

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD. and SAMSUNG ELECTRONICS
AMERICA, INC.,
Petitioners,

v.

MOBILE DATA TECHNOLOGIES LLC,
Patent Owner

IPR2025-00542

U.S. Patent No. 9,922,348

**DECLARATION OF HENRY HOUH, PH.D. IN SUPPORT OF PETITION
FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,922,348**

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I, Henry Houh, Ph.D., declare as follows:

1. I have been retained by Goodwin Procter LLP on behalf of Petitioners Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (“Petitioners”) to provide this Declaration concerning technical subject matter relevant to the petition for *Inter Partes* Review (“Petition”) of 9,922,348 (“the ’348 patent”).

2. I am over 18 years of age. I have personal knowledge of the facts stated in this Declaration and could testify competently to them if asked to do so.

3. I have been asked to provide my technical opinions regarding how a person of ordinary skill in the art would have understood the claims of the ’348 patent at the time of the alleged invention, which I have been asked to assume is the 2002 timeframe. For purposes of whether the teachings of the prior art render the claims of the ’348 patent obvious, I have been asked to assume the date of June 18, 2002. I have also been asked to provide my technical opinions on how concepts in the ’348 patent specification relate to claim limitations of the ’348 patent.

4. In reaching the opinions provided herein, I have considered the ’348 patent, its prosecution history, and the references cited in my Declaration and the Appendix. I have also drawn on my own education, training, research, knowledge, and personal and professional experience.

5. In general, I have been asked to cite to the specification of a patent or patent publication using the following formats: (Patent, Col:Line Number(s)) or (Patent, Paragraph Number(s)). For example, the citation ('348 patent, 1:1-10) points to the '348 patent specification at column 1, lines 1-10. Also, for convenience, I have been asked to use italics to denote limitations from the challenged claims. Unless otherwise noted, all emphasis is added.

6. I am being compensated for my time at my standard consulting rate. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study and analysis, the substance of my opinions, or the outcome of any proceeding involving the '348 patent. I have no financial interest in the outcome of this matter or in any litigation involving the '348 patent.

7. I understand that another party, Meta Platforms, Inc. ("Meta"), has challenged the '348 patent in *inter partes* review proceedings at *Meta Platforms, Inc. v. Mobile Data Techs. LLC*, IPR2024-00250 ("Meta-MDT-IPR"), which was instituted by the Patent Trial and Appeal Board. I refer in my declaration below to some of the positions and issues raised in that proceeding, including as it pertains to claim construction of certain claim terms in the '348 patent.

I. Qualifications

8. I believe I am well qualified to render useful opinions on this matter. I will briefly summarize my knowledge, training, and experience here. A more detailed summary of my background, education, experience, and publications is set forth in my curriculum vitae (CV), which is provided as EX-1004.

9. I received my Bachelor of Science degree in Physics from Massachusetts Institute of Technology (“MIT”) in 1990. I also received my Bachelor of Science degree, Master of Science degree, and Ph.D., all in Electrical Engineering and Computer Science, from MIT in 1989, 1991, and 1998 respectively.

10. My college studies focused on communications and data networking. My undergraduate and graduate coursework pertained to telecommunication networks optical communications, and data networking. I maintained both the computer workstations and networking devices in my networking