2540 for storing information about talk formats the user does not like. It may include field 2550 for **storing information about performing artists the user likes**. It may include field 2560 for storing information about performing artists the user does not like. It may also include one or more fields 2570 for **storing information about how the user's preferences change over time**, for example if the user likes listening to different types of content on different days of the week or at different times of the day.

Ellis, [0230]

User Information:



Ellis, Fig. 25

90. The user preferences and other information also may include a user's media content ratings:

The **system may allow the user to rate a piece of content**. For example, the **user may be able to specify a like or dislike** for a particular song or commercial, or to indicate a level of interest. The user

may also to be able to **rate a specific musical artist, station, radio show, and other sets of content**. The system may be configured to skip over undesirable content. The system may be configured to automatically save a copy of desirable content.

Ellis, [0039].

91. Ellis's technique also collects information about features accessed by the user:

In step 3720, the system **may collect information on enhanced radio features accessed by the user**. For example, the system may log each feature used, and the day and time the feature was selected.

Ellis, [0264].

92. Thus, Sasaki's server that stores user preferences about a user of a mobile device with respect to music, pictures, video, and text, in view of Ellis's technique of automatically determining a user's preferences about types of content, songs, commercials, shows, and other content, where the automatic determination is based monitoring a mobile device user's usage information renders obvious *"infer one or more entertainment preferences of a user of a mobile device based on retrieved information about media accessed by the mobile device and a plurality of media content types of the media, the plurality of media content types including textual media, image media, audio media, and video media."*

[1.1b] access one or more sources of information about venues or events

proximal to a current location of the user or the mobile device;

93. As discussed in [1.1a], Sasaki teaches a *server* in communication with a *mobile device*. Sasaki teaches that its mobile device can directly transmit “information representing latitude and longitude (detected by the GPS)” of its current position. Sasaki, [0069].

In this case, as the date and time of transmission, the present time that is acquired from a clock circuit of a terminal device that transmits the content recommendation information may be used. Regarding the place of transmission, for example, if the terminal has a built-in GPS (global positioning system), the GPS information may be used to specify the place of transmission, and the specifying information may be used. Alternatively, **information representing the latitude and longitude (detected by the GPS) of the place of transmission which indicate the present position can directly be transmitted.** In addition, the owner name of the terminal may be used as the recommender.

Sasaki, [0069].

94. Sasaki also discloses that the location information could be “positional information” using “radio waves from a plurality of base stations.” Sasaki, [0081].

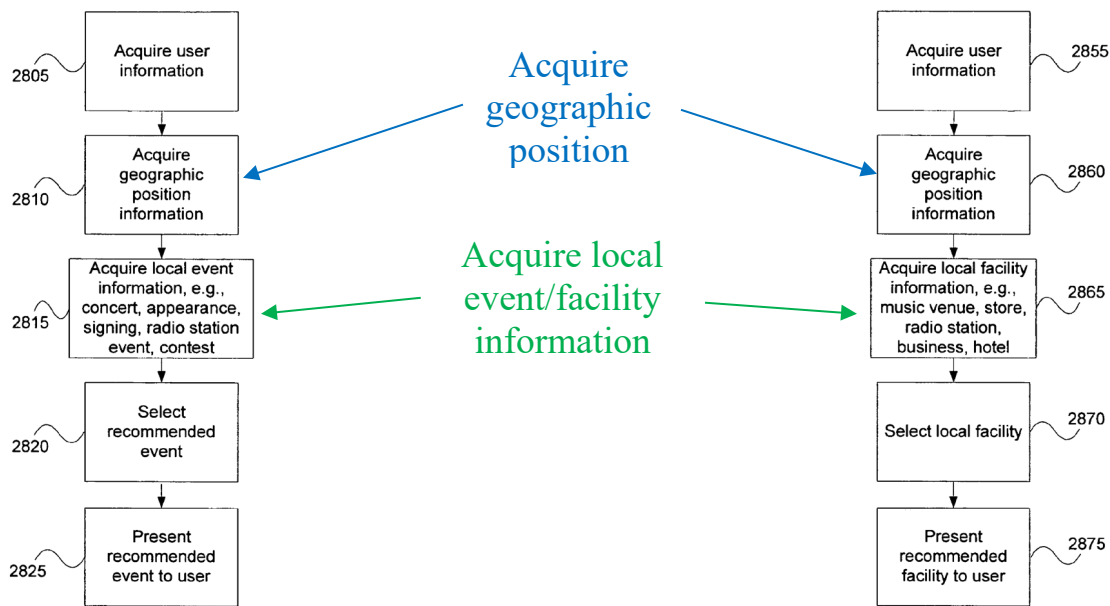
95. Sasaki also teaches that the place of transmission is “necessary information” and is part of the “content recommendation information.” Sasaki, [0068].

96. Ellis teaches a technique that uses the geographic position information to “acquire information about local events”:

In step 2810, the system may **acquire geographic position information**, for example using global positioning system monitor 160 ... In step 2815, **the system may acquire information about local events**. Events may include concerts, celebrity appearances, signings, radio station events, contests, etc. Event information may be acquired using communications device 155.

... In step 2865, the **system may acquire information about local facilities**. Facilities may include concert venues, tourist attractions, radio stations, stores, hotels, restaurants, other local businesses, etc. Facility information may be acquired using communications device 155.

Ellis, [0233]-[0234]; *see also* Ellis, [0225] (“use global positioning system monitor 160 to determine the user’s location”).



Ellis, Fig. 28A, Fig. 28B (annotated).

97. Ellis further teaches downloading information about local events and facilities from a web site (*one or more sources of information*):

In step 3020, the system may **access an enhanced radio web site to perform functions such as retrieve data**, upload data, or present a web page to the user. In step 3025, **the system may download information about local events and local facilities.**

Ellis, [0236].

98. Thus, Sasaki's server in communication with a mobile device that directly transmits its GPS location in view of Ellis's technique of using the user's geographic location to access information about events and facilities that are local to the user renders obvious "*access one or more sources of information about venues or events proximal to a current location of the user or the mobile device.*"

[1.1c] *identify at least one of the venues or events as being of interest to the user based at least in part on the inferred one or more entertainment preferences and the current location;*

99. As discussed in [1.1a]-[1.1b], Sasaki and Ellis teach a server that automatically determines a user's entertainment preferences. Further, Sasaki's "server provides content recommendation information to a user's terminal device." Sasaki, [0115].

100. As discussed in [1.1b], Sasaki teaches receiving the GPS location of the user and Ellis teaches a technique that uses the geographic location of the user to acquire a set of events and facilities that are local to the user.

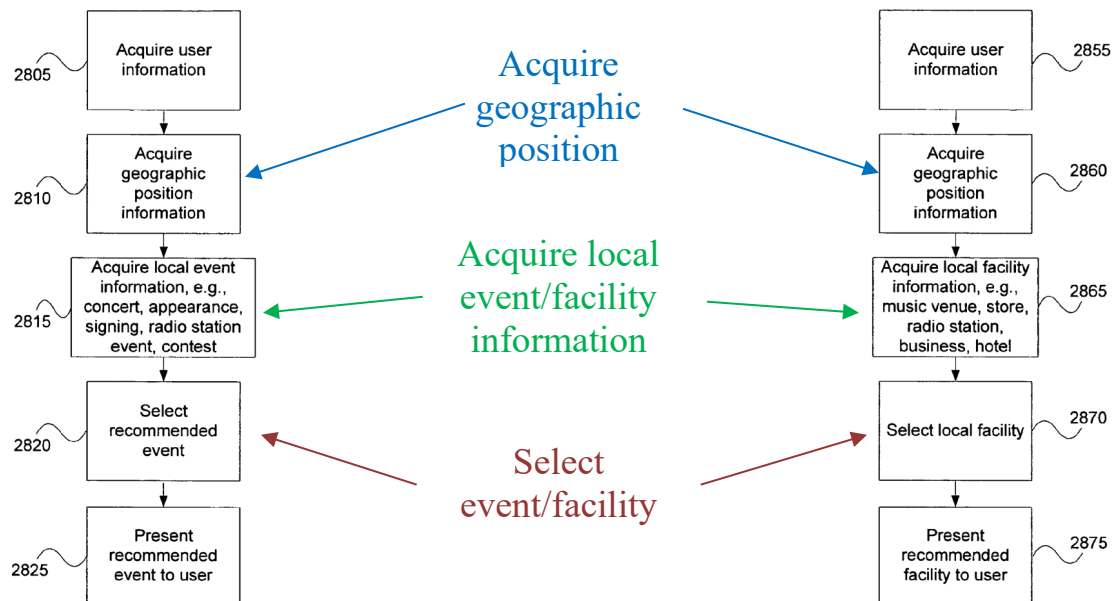
101. Whether an event or venue is actually of interest to a user is purely subjective to that user's personal tastes, but for purposes of this proceeding, Ellis discloses recommending an event or facility that has characteristics that closely match the inferred preferences of a user. For example, after Ellis's technique acquires the local events and facilities, the technique identifies an event or facility that closely matches the user's preferences:

In step 2820, the system may **select one or more recommended events**. Events may be selected **by comparing information about each event with user information**, and **selecting events that most closely match user preferences**.

In step **2870**, the system may select one or more recommended facilities. **Facilities** may be **selected by comparing information about**

each facility with user information, and selecting facilities that most closely match user preferences.

Ellis, [0233]-[0234].



Ellis, Fig. 28A, Fig. 28B (annotated)

102. Thus, Sasaki’s server that provides recommendations to the portable media player in view of Ellis’s technique of identifying events and facilities that are local to the user and that closely match the user’s preferences (as determined by the server) renders obvious “*identify at least one of the venues or events as being of interest to the user based at least in part on the inferred one or more entertainment preferences and the current location.*”

[1.1d] generate a recommendation message indicating the identified venue or event; and

103. As discussed in [1.1b]-[1.1c], Sasaki and Ellis teach a server that automatically determines a user's entertainment preferences. As discussed in [1.1c], Ellis discloses techniques to identify an event or facility that "most closely match user preferences." Ellis, [0233]-[0234]. Further, Sasaki's "server provides content recommendation information to a user's terminal device." Sasaki, [0115].

104. Jacobi discloses a technique for generating a recommendation message for a given user. Jacobi begins the technique by identifying a list of items that are of interest to the user and sorting the list. Jacobi, [0072] (the "resulting list is then sorted [] in order of highest-to-lowest score"). The recommendation message is then generated. In one example, the recommendation is generated by creating a web page, with each recommended item as a hypertextual link:

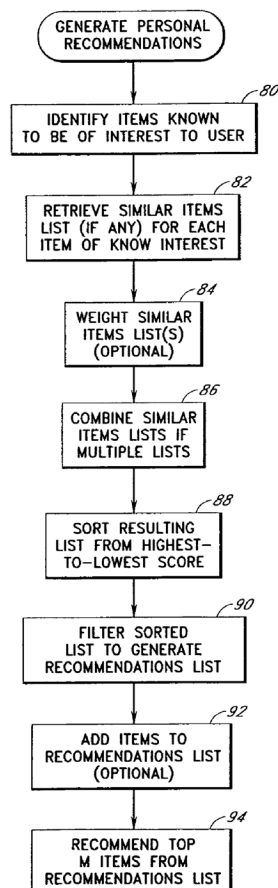
Finally, in step 94, a list of the top M (e.g., 15) items of the **recommendations list** are returned to the Web server 32 (FIG. 1). The Web server **incorporates this list into one or more Web pages** that are returned to the user, with each recommended item being **presented as a hypertextual link** to the item's product information page.

Jacobi, [0074].

105. Jacobi sorts the items based on their associated weight and recommends the top items on the list. The recommendation message may be communicated to the user using one of a plurality of methods, e.g., web page, email, facsimile, or some other transmission method:

The resulting list is then sorted (step 88) in order of highest-to-lowest score ... Finally, in step 94, a list of the top M (e.g., 15) items of the recommendations list are returned to the Web server 32 (FIG. 1). The Web server incorporates this list into one or more Web pages that are returned to the user, with each recommended item being presented as a hypertextual link to the item's product information page. The recommendations may alternatively be conveyed to the user by email, facsimile, or other transmission method.

Jacobi, [0072], [0074].



Jacobi, Fig. 2

106. Ellis's technique also discloses communicating the recommended

events or facilities to the user via a mobile device:

In step 2825, the system may **present one or more recommended events to the user**, for example on display device 150.

Ellis, [0233].

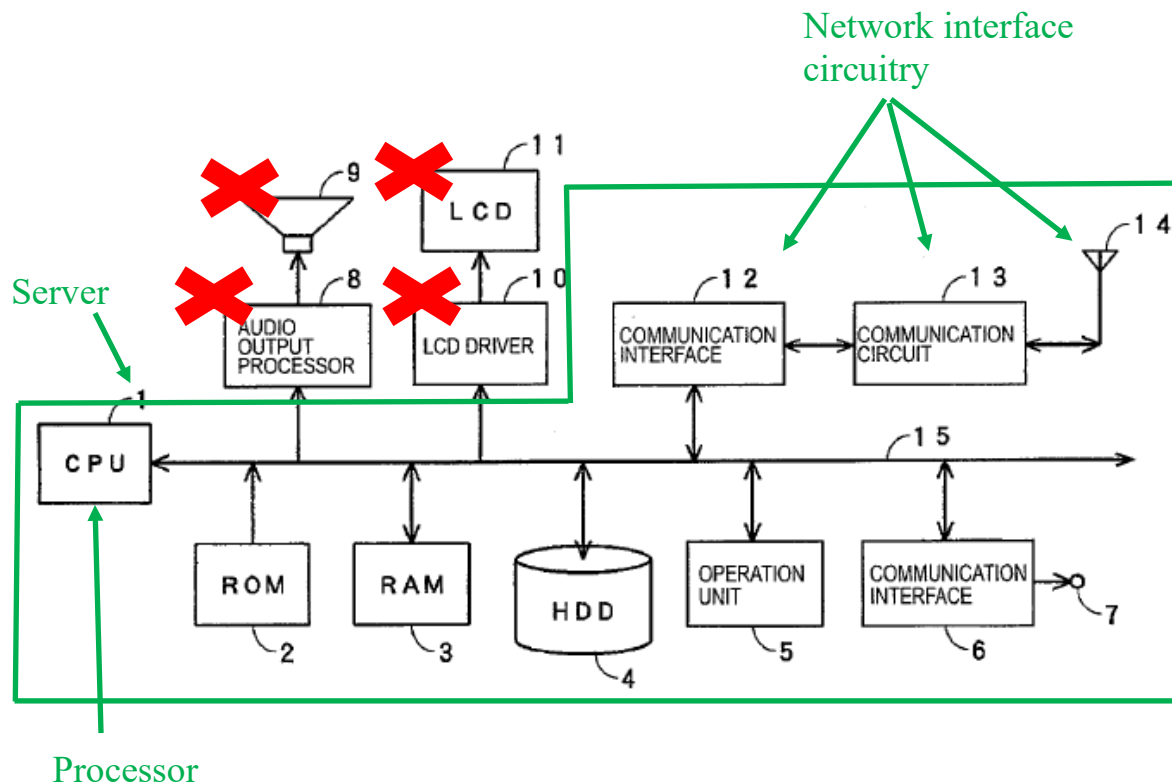
In step 2875, the system may **present one or more recommended facilities to the user**, for example on display device 150.

Ellis, [0234].

107. Thus, Sasaki's server that provides recommendations to the portable media player in view of Ellis's technique of identifying events and facilities, further in view of Jacobi's generating a recommendation message (such as creating a web page with links) renders obvious "*generate a recommendation message indicating the identified venue or event.*"

[1.2] network interface circuitry communicatively coupled to the processor circuitry, the network interface circuitry arranged to receive the information about the media, and send the recommendation message to the mobile device.

108. "[C]ommunication is performed between the server and terminal device B." Sasaki, [0113]. The server communicates with a mobile device through a "communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14" using "wireless communications standards." Sasaki, [0041].



Sasaki, Fig. 1 (annotated).

109. As shown in Fig. 1, the network interface circuitry (comprising one or more of the communication interface 12, communication circuit 13, and antenna 14) are communicatively coupled to the CPU 1 by “CPU bus 15”. Sasaki, [0032], [0030] (the “CPU 1 controls the entirety” of the device by “supplying the control signals”).

110. The network interface circuitry (comprising one or more of the communication interface 12, communication circuit 13, and antenna 14) are arranged to receive the information about the media, and send the recommendation message to the mobile device because the “communication interface 12 performs processing such as converting received data into data having

a format capable of being processed by the terminal device, and converting data to be transmitted from the terminal device into data having a format for transmission.” Sasaki, [0040].

111. As discussed in [1.1a], the server receives information about the media and, as discussed in [1.1d], the server generates a recommendation message for transmission to the mobile device.

112. Ellis’s technique also discloses communicating the recommended events or facilities to the user via a portable media player device:

In step 2825, the system may **present one or more recommended events to the user**, for example on display device 150.

Ellis, [0233].

In step 2875, the system may **present one or more recommended facilities to the user**, for example on display device 150.

Ellis, [0234]

113. Thus, the server’s communication circuitry (comprising one or more of the communication interface, communication circuit, and antenna) for sending and receiving information to and from the mobile device, wherein the information received includes information about the media content and the information sent to the mobile device is a recommended event or facility renders obvious “*network interface circuitry communicatively coupled to the processor circuitry, the network*

interface circuitry arranged to receive the information about the media, and send the recommendation message to the mobile device.”

7. Claim 2

[2.0] *The server of claim 1, wherein the audio media comprises music media and podcast media.*

114. As discussed in [1.1a], Sasaki discloses that its recommendation system collects information about different media content types, such as “music,” “still pictures,” “video,” and “text.” Sasaki, [0074]. Further, Ellis discloses several techniques for inferring the entertainment preferences of a user of a mobile device based on media usage information (such as “information on particular songs, commercials, shows, and other content” that the user heard, and “content the user may have skipped over”). See Ellis, [0263].

115. Moreover, the user’s media usage information includes the user’s liked groups and “a group may be based on a specific radio show.” Ellis, [0214]. A POSITA would recognize that a radio show broadcast via the internet, as disclosed in Ellis, corresponds to a podcast media. See Jellison, [0035] (“It may be desired to publish a portion of the radio program as a podcast.”); Lim, [0002] (“A podcast is a digital recording of a radio broadcast or similar programme, made available on the Internet in a number of separate files for downloading to a personal audio player.”)

116. Thus, Sasaki’s server that collects a user’s usage information about music in view of Ellis’s teaching of determining user preferences for media that

includes music and a radio show broadcast on the internet and renders obvious

“wherein the audio media comprises music media and podcast media.”

8. Claim 4

[4.0] *The server of claim 1, wherein the processor circuitry is further arranged to infer the current location of the user of the mobile device based on obtained location information associated with the mobile device.*

117. As discussed in [1.1], Sasaki teaches a *server* with processor circuitry. As discussed in [1.1b], Sasaki teaches that the server infers the location of the user by having the mobile device associated with the user directly transmit “information representing the latitude and longitude (detected by the GPS)” of its current position. Sasaki, [0069].

Regarding the place of transmission ... information representing the **latitude and longitude (detected by the GPS)** of the place of transmission which indicate the present position **can directly be transmitted.**

Sasaki, [0069].

118. Sasaki also discloses that the location information could be “positional information” using “radio waves from a plurality of base stations.” Sasaki, [0081].

119. Further, Sasaki teaches that the location information can be “converted into map information ... or a building name or the like.” Sasaki, [0080].

120. Ellis also teaches multiple methods to infer the user's location by receiving location information of mobile device. For example, Ellis teaches: (1) "us[ing] global positioning system monitor 160 to determine the user's location." Ellis, [0225]; (2) "allowing a user to enter it," Ellis, [0225]; and by (3) "monitoring the radio stations that may be received and comparing them against the geographical region field in the radio station database." Ellis, [0225].

121. Thus, Sasaki's server that receives the location information of the mobile device associated with the user and then converts that information into map information (or the like) renders obvious "*wherein the processor circuitry is further arranged to infer the current location of the user of the mobile device based on obtained location information associated with the mobile device.*"

9. Claim 7

[7.0] *The server of claim 1, wherein the media accessed by the mobile device is media stored on the mobile device or media streamed to the mobile device.*

122. First, as discussed in [1.1a], Sasaki discloses a *mobile device* because it teaches a mobile device for playing "various types of content, such as music and images."

123. Second, also discussed in [1.1a], Ellis discloses that a user uses the mobile device to access music and other content, whether by storing data on the mobile device or by connecting directly to a network-based radio station. Ellis, [0136]-[0137].

124. Thus, Sasaki's mobile device for playing various types of content in view of Ellis's teaching that of a portable media device that accesses media both stored on the device and streamed to the device renders obvious "*wherein the media accessed by the mobile device is media stored on the mobile device or media streamed to the mobile device.*"

10. Claim 8

[8.0] *The server of claim 1, wherein the recommendation message is one of a short message service (SMS) message, a multimedia messaging service (MMS) message, a push notification, an email, a pager message, a facsimile message, or a phone call to the mobile device.*

125. First, as discussed in [1.1d], the combination of Sasaki, Ellis, and Jacobi teaches generating a recommendation message for transmission the portable media player device.

126. Second, as discussed in [1.1d], Jacobi discloses a technique that incorporates the recommended events into email or a facsimile. Jacobi, [0074].

127. Thus, Sasaki's and Ellis's disclosure of communicating recommendations to the user in combination with Jacobi's email and facsimile methods to transmit the recommendations to the user render obvious "*wherein the recommendation message is one of a short message service (SMS) message, a multimedia messaging service (MMS) message, a push notification, an email, a pager message, a facsimile message, or a phone call to the mobile device.*"

11. Claim 9

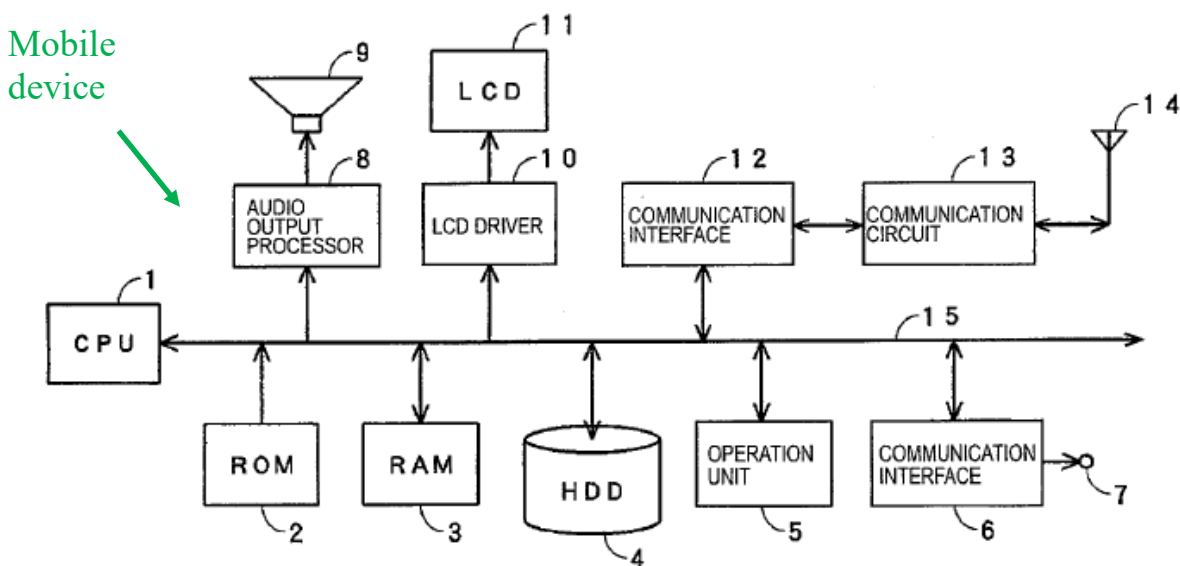
[9.0] *The server of claim 1, wherein the network interface circuitry is arranged to receive the information about the media from a remote storage system or from the mobile device.*

128. This limitation is substantially similar to the limitation of [1.2], and for the same reasons as discussed above, the prior art renders this limitation obvious.

12. Claim 10

[10.0] *A mobile device, comprising:*

129. Sasaki discloses a *mobile device* because it teaches a terminal device, e.g., portable media player device, that is “portable” and plays “various types of content, such as music and images.” Sasaki, [0021]. Fig. 1 is a block diagram illustrating the mobile device:



Sasaki, Fig. 1 (annotated).

130. Ellis further discloses that a mobile device that accesses music and other content can do so by storing the content on the mobile device (e.g., “download songs”) or by accessing songs over “Internet and radio frequency broadcasts.” Ellis, [0136]-[0137], [0274].

The listener may record songs 4218 and other content from the radio and replay them later, or download songs from other sources.

The listener may rate songs 4248. At a later time, the system may use the listener ratings to act on songs and other content that are broadcast. If a song that the listener likes 4246 is broadcast on a station that the user is not listening to, the system may notify the user or automatically switch to the song, and the listener may hear the song from the beginning. If a song that the listener does not like 4247 is broadcast, the system may automatically skip over it. The system may provide a karaoke mode 4240, allowing the listener to sing along with a song.

Ellis, [0137].

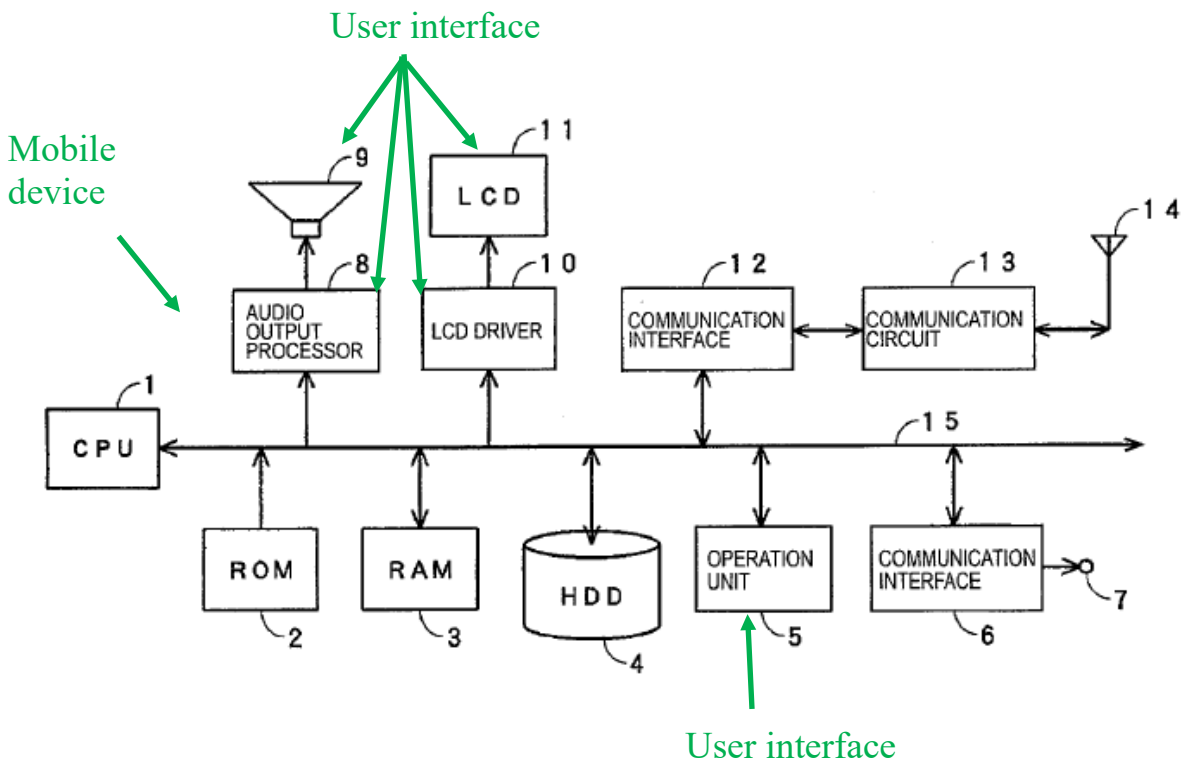
If desired, the user may be allowed to scan in either direction (i.e., through higher radio frequencies or lower radio frequencies). The user may also be allowed to scan across multiple radio sources (e.g., **both Internet and radio frequency broadcasts**).

Ellis, [0274].

131. Thus, Sasaki’s mobile device for playing various types of content in view of Ellis’s teaching of a portable media device that accesses media both stored on the device and streamed to the device renders obvious a “mobile device.”

[10.1] *user interface circuitry*;

132. Sasaki discloses *user interface circuitry* because it teaches that its mobile device has several different components for receiving inputs from the user and providing output to the user. For example, “audio output processor 8” supplies audio data to “speaker 9” to play audio. “LCD driver 10” provides image data to “LCD 11” for displaying images. Sasaki, [0037]. The “operation unit 5 includes an operation button switch, an operation key, and an operation knob which are used to receive operation input from the user.” Sasaki, [0034].

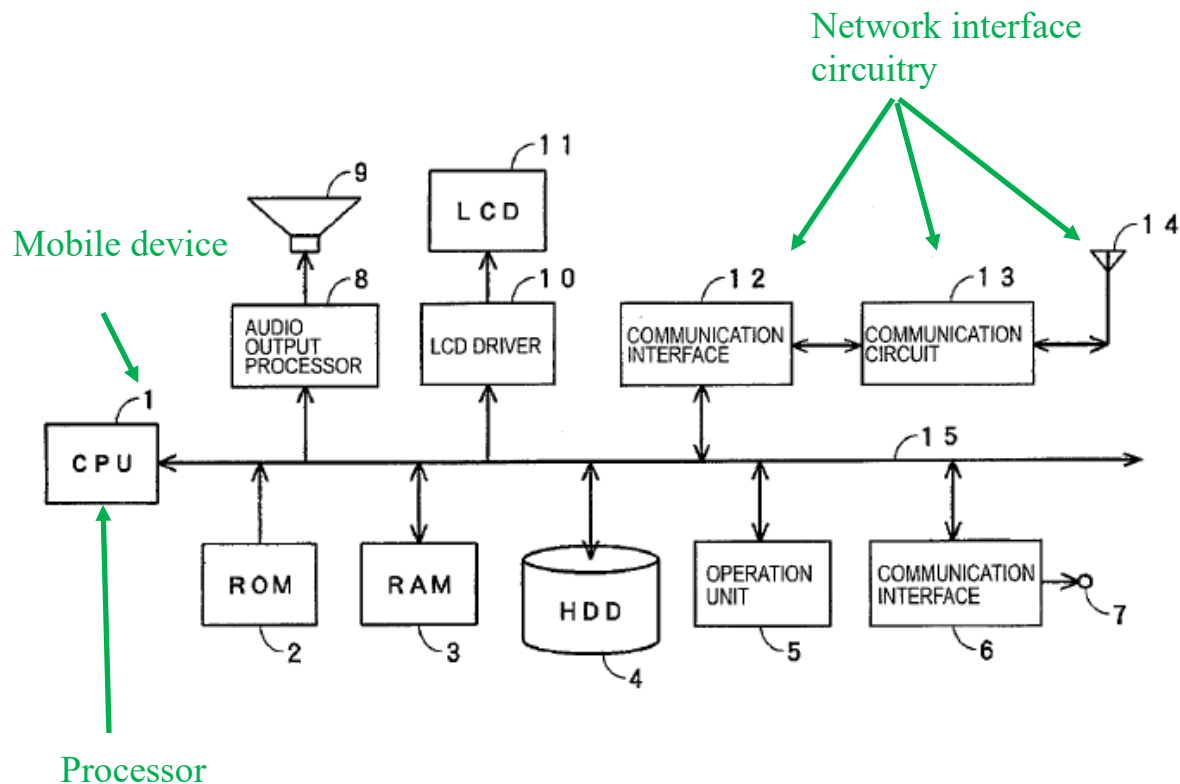


Sasaki, Fig. 1 (annotated).

133. Thus, Sasaki’s mobile device having buttons, knobs, speakers, and screens that interact with user renders obvious “*user interface circuitry*.”

[10.2] *transceiver circuitry*;

134. The mobile device communicates through a “communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14” using “wireless communications standards.” Sasaki, [0041].



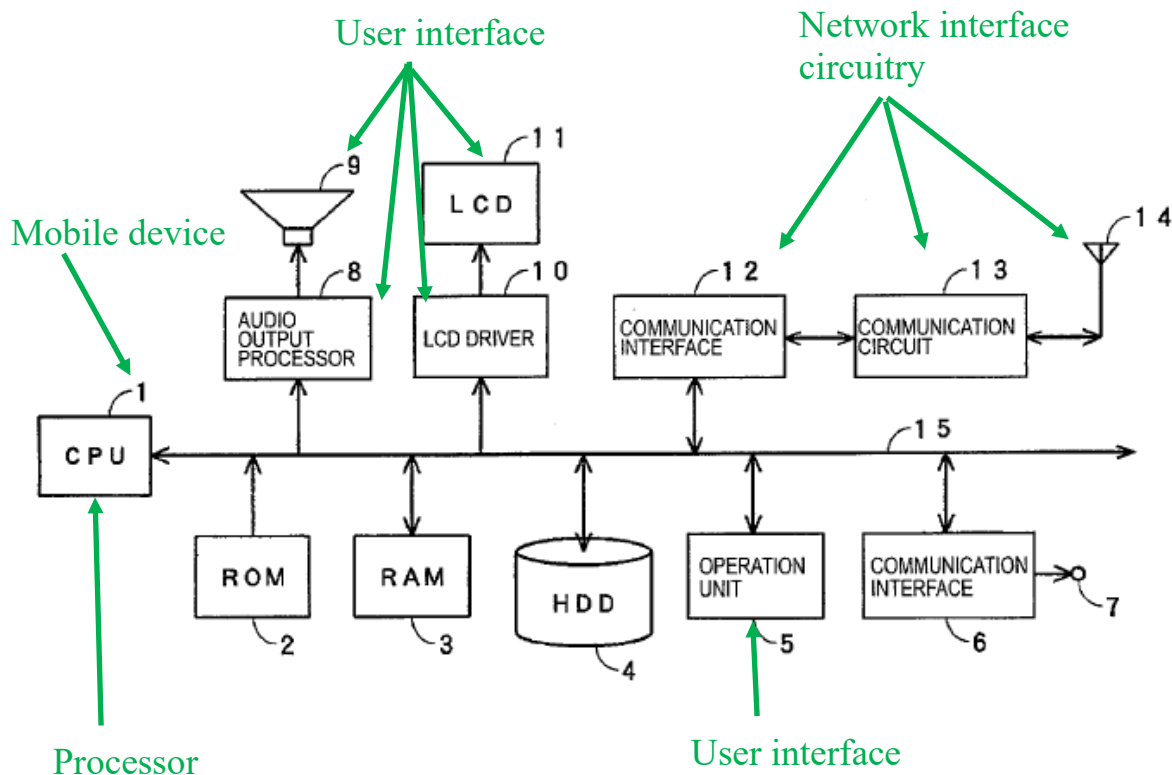
Sasaki, Fig. 1 (annotated).

135. As shown in Fig. 1, the network interface circuitry (comprising one or more of the communication interface 12, communication circuit 13, and antenna 14) are communicatively coupled to the CPU 1 by “CPU bus 15”. Sasaki, [0032], [0030] (the “CPU 1 controls the entirety” of the device by “supplying the control signals”).

136. Thus, the mobile device's communication circuitry (comprising one or more of the communication interface, communication circuit, and antenna) for sending and receiving information renders obvious "*transceiver circuitry*."

[10.3] *processor circuitry communicatively coupled to the user interface circuitry and the transceiver circuitry, the processor circuitry to;*

137. As discussed in [10.1] and [10.2], Sasaki discloses a mobile device having user interface circuitry and transceiver circuitry. Sasaki further disclose that the mobile device is controlled by "CPU 1" that executes "programs" stored in ROM. Sasaki, [0030]. As shown in Fig. 1, the network interface circuitry (comprising one or more of the communication interface 12, communication circuit 13, and antenna 14) and user interface circuitry are communicatively coupled to the CPU 1 by "CPU bus 15." Sasaki, [0032], [0030] (the "CPU 1 controls the entirety" of the device by "supplying the control signals").



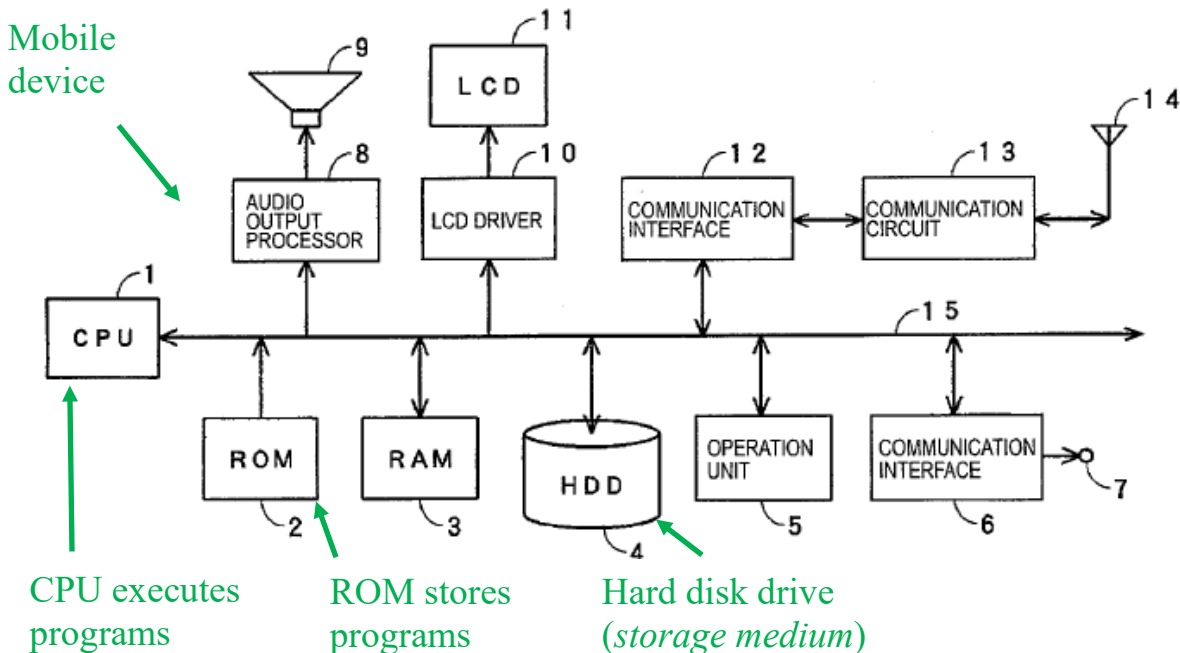
Sasaki, Fig. 1 (annotated).

138. Thus, Sasaki’s mobile device that has a CPU in communication with user inputs and output and transceiver components renders obvious “*processor circuitry communicatively coupled to the user interface circuitry and the transceiver circuitry, the processor circuitry to:*”

[10.4] operate a media player application to access media, and output the accessed media via the user interface circuitry, and;

139. Sasaki discloses a mobile device that has an “audio output processor 8” that supplies audio data to “speaker 9” to play audio and an “LCD driver 10” that provides image data to “LCD 11” for displaying images. Sasaki, [0037]. The

functionality of the mobile device is controlled by “CPU 1” that executes “programs” stored in ROM. Sasaki, [0030].



Sasaki, Fig. 1 (annotated).

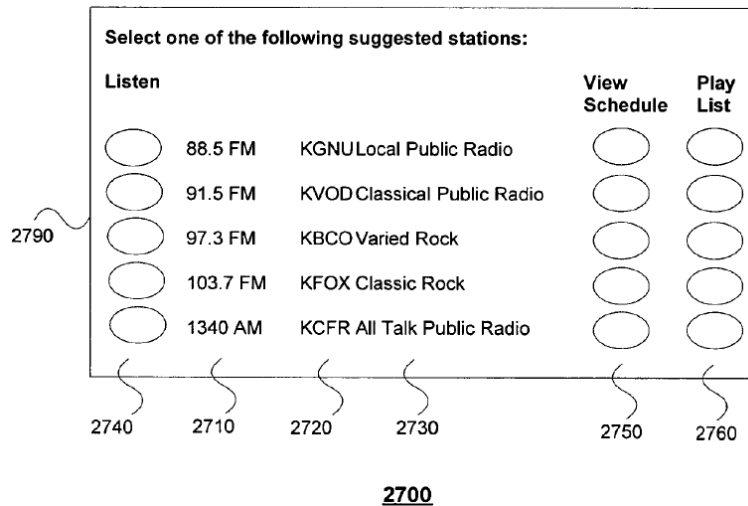
140. Sasaki also discloses that the hard disk drive stores audio data and image data. The HDD can store “image data,” such as MPEG or JPEG data. Ex.1004, [0038]. “Audio data and image data” can be recorded and stored in the HDD. Ex.1004, [0045]. “[M]usic data and image data” are also stored in the HDD. Ex.1004, [0065]. The audio data is used by “audio output processor 8” supply audio data to “speaker 9” to play audio and the image data is used by the “LCD driver 10” to provide image data to “LCD 11” for displaying images. Sasaki, [0037].

141. Ellis discloses a program on a mobile device that displays an

interactive screen, allows the user to scroll through selections, and includes on-screen buttons for selection by the user to play content:

FIG. 27 shows illustrative display screen 2700 which may be used to present recommended radio stations to a user. Recommended station list 2790 may be presented to the user. If more stations are recommended than will fit onto a single screen, the system may allow the user to scroll or page to view additional selections. Each selection may include information such as broadcast frequency 2710, call letters 2720, and station format 2730. Each selection may also include on-screen buttons 2740 that may be selected by the user to immediately start listening to the station, buttons 2750 to view a schedule of programming on the station, and buttons 2760 to view a play list for the station. Other items may be shown on screen 2700 as well. This screen may be displayed in different formats depending on the characteristics of display device 150 and user controls 140 of FIG. 1.

Ellis, [0232].

**FIG 27**

Ellis, Fig. 27.

142. Thus, Sasaki’s CPU that executes programs to output audio data to speakers and/or image data to a screen in view of Ellis’s teaching a program to allow selections and play music renders obvious “*operate a media player application to access media, and output the accessed media via the user interface circuitry.*”

[10.5] *establish a network connection with a server via the transceiver circuitry;*

143. First, as discussed in [10.2], the mobile device includes “communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14” (*transceiver circuitry*). Sasaki, [0041].

144. As discussed in [1.0] and [1.2], Sasaki teaches a server that also has a “communication interface 12, the communication circuit 13, and the

transmitting/receiving antenna 14.” Sasaki, [0041].

145. Sasaki teaches that “communication is performed between the server and terminal device B.” Sasaki, [0113]. The “communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14” are used, whereby wireless communication can establish connection ... between the terminal device and an external device such as a server.” Sasaki, [0041].

146. Thus, the mobile device’s communication circuitry (comprising one or more of the communication interface, communication circuit, and antenna) that establishes a connection with a server renders obvious “*establish a network connection with a server via the transceiver circuitry.*”

[10.6] *the transceiver circuitry to receive a recommendation message from the server, the recommendation message indicating an event or venue of interest that is proximate to an inferred current location of a user, and wherein:*

147. As discussed in [1.1c], [1.1d], and [1.2], Sasaki, Ellis and Jacobi render obvious a server generating a recommendation message indicating an event or venue of interest that is close to the location of a user. And, as discussed in [10.5], the mobile device establishes a network connection with the server by using its communication circuitry.

148. Ellis further discloses that the mobile device “may notify the user about the matching content. For example, the name of the matching content may be displayed on a display device or output to the speakers.” Ellis, [0439].

149. Thus, the communication circuitry of the mobile device in communication with the server, where the server generates a recommendation message indicating an event or venue of interest that is close to the location of the user, wherein the user is notified about matching content renders obvious “*the transceiver circuitry to receive a recommendation message from the server, the recommendation message indicating an event or venue of interest that is proximate to an inferred current location of a user.*”

[10.7] *the event or venue of interest is based on one or more inferred preferences of the user and the inferred current location;*

150. This limitation is substantially similar to the limitation of [1.1a] and [1.1b], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[10.8] *the inferred preferences are based at least in part on information about the accessed media and media content types of the accessed media from among a plurality of media content types, the plurality of media content types including textual media, image media, audio media, and video media, and;*

151. This limitation is substantially similar to the limitation of [1.1a], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[10.9] *the event or venue of interest is selected from one or more sources of information about a plurality of venues or events proximate to the inferred current location of the user.*

152. This limitation is substantially similar to the limitation of [1.1b], and

for the same reasons as discussed above, the prior art renders this limitation obvious

13. Claim 12

[12.0] *The mobile device of claim 10, further comprising:*

153. This limitation is substantially similar to the limitation of [10.0], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[12.1] *global positioning system (GPS) circuitry to provide data indicative of GPS coordinates of the mobile device:*

154. Sasaki teaches that its mobile device has a “built-in GPS (global positioning system)” to “specify the place of transmission.” The data indicative of the place of transmission of the mobile device includes the “latitude and longitude (detected by the GPS).” Sasaki, [0069].

In this case, as the date and time of transmission, the present time that is acquired from a clock circuit of a terminal device that transmits the content recommendation information may be used. Regarding the place of transmission, for example, if the terminal has a built-in GPS (global positioning system), the GPS information may be used to specify the place of transmission, and the specifying information may be used. Alternatively, information representing the latitude and longitude (detected by the GPS) of the place of transmission which indicate the present position can directly be transmitted. In addition, the owner name of the terminal may be used as the recommender.

Sasaki, [0069].

155. Thus, mobile device that has a built-in global positioning system to specify the latitude and longitude of its current position renders obvious “*global positioning system (GPS) circuitry to provide data indicative of GPS coordinates of the mobile device.*”

[12.2] the processor circuitry is further to generate location information to include the GPS coordinates:

156. As discussed in [12.1], Sasaki’s mobile device renders obvious GPS circuitry that provides data indicative of the latitude and longitude.

157. Sasaki further discloses generating “information representing” the latitude and longitude for subsequent transmission:

Regarding the place of transmission, for example, if the terminal has a built-in GPS (global positioning system), the GPS information may be used to specify the place of transmission, and the specifying information may be used. Alternatively, **information representing the latitude and longitude (detected by the GPS)** of the place of transmission which **indicate the present position** can directly be transmitted.

Sasaki, [0069].

158. It would be obvious to a POSITA that location information, e.g., XX Hotel lobby, can instead be displayed as GPS coordinates:

As shown in FIG. 3B, the piece of content recommendation information stored in the receiving area includes a date and time of transmission, a place of transmission, a recommender, recommendation comment information, etc., and a storage location of sample data.

Sasaki, [0071].

FIG. 3B

DATE AND TIME	PLACE	RECOMMENDER	RECOMMENDATION COMMENT INFORMATION, ETC.	SAMPLE
12/15/2004, 10:30	FRONT GATE AT TDL	OO, TARO	THIS VIEW, MOUNT FUJI! BEAUTIFUL!	MtFuji.jpg
12/24/2004, 19:00	XX HOTEL, LOBBY	SATO, ΔΔ	MOST FAVORITE CHRISTMAS MUSIC	Santa'sComing.mp3
12/25/2004, 09:15	TOKYO STATION	MIKE □□	MOVING LOVE STORY STARRING X□ KEIKO	Romacne.mpg
12/31/2004, 20:45	MEIJI SHRINE	OΔ, JIRO	IN THIS MYSTERY NOVEL, MYSTERY IS UNSOLVED TO THE LAST.	(none)

Sasaki, Fig. 3B (annotated)

159. Sasaki further teaches that the CPU “controls the entirety” of the mobile device. Sasaki, [0030].

The CPU 1 generates control signals by executing programs to perform processing such as various types of arithmetic operations. **The CPU 1 controls the entirety of the terminal device by supplying the control signals to portions of the terminal device.** The ROM 2 stores control programs that are executed by the CPU 1, unique identification (ID) information for identifying the terminal device, etc.

Sasaki, [0030].

160. Thus, Sasaki’s teaching of a mobile device that (i) is entirely controlled by a CPU, (ii) generates data indicative of GPS-detected latitude and longitude to indicate the mobile device’s present position, and (iii) transmits information representing the GPS position renders obvious *the processor circuitry*

is further to generate location information to include the GPS coordinates.

[12.3] the transceiver circuitry is to transmit the location information to the server to facilitate the server in inferring a current location of a user of the mobile device.

161. First, as discussed in [10.5], the communication circuitry in the mobile device establishes a network connection with the server.

162. Second, Sasaki teaches that the “information representing the latitude and longitude (detected by the GPS) of the place of transmission which indicate the present position can be **directly transmitted**.” Sasaki, [0069].

163. Third, Sasaki teaches that the server uses the information representing the latitude and longitude to infer a location of the user of the mobile device. Specifically, Sasaki teaches that the information representing the latitude and longitude can be “converted into map information ... or a building name or the like.” Sasaki, [0080].

164. Ellis also discloses using multiple methods to determine (*infer*) the mobile device’s current location, including (1) “us[ing] global positioning system monitor 160 to determine the user’s location,” (2) “allowing a user to enter it,” and by (3) “monitoring the radio stations that may be received and comparing them against the geographical region field in the radio station database.” Ellis, [0225].

165. Thus, a mobile device that uses communication circuitry to transmit location information to a server so that the server can determine the user of the

mobile device's location renders obvious "*the transceiver circuitry is to transmit the location information to the server to facilitate the server in inferring a current location of a user of the mobile device.*"

14. Claim 13

[13.0] *The mobile device of claim 10, wherein:*

166. This limitation is substantially similar to the limitation of [10.0], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[13.1] *user interface circuitry is to obtain a user input indicating a current location of the mobile device or a desired location of the mobile device:*

167. First, as discussed in [10.1], the user interface circuitry receives input from the user.

168. Second, Ellis teaches that the user location information can be obtained by the system by "allowing a user to enter it." Ellis, [0225].

169. Thus, Sasaki's mobile device that provides the user with user interface circuitry in view of Ellis disclosing allowing the user to enter location information renders obvious "*user interface circuitry is to obtain a user input indicating a current location of the mobile device or a desired location of the mobile device.*"

[13.2] *the processor circuitry is further to generate location information to indicate the user input, and*

170. As discussed in [12.2], the CPU controls the entirety of the mobile

device and uses the data from the GPS system to generate information representing the latitude and longitude. As discussed in [13.1], one more method for receiving location information is that the user enters the location information into the mobile device.

171. Accordingly, it would be obvious to a POSITA that, a processor that is capable of generating information representing the latitude and longitude would be able to similarly generate information representing the latitude and longitude from another input source, such as a user input.

172. Thus, for the same reasons as discussed above, the prior art renders this limitation obvious.

[13.3] the transceiver circuitry is to transmit the location information to the server to facilitate the server in inferring a current location of a user of the mobile device.

173. This limitation is substantially similar to the limitation of [12.3], and for the same reasons as discussed above, the prior art renders this limitation obvious.

15. Claim 15

[15.0] The mobile device of claim 10, wherein the recommendation message is one of eta short message service (SMS) message, a multimedia messaging service (MMS) message, a push notification, an email, a pager message, a facsimile message, or a phone call.

174. As discussed in [10.6], the mobile device receives a recommendation message from a server. As discussed in [1.1d], the recommendation from the

server can be a “web page,” “email,” or “facsimile.” Jacobi, [0074]. For the same reasons as discussed above, the prior art renders this limitation obvious.

16. Claim 16

[16.0] *The mobile device of claim 10, wherein the mobile device is a cellular phone, a portable media player, a tablet computer, or an in-vehicle computing device.*

175. As discussed in [10.0], Sasaki’s device is “portable” and plays “various types of content, such as music and images.” Sasaki, [0021]. Sasaki further discloses that the mobile device “has reduced size and weight, and can be carried” or put in “a pocket of user’s clothes.” Sasaki, [0021].

176. Further, Sasaki discloses that its teachings apply to an “on-vehicle communication apparatus.” Sasaki, [0136].

177. Accordingly, Sasaki’s device that is portable, plays various types of content, small in size, and pocketable renders obvious a *portable media player*. Further, Sasaki’s teachings of an “on-vehicle communication apparatus” render obvious an *in-vehicle computing device*.

178. Thus, Sasaki teaching a *portable media player* and an *in-vehicle computing device* renders obvious “*wherein the mobile device is a cellular phone, a portable media player, a tablet computer, or an in-vehicle computing device.*”

17. Claim 17

[17.0] *A method of operating a mobile device, the method comprising:*

179. This limitation is substantially similar to the limitation of [10.0], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[17.1] *executing a media player application to access media stored in memory of the mobile device or streamed to the mobile device:*

180. This limitation is substantially similar to the limitation of [10.4], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[17.2] *establishing a network connection with a server; and:*

181. This limitation is substantially similar to the limitation of [10.5], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[17.3] *receiving a recommendation message from the server, the recommendation message indicating an event or venue of interest that is proximate to an inferred current location of a user of the mobile device;*

182. This limitation is substantially similar to the limitation of [10.6], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[17.4] *the event or venue of interest is based on one or more inferred preferences of the user and the inferred current location;*

183. This limitation is substantially similar to the limitation of [10.7], and for the same reasons as discussed above, the prior art renders this limitation

obvious.

[17.5] *the inferred preferences are based at least in part on information about the accessed media and media content types of the accessed media from among a plurality of media content types, the plurality of media content types including textual media, image media, audio media, and video media, and*

184. This limitation is substantially similar to the limitation of [10.8], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[17.6] *the event or venue of interest is selected from one or more sources of information about a plurality of venues or events proximate to the inferred current location of the user.*

185. This limitation is substantially similar to the limitation of [10.9], and for the same reasons as discussed above, the prior art renders this limitation obvious.

18. Claim 18

[18.0] *The method of claim 17, further comprising: generating a location information message to indicate a location of the mobile device; and*

186. This limitation is substantially similar to the limitation of [12.2], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[18.1] *transmitting the location information to the server to facilitate the server in inferring a current location of a user of the mobile device.*

187. This limitation is substantially similar to the limitation of [12.3], and for the same reasons as discussed above, the prior art renders this limitation

obvious.

19. Claim 19

[19.0] *The method of claim 17, further comprising: determining the location of the mobile device based on global positioning system (GPS) coordinates of the mobile device or an obtained user input indicating a current location of the mobile device or a desired location of the mobile device.*

188. This limitation is substantially similar to the limitation of [12.0]-[12.3] and [13.0]-[13.3], and for the same reasons as discussed above, the prior art renders this limitation obvious.

B. Ground 2: Claims 5-6, 14 and 20 are obvious under 35 U.S.C. § 103 over Sasaki in view of Ellis and in view of Jacobi, and further in view of Havinis.

20. Summary of Havinis

189. Havinis relates generally to telecommunications systems and methods for positioning a mobile terminal within a cellular network. Havinis, 1:9-12.

The present invention relates generally to telecommunications systems and methods for positioning a mobile terminal within a cellular network, and specifically to providing historical data for location services.

Havinis, 1:9-12.

The present invention is directed to telecommunications systems and methods for providing location information, which can consist of either real-time data or historical data when the subscriber requested to be

positioned is either absent or not reachable, to a requesting LA. In addition, the age of the location information can be included to indicate to the requesting LA the reliability of the location information. The historical data is preferably stored per subscriber in the serving MSC/VLR following a successful positioning of that subscriber. This historical data can consist of the location information along with a time stamp indicating the time that the location information was obtained and stored in the MSC/VLR.

Havinis, 3:9-21.

190. Havinis's technique uses the geographical location of at least three base transceiver stations (BTS) and the time that the mobile device (MS 300) is connected to the BTS to estimate the physical location of the mobile device.

The historical data or real-time data can be obtained using various positioning methods. As an example, within a GSM system, positioning of a particular MS 300 can be performed by collecting positioning data, e.g., Timing Advance (TA) values TA1, TA2 and TA3 from several Base Transceiver Stations (BTS's) (310, 320 and 330) from which the geographical location, e.g., x, y coordinates, of the MS 300 can be calculated.

Havinis, 4:31-38.

The TA values (TA2 and TA3) measured by the target BTS's (310 and 330), together with the TA value TA1 obtained from the serving BTS 320, are then transmitted by the serving BSC 340 to the serving MLC 370 via the MSC/VLR 360 (step 480) to determine the location of the

MS 300 using a triangulation algorithm (step 485). This location information can then be sent to the serving MSC/ VLR 360 to be stored as historical data 364 in the subscriber record 362 associated with the MS 300 within the MSC/VLR 360 (step 490). When the location information 364 is stored in the MSC/VLR 360 (step 490), the MSC/VLR 360 also reads a time stamp 366 (step 495) and stores it (step 498) along with the location information 364 (step 490).

Havinis, 6:18-30.

191. Havinis further teaches that the location information can “be stored as historical data” and “associated with” the mobile device. Havinis, 6:26-28. Either “the real-time location data or historical location data” can be used to provide the location of the user’s mobile device. Havinis, 4:2-5.

Land Mobile Network (PLMN) 385 that the LA 380 is located in, the GMLC 390 can return to the LA 380 either real-time location data or historical location data (in case that mobile subscriber is absent or not reachable at the time the positioning request is received). Real-time data consists of data returned to the LA 380 after the mobile subscriber was successfully positioned as a result of the request for location information sent by the LA380. Historical data, on the other hand, consists of the last available location information along with the age of that location information.

Havinis, 4:1-10.

21. Reasons to Combine Sasaki, Ellis, and Jacobi with Havinis

192. A POSITA would have been motivated to combine the teachings of Sasaki-Ellis-Jacobi with Havinis. Sasaki-Ellis-Jacobi discloses a recommendation system that uses the current location of the mobile device to obtain events and facilities located proximately to the user and Havinis teaches techniques, known to POSITAs, for determining the current location for a portable device using current or historical positioning data.

193. As an initial matter, a POSITA when considering the '040 patent, would have looked to the teachings of Havinis. The field of endeavor of the '040 patent is identifying "locations proximally located to an inferred current location of the user" by determining the location of a portable device's connections to wireless access points. '040 patent, 2:46-51, 4:43-60. Havinis is analogous art because it relates to determining a mobile device's location by triangulating connections to wireless access points. Havinis, 6:23-24.

The TA values (TA2 and TA3) measured by the target BTS's (310 and 330), together with the TA value Tal obtained from the serving BTS 320, are then transmitted by the serving BSC 340 to the serving MLC 370 via the MSC/VLR 360 (step 480) to determine the location of the MS 300 using a triangulation algorithm (step 485). This location information can then be sent to the serving MSC/ VLR 360 to be stored as historical data 364 in the subscriber record 362 associated with the MS 300 within the MSC/VLR 360 (step 490). When the location

information 364 is stored in the MSC/VLR 360 (step 490), the MSC/VLR 360 also reads a time stamp 366 (step 495) and stores it (step 498) along with the location information 364 (step 490). The MSC/VLR 360 can then send the geographical position 364 of the MS 300 along with the time stamp 366 to the GMLC 390, which can then send the position 364 of the MS 300 along with an indication that the age of the location information 364 is zero to the requesting LA (node) 380 (step 499).

Havinis, 6:19-37.

194. A POSITA would have been specifically motivated to apply Havinis's techniques for positioning a mobile device using current or historical positioning data to the user location methods of Sasaki-Ellis-Jacobi. For example, Sasaki-Ellis-Jacobi system recommends "radio station, local events, and local facilities" based on a "geographic location" of the mobile device. Ellis, [0145].

The system may include optional global positioning system device 160. This device may determine the geographic location of the ERS using the global positioning system satellites, and send that information to controller 145.

Ellis, [0145]. Sasaki and Ellis each rely on a global positioning system to monitor the user's location. Havinis supplies teachings about how to calculate the current geographical location of a mobile device without the use of a global positioning system. It would be desirable to have this additional functionality in the event of a

failure of or error in the global positioning satellites or the GPS component. Given the importance to the location of the user for providing local recommendations as described in Ellis, implementing a second source of location information as taught by Havinis would benefit the Sasaki-Ellis-Jacobi combination by ensuring that the location functionality would be operational as much as possible.

195. Further, a POSITA would have had a reasonable expectation of success. Sasaki discloses a mobile device that communicates through a “communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14” using “wireless communications standards.” One example of wireless communication in Sasaki is “UWB (Ultra Wide Band).” Sasaki, [0041].

The communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14 are used, whereby wireless communication can establish connection with a terminal device of the same model, or connection between the terminal device and an external device such as a server through a predetermined network. The communication interface 12, the communication circuit 13, and the transmitting/receiving antenna 14 can be configured to use various wireless communication standards such as Bluetooth, IEEE (Institute of Electrical and Electronics Engineers) 804.11x, and UWB (Ultra Wide Band).

Sasaki, [0041]. Havinis discloses techniques for using wireless connections using the “Global System for Mobile Communication (GSM) digital mobile cellular radio system.” Havinis, 1:20-22.

Cellular telecommunications is one of the fastest growing and most demanding telecommunications applications ever. Today it represents a large and continuously increasing percentage of all new telephone subscriptions around the world. A standardization group, European Telecommunications Standards Institute (ETSI), was established in 1982 to formulate the specifications for the Global System for Mobile Communication (GSM) digital mobile cellular radio system.

Havinis, 1:14-22. Adding Havinis’s GSM techniques to Sasaki’s wireless device would have a reasonable expectation of success because Sasaki contemplated using multiple wireless communication standards on its device, and the GSM standard of Havinis was one such known wireless communication standard.

196. Sasaki also teaches that its mobile device could use radio waves from base stations to obtain location information:

Regarding positional information such as a place of transmission, for example, by using radio waves from a plurality of base stations for cellular telephone and specifying an approximate range around a transmitting position, the approximate range can be used. In other words, regarding the positional information Such as a place of transmission, various methods can be used.

Sasaki, [0081].

197. Because Sasaki contemplated using radio waves from a plurality of base stations to approximate a transmitting position, a POSITA would have looked to Havinis, because Havinis provides details the techniques used to determine a device's position using radio waves from base stations. *See, e.g.*, Havinis, 4:31-38.

198. Further, such combinations were already being implemented by POSITAs. For example, US2006/0258289 to Dua shows a “wireless media player” with both ultra wideband connectivity and a transceiver for “interacting with a cellular network, such as a Global System Mobile (GSM) network.” Dua, [0062], [0066].

A short-range transceiver 108 and antenna 117 provide wireless connectivity with external devices or access points using Supported communications protocols (e.g., Bluetooth, 802.11a/b/g/n, Ultra Wideband, Wireless USB, 802.15.3/WiMedia, Wireless 1394, Wireless FireWire, WiMax, and 802.15.4/ZigBee). The short-range transceiver 108 and antenna 117 system also support broadcast standards such as AM, FM, UHF, VHF, and HDTV. Support for these broadcast standards allows the media player 100 to receive and broadcast radio and television signals over a short-range.

Dua, [0062].

Short-range transceiver 108 interacts with a CPU 109 for implementing short-range communications protocols and processing messages

exchanged between other electronic devices and the media player 100. CPU 109 is linked to a volatile or dynamic random access memory (DRAM) 106. CPU 109 executes programs stored in a non-volatile or read only memory 106 and provides instructions for managing and controlling the operating of media player 100. CPU 109 is also connected to network transceiver 105 for interacting with a cellular network, such as a Global System Mobile (GSM) network and the like via antenna 117. Media player 100 is able to access the Internet through the cellular network, or through a wireless access point using short range transceiver 108 and a supported communications protocol (e.g., WiFi).

Dua, [0066].

199. Accordingly, a POSITA would have combined the Sasaki-Ellis-Jacobi system with Havinis because the combination would use known techniques (Havinis's providing the user of the portable device's current geographical location) to improve a similar system (the wireless system with a portable media device of Sasaki-Ellis-Jacobi system) in the same way (providing the current location of the user based on user's connection to the network).

1. Claim 5

[5.0] *The server of claim 4, wherein the network interface circuitry is further arranged to:*

200. As discussed in [1.1a], Sasaki's server includes a processor that is

coupled to a communication circuitry (*network interface circuitry*).

[5.1] *receive the location information from the mobile device;*

201. First, as discussed in [1.1a], Sasaki's server is in communication with the mobile device and receives information from the mobile device.

202. Second, as discussed in [4.0], Sasaki discloses that the mobile device has a global positioning system and a radio wave/base station positioning technique. Additionally, Sasaki's technique enables the mobile device to directly communicate the information representing the location information of its current position (*a current location of the mobile device*).

203. Thus, Sasaki's server that has communication circuitry for receiving information from the mobile device, wherein the mobile device transmits location information of the device's position renders obvious "*receive the location information from the mobile device.*"

[5.2] *receive the location information from a wireless network to which the mobile device has established a network connection.*

204. As discussed in [4.0], Sasaki's server receives location information so that it can determine the portable media player device's current location.

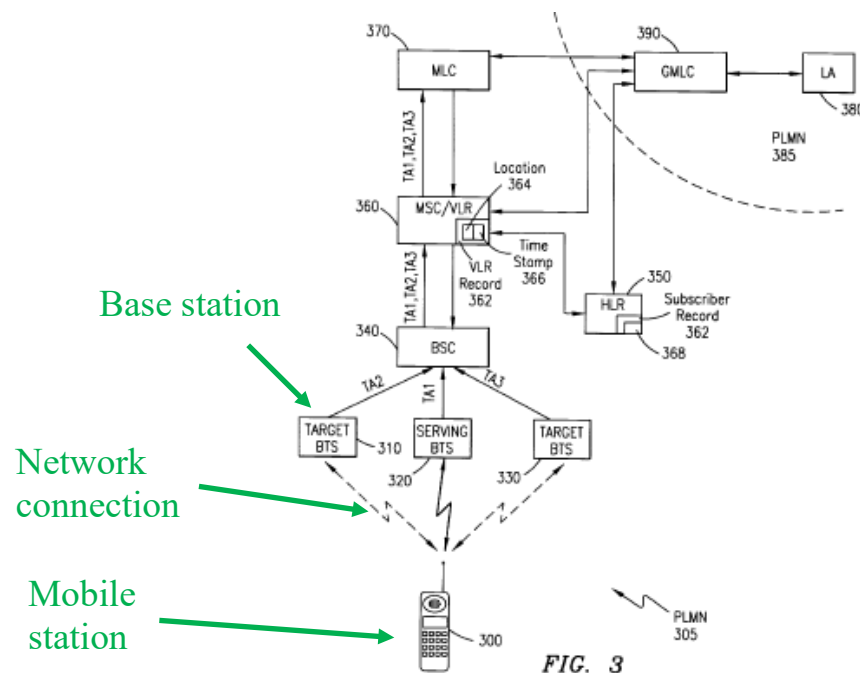
205. Havinis discloses a method for estimating the "geographical location" of a mobile station (MS). Havinis:

As can be seen in FIG. 2 of the drawings, upon a network positioning request, positioning of an MS 200 can be performed by several BTS's

(210, 220 and 230) generating positioning data, which can then be delivered, via the MSCNLR 260, to a Mobile Location Center (MLC) 270 for **calculation of the geographical location of the MS 200**. The geographical location of the MS 200 can then be sent to a Location Application (LA) 280 that requested the positioning. Alternatively, the requesting LA 280 could be located within the MS 200 itself, within the MSCNLR 260 or could be an external node, such as an Intelligent Network (IN) node (not shown).

Havinis, 2:7-18. Specifically, Havinis teaches that the mobile station establishes a network connection by communicating with at least one base transceiver station.

Havinis, Fig. 3.



Havinis, Fig. 3 (annotated). To estimate the location of the mobile station, Havinis teaches using timing advance values transmitted from multiple base transceiver

stations (each, an *access point*), along with the site location data associated with each base station, to calculate the geographical position of the portable device:

The historical data or real-time data can be obtained using various positioning methods. As an example, within a GSM system, positioning of a particular MS 300 can be performed by collecting positioning data, e.g., Timing Advance (TA) values TA1, TA2 and TA3 from several Base Transceiver Stations (BTS's) (310, 320 and 330) from which the geographical location, e.g., x, y coordinates, of the MS 300 can be calculated.

Havinis, 4:31-38.

However, with three TA values from three BTSs, e.g., BTSs 210, 220, and 230, the location of the MS200 can be determined with a certain degree of accuracy. Using a triangulation algorithm, with knowledge of the three TA values and site location data associated with each BTS (210, 220, and 230), the position of the MS200 can be determined (with certain accuracy) by the MLC 270.

Havinis, 2:32-45.

206. Sasaki's server that receives location information from the mobile device in view of Havinis's technique that the location of a mobile device can be calculated using timing advance values and site location data transmitted from a base station to which the mobile device is connected renders obvious "*receive the location information from a wireless network to which the mobile device has*

established a network connection.”

2. Claim 6

[6.0] *The server of claim 4, wherein the processor circuitry is further arranged to determine the current location of the mobile device based on results of triangulation of signals from various wireless access points or based on known current locations of other mobile devices in communication with the server.*

207. First, as discussed in [4.0], Sasaki’s server receives location information so that it can determine the mobile device’s current location.

208. Second, as discussed in [5.2], to estimate the location of a mobile device, Havinis teaches using timing advance values transmitted from multiple base transceiver stations (each, an *access point*), along with the site location data associated with each base station, to calculate the geographical position of the portable device.

209. Havinis further teaches that the server uses a “triangulation algorithm” to calculate the mobile device’s location:

However, with three TA values from three BTSs, e.g., BTSs 210, 220, and 230, the location of the MS200 can be determined with a certain degree of accuracy. **Using a triangulation algorithm, with knowledge of the three TA values and site location data associated with each BTS (210, 220, and 230), the position of the MS200 can be determined** (with certain accuracy) by the MLC 270.

Havinis, 2:32-45.

210. Thus, Sasaki’s server that receives information representing the

location of the mobile device in view of Havinis's teaching that the location of a mobile device can be calculated using a triangulation method with timing advance values and site location data transmitted from three base stations (wireless access points) renders obvious "*wherein the processor circuitry is further arranged to determine the current location of the mobile device based on results of triangulation of signals from various wireless access points or based on known current locations of other mobile devices in communication with the server*" as claimed.

3. Claim 14

[14.0] *The mobile device of claim 10, wherein the current location is further inferred based on a location of an access network node through which the mobile device has established a network connection or based on one or more previous geographic locations of the mobile device.*

211. First, as discussed in [4.0], Sasaki's server receives location information so that it can determine the portable media player device's current location.

212. Second, as discussed in [5.2], Havinis discloses a method for calculating the "geographical location" of a mobile station (a portable device) connected wirelessly. Havinis, 2:7-18. Specifically, Havinis teaches using timing advance values transmitted from base transceiver stations (*access network node*), along with the site location data associated with each base station (*location of an access network node*), to calculate the geographical position of the portable device:

The **historical data or real-time data** can be obtained using various positioning methods. As an example, within a GSM system, positioning of a particular MS 300 can be performed by **collecting positioning data, e.g., Timing Advance (TA) values TA1, TA2 and TA3 from several Base Transceiver Stations (BTS's) (310, 320 and 330) from which the geographical location, e.g., x, y coordinates, of the MS 300 can be calculated.**

Havinis, 4:31-38.

213. Havinis discloses a method for estimating the location of a mobile station that is not currently connected to the network using historical data:

The **TA values (TA2 and TA3) measured by the target BTS's (310 and 330), together with the TA value TA1 obtained from the serving BTS 320,** are then transmitted by the serving BSC 340 to the serving MLC 370 via the MSC/VLR 360 (step 480) **to determine the location of the MS 300 using a triangulation algorithm** (step 485). This location information can then be sent to the serving MSC/VLR 360 to be stored as historical data 364 in the subscriber record 362 associated with the MS 300 within the MSC/VLR 360 (step 490).

Havinis, 6:19-37.

214. Havinis teaches that the location can be determined using the “real-time data” from the base stations, which teaches the *location of an access network node through which the mobile device has established a network connection*. See Havinis also teaches that the location can be determined using “historical data”

data from the base stations, which teaches *based on one or more previous geographic locations*. Havinis, 4:31-38.

215. Thus, Sasaki's server that receives information representing the location of the mobile device in view of Havinis's teachings of sending base station coordinates and site location data, whether as real-time data or historical data, renders obvious "*wherein the current location is further inferred based on a location of an access network node through which the mobile device has established a network connection or based on one or more previous geographic locations of the mobile device.*"

4. Claim 20

[20.0] *The mobile device of claim 17, wherein the current location is further inferred based on a location of a wireless network to which the mobile device has established a network session and based on one or more previous geographic locations of the mobile device.*

216. As discussed in [4.0], Sasaki's server receives location information so that it can determine the portable media player device's current location.

217. First, Havinis further discloses that, the location of MS (a mobile device) can be calculated using site location data of the base stations of the network to which the device is connected (*location of a wireless network to which the mobile device has established a network session*):

However, with three TA values from three BTSs, e.g., BTSs 210,220, and 230, **the location of the MS200 can be determined** with a certain

degree of accuracy. **Using a triangulation algorithm**, with **knowledge of the three TA values** and **site location data associated with each BTS** (210, 220, and 230), **the position of the MS200 can be determined** (with certain accuracy) by the MLC 270.

Havinis, 2:32-45.

218. Second, Havinis discloses using historical positioning data (based on one or more previous geographic locations of the mobile device):

The historical data or real-time data **can be obtained using various positioning methods**. As an example, within a GSM system, positioning of a particular MS 300 can be performed by **collecting positioning data, e.g., Timing Advance (TA) values TA1, TA2 and TA3 from several Base Transceiver Stations (BTS's) (310, 320 and 330) from which the geographical location, e.g., x, y coordinates, of the MS 300 can be calculated.**

Havinis, 4:31-38.

219. Thus, Sasaki's server that receives information representing the location of the mobile device in view of Havinis's disclosure of using the site location of the transceivers and the historical location data for the mobile device renders obvious "*wherein the current location is further inferred based on a location of a wireless network to which the mobile device has established a network session and based on one or more previous geographic locations of the mobile device.*"

C. Ground 3: Claims 3 and 11 are obvious under 35 U.S.C. § 103 over Sasaki in view of Ellis and Jacobi, and in further view of Teicher.

1. SUMMARY OF TEICHER

220. Teicher relates to a technique for analyzing user wish-lists to provide recommendations for commercial or private attractions. Specifically, in Teicher, users provide preferences, e.g., wish-lists:

Users of the present invention enter their wish-lists ... then scans the wish-lists for generating encounters. An encounter determines an ensemble of two or more users, an assigned attraction and a schedule for visiting that attraction.

Teicher, [0008].

221. Teicher's technique analyzes the users' wish-lists to generate a list of recommended attractions that are selected from a plurality of commercial or private attractions including:

The term "attraction" herein denotes a specification of the content of and/or the place, and usually also the time or times of operation, for a face-to-face social meeting. An attraction can be the reason for the meeting, or just a nucleus around which a meeting is crystallized. Non-limiting examples for an attraction are: a café, restaurant, pub or bar, a theater, movie, zoo, amusement park, concert hall, opera, exhibition, fair, baseball match, shopping mall, gym, book store; a domestic or international tour, a lecture, party, political gathering; singles workshop; a church, synagogue, or mosque; or a gathering at one's home for a part or chat. Attractions can be defined in various degrees

of specificity; for example: a restaurant, an Italian restaurant, or a specific Italian restaurant; a movie, a comedy, a specific comedy, or a specific comedy at a specific movie theater.

Teicher, [0025].

Social meetings can take place at commercial attractions such as dining and drinking places, clubs, movie and show theatres, concert halls, museums, lectures, sports arenas, shopping malls, amusement parks, zoos, resorts, domestic and overseas tours, etc. Social meetings can also take place in noncommercial settings such as a private party, during a walk in a park, or when participating in a public lecture, demonstration, or political gathering.

Teicher, [0007].

222. For example, when a user's preferences, e.g., wish-list, include finding individuals to date or develop new friendships, the system recommends events in a group setting for the user:

In this case, participants may feel embarrassed or unsafe in having a one-on-one meeting with a stranger, and would feel more comfortable in having initial meetings in a group setting, and move to couple meetings only after having developed interest and confidence in others during group meetings. The personal wish-list's scoring then includes not only the level of interest in other subscribers, but also an indication whether the present subscriber agrees to meet each of his/her scored subscribers in a couple setting.

Teicher, [0047].

2. Reasons to Combine Sasaki, Ellis, Jacobi, and Teicher

223. A POSITA would have been motivated to combine the teachings of Sasaki-Ellis-Jacobi with Teicher. Sasaki-Ellis-Jacobi discloses a recommendation system that identifies and communicates recommendations, e.g., events and facilities, to the user via a mobile device, and Teicher teaches techniques, known to POSITAs, for generating recommendations about a myriad of attractions of interest.

224. As an initial matter, a POSITA considering the problem purportedly solved by the '040 patent, would have looked to the teachings of Teicher. The field of endeavor of the '040 patent is “venue or event recommendations for a user of a portable media player device.” '040 patent, 1:20-21. Teicher is analogous art because it relates to analyzing users' wish-lists (e.g., preferences) to recommend an attraction that would be of interest to users. Teicher, [0044].

225. As addressed above, a POSITA would have been specifically motivated to apply Teicher's techniques of recommending different types of attractions to the event and facility recommendations of Sasaki-Ellis-Jacobi. For example, Sasaki-Ellis-Jacobi system recommends “radio station, local events, and local facilities” (e.g., selecting one or more events based on the user preferences and displaying recommendations to the user). Ellis, [0137], [0233]. Teicher

describes that it was known to POSITAs that an attraction based on the user's likes in a recommendation system, such as the Sasaki-Ellis-Jacobi system, would include additional forms of local attractions. Teicher, [0008]. Teicher's teachings about attractions would be desirable to combine with the Sasaki-Ellis-Jacobi system because having more types of attractions lets users specify "the content of and/or the place, and usually also the time or times of operation." Teicher, [0025]. Teicher includes a plurality of attractions that would be of interest to a user:

An attraction can be the reason for the meeting, or just a nucleus around which a meeting is crystallized. Non-limiting examples for an attraction are: a café, restaurant, pub or bar; a theater, movie, zoo, amusement park, concert hall, opera, exhibition, fair, baseball match, shopping mall, gym, bookstore; a domestic or international tour, a lecture, party, political gathering; singles workshop; a church, synagogue, or mosque; or a gathering at one's home for a part or chat. Attractions can be defined in various degrees of specificity; for example: a restaurant, an Italian restaurant, or a specific Italian restaurant; a movie, a comedy, a specific comedy, or a specific comedy at a specific movie theater.

Teicher, [0025]. The Sasaki-Ellis-Jacobi system teaches recommending events and facilities to the user and incorporating Teicher's additional details about the attractions broaden the types of events and facilities available to the user of the Sasaki-Ellis-Jacobi system.

226. A POSITA would have had a reasonable expectation of success when

combining the teachings of Teicher with those of the Sasaki-Ellis-Jacobi because Sasaki-Ellis-Jacobi already recommend several types of local events and Teicher teaches additional types of attractions to recommend to the user based on user preferences. Further, a POSITA would have had a reasonable expectation of success because the teachings of Teicher have already been successfully implemented in a recommendation system, such as the recommendation system of Sasaki-Ellis-Jacobi.

227. Accordingly, a POSITA would have combined the Sasaki-Ellis-Jacobi system with Teicher because the combination would use known techniques (Teicher's attraction list based on user preferences) to improve a similar system (the Sasaki-Ellis-Jacobi recommendation system) in the same way (providing event(s) and facility(s) recommendations to a user based on user preferences).

3. Claim 3

[3.0] *The server of claim 2, wherein the processor circuitry is arranged to generate the recommendation message based at least in part on:*

228. First, as discussed in [1.1], Sasaki's server's CPU corresponds to the claimed *processor circuitry*.

229. Second, as discussed in [1.1c], Ellis teaches selecting events and facilities by comparing information about each event and facility with the user information, including the user's likes and the user's current location, and choosing the events and facilities that most closely match the user's preferences.

230. Third, as discussed in [1.1d], Jacobi discloses generating a recommendation message by placing identified recommendations into one or more web pages, product hypertextual link, email, facsimile, and other transmission methods (*generate the recommendation message*).

231. Thus, Sasaki's server including a processor in view of Ellis's teaching of identifying recommended events and facilities in view of Jacobi's generating a recommendation message, such as a web page with the recommendations, renders obvious "*wherein the processor circuitry is arranged to generate the recommendation message based at least in part on:*"

[3.1] a genre of music played at the event or venue of interest and a music genre preference of the user inferred by the server based on music media stored in, or accessed using, the mobile device;

232. First, as discussed in [1.1c], Sasaki and Ellis render obvious (i) identifying local events and facilities that are of interest to the user, (ii) by comparing information about each local event or facility with the user's preferences (as automatically determined by the server), and (iii) selecting local events and facilities by comparing information about the event or facility with the user's preferences and selecting the closest matches.

233. Second, Ellis further discloses, as discussed in [1.1a], determines a user's preference based on the user's usage information, accessed using the mobile device, with respect to a group "based on type of content [] all songs, etc."

commercials, music genre, a specific artist, or particular radio station. Ellis, [0214], [0051]. A POSITA would recognize that a group based on all songs, commercials, music genre, a specific artist, or particular radio station, etc., as disclosed in Ellis, corresponds to *music media stored in, or accessed using, the mobile device*.

234. Third, Ellis discloses that its technique can provide information about “local concerts, performing artist appearances, signings, radio station events, weather, and other events of interest.” Ellis, [0045].

235. Thus, Sasaki’s server that provides content recommendation information to a mobile device, in view of Ellis’s technique of recommending events or facilities by comparing information about local events and facilities to the user’s preferences that are determined based on, in part, the music media listened to by the user on a mobile device renders obvious “*genre of music played at the event or venue of interest and a music genre preference of the user inferred by the server based on music media stored in, or accessed using, the mobile device*.”

[3.2] a genre of a play or movie played at the venue or event of interest, respectively, and on a video genre preference of the user inferred by the server based at least in part on video media stored in, or accessed using, the mobile device;

236. First, as discussed in [1.1c], Sasaki and Ellis render obvious (i) identifying local events and facilities that are of interest to the user, (ii) by comparing information about each local event or facility with the user’s

preferences (as automatically determined by the server), and (iii) selecting local events and facilities by comparing information about the event or facility with the user's preferences and choosing the events and facilities that most closely match the user's preferences.

237. Second, Sasaki further discloses, as discussed in [1.1a], that its system collects information about different media content types, such as "music," "still pictures," "video," and "text." Sasaki, [0074]. Ellis further discloses, as discussed in [1.1a], determines a user's preference based on the user's usage information. Ellis, [0214], [0051]. Sasaki further discloses a plurality of media content types in the context of a recommendation system, including "movies." Sasaki, [0140]. A POSITA would recognize, in view of Sasaki, that the user's usage information would include all media content types accessed by the mobile device including video media such as the "video" content, taught in Sasaki.

As described above, in the above-described embodiments and modifications, the content recommendation information means, not only recommendation information concerning so-called "digital content. Such as music and movies, but also, in a broad sense, various types of information, such as traffic information and map information, which is to be transmitted to a communication terminal device for use by the user.

Sasaki, [0140].

238. Third, Ellis discloses that its technique can provide information about “local concerts, performing artist appearances, signings, radio station events, weather, and other events of interest.” Ellis, [0045].

The system may provide automatic notification of local concerts, performing artist appearances, signings, radio station events, weather, and other events of interest. This information may be of interest to all types of users, including those users who are traveling in an unfamiliar region. Similarly, the system may provide information about local music venues, stores, and other facilities and businesses.

Ellis, [0045].

239. To the extent that Sasaki and Ellis do not disclose a venue of interest that would show a play or movie, Teicher discloses that it was known to recommend movie and show theatres as a venue of interest:

Social meetings can take place at commercial **attractions such as** dining and drinking places, clubs, **movie and show theatres**, concert halls, museums, lectures, sports arenas, shopping malls, amusement parks, zoos, resorts, domestic and overseas tours, etc. Social meetings can also take place in noncommercial settings such as a private party, during a walk in a park, or when participating in a public lecture, demonstration, or political gathering.

Teicher, [0007].

240. As discussed in [1.1c], Ellis’s technique selects events and facilities

based on comparing information about each event with the user information (such as the determined music genre preferences of the user) and choosing the events or facilities that most closely match the user information. It would be obvious to a POSITA that information about each event would be information applicable to such event, such as the type of movie (*video genre*) being played at a theatre.

241. Thus, Sasaki's server that provides content recommendation information to a mobile device, in view of Ellis's technique of recommending events or facilities by comparing information about local events and facilities to the user's preferences that are determined based on, in part, the video media accessed by the user on a mobile device renders obvious "*a genre of a play or movie played at the venue or event of interest, respectively, and on a video genre preference of the user inferred by the server based at least in part on video media stored in, or accessed using, the mobile device.*"

[3.3] *an exhibit genre of the event or venue of interest and on an image genre preference of the user inferred by the server based on image media stored in, or accessed using, the mobile device;*

242. First, as discussed in [1.1c], Sasaki and Ellis render obvious (i) identifying local events and facilities that are of interest to the user, (ii) by comparing information about each local event or facility with the user's preferences (as automatically determined by the server), and (iii) selecting local events and facilities by comparing information about the event or facility and

choosing the events and facilities that most closely match the user's preferences.

243. Second, Sasaki further discloses, as discussed in [1.1a], that its system collects information about different media content types, such as “music,” “still pictures,” “video,” and “text.” Sasaki, [0074]. Ellis further discloses, as discussed in [1.1a], determines a user's preference based on the user's usage information. Ellis, [0214], [0051]. A POSITA would recognize, in view of Sasaki, that the user's usage information would include all media content types accessed by the mobile device including image media.

244. Third, Ellis discloses that its technique can provide information about “local concerts, performing artist appearances, signings, radio station events, weather, and other events of interest.” Ellis, [0045].

245. To the extent that Sasaki and Ellis do not disclose a venue of interest that has exhibits as a local event or facility, Teicher discloses that it was known to recommend museums as a venue of interest:

Social meetings can take place at commercial **attractions such as** dining and drinking places, clubs, movie and show theatres, concert halls, **museums**, lectures, sports arenas, shopping malls, amusement parks, zoos, resorts, domestic and overseas tours, etc. Social meetings can also take place in noncommercial settings such as a private party, during a walk in a park, or when participating in a public lecture, demonstration, or political gathering.

Teicher, [0007].

246. As discussed in [1.1c], Ellis's technique selects events and facilities based on comparing information about each event with the user information (such as the determined music genre preferences of the user) and choosing the events and facilities that most closely match the user preferences. It would be obvious to a POSITA that information about each event would be information applicable to such event, such as the type of exhibit (*exhibit genre*) being displayed at a museum.

247. Thus, Sasaki's server that provides content recommendation information to a mobile device, in view of Ellis's technique of recommending events or facilities by comparing information about local events and facilities to the user's preferences that are determined based on, in part, the image media accessed using a mobile device renders obvious "*an exhibit genre of the event or venue of interest and on an image genre preference of the user inferred by the server based on image media stored in, or accessed using, the mobile device.*"

[3.4] *an attribute of a worship, cultural, community or political event or venue of interest and on a subject preference of the user inferred by the server based on podcast media stored in, or accessed using, the mobile device.*

248. First, as discussed in [1.1c], Sasaki and Ellis render obvious (i) identifying local events and facilities that are of interest to the user, (ii) by comparing information about each local event or facility with the user's preferences (as automatically determined by the server), and (iii) selecting local

events and facilities by comparing information about the event or facility with the user's preferences and choosing the events and facilities that most closely match the user's preferences.

249. Second, Ellis further discloses, as discussed in [1.1a], determines a user's preference based on the user's usage information with respect to "a group [] based on a specific radio show" or radio show broadcast via the internet. Ellis, [0214], [0051]. A POSITA would recognize that a radio show broadcast via the internet, as disclosed in Ellis, corresponds to a podcast media. *See* Jellison, [0035] ("It may be desired to publish a portion of the radio program as a podcast."); Lim, [0002] ("A podcast is a digital recording of a radio broadcast or similar programme, made available on the Internet in a number of separate files for downloading to a personal audio player.").

250. Third, as discussed in [1.1c], Sasaki and Ellis render obvious identifying events and facilities by comparing information about each event or facility with the current location of the user and matching information about the events and facilities with the user's preferences automatically determined by the server based on the user's usage information. Ellis also discloses that its technique can provide information about "local concerts, performing artist appearances, signings, radio station events, weather, and other events of interest." Ellis, [0045]. Sasaki further discloses that it was known that events of interest could include

“places of historical interest” (*cultural venue of interest*). Sasaki, [0139]

(“information concerning scenic spots and places of historical interest, can be provided to a communication terminal device.”).

251. To the extent that Sasaki and Ellis do not disclose “*political event or venue of interest*” as a local event or facility, Teicher discloses that it was known to recommend a political gathering as a venue of interest:

Social meetings can take place at commercial **attractions such as** dining and drinking places, clubs, movie and show theatres, concert halls, museums, lectures, sports arenas, shopping malls, amusement parks, zoos, resorts, domestic and overseas tours, etc. Social meetings can also take place in noncommercial settings such as a private party, during a walk in a park, or when participating in a public lecture, demonstration, or **political gathering**.

Teicher, [0007].

252. Thus, Sasaki’s server that provides content recommendation information to a mobile device, which includes taking into account information Teicher’s disclosure of a political gathering as an attraction of interest, in view of Ellis’s technique of recommending events or facilities by comparing information about local events and facilities to the user’s preferences that are determined based on, in part, the podcast media listened to by the user on a mobile device renders obvious “*an attribute of a worship, cultural, community or political event or venue*

of interest and on a subject preference of the user inferred by the server based on podcast media stored in, or accessed using, the mobile device.”

4. Claim 11

[11.0] *The mobile device of claim 10, wherein the recommendation is based on one or more of:*

253. As discussed in [10.6], the mobile device receives a recommendation message.

[11.1] *a genre of music played at the event or venue of interest and a music genre preference of the user inferred by the server based on audio media stored in, or accessed using, the mobile device;*

254. This limitation is substantially similar to the limitation of [3.1], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[11.2] *a theatrical or cinematography genre of the event or venue of interest and on a video genre preference of the user inferred by the server based on video media stored in, or accessed using, the mobile device;*

255. This limitation is substantially similar to the limitation of [3.2], and for the same reasons as discussed above, the prior art renders this limitation obvious.

[11.3] *an exhibit genre of the event or venue of interest and on an image genre preference of the user inferred by the server based on image media stored in, or accessed using, the mobile device; and*

256. This limitation is substantially similar to the limitation of [3.3], and for the same reasons as discussed above, the prior art renders this limitation

obvious.

[11.4] *an attribute of a worship, cultural, community or political event or venue of interest and on a subject preference of the user inferred by the server based on audio media stored in, or accessed using, the mobile device.*

257. This limitation is substantially similar to the limitation of [3.4], and for the same reasons as discussed above, the prior art renders this limitation obvious.

VIII. CONCLUSION

258. This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare that all statements made herein on 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 or Title 18 of the United States Code.

Date: 11/29/22

Henry Houh

Henry Houh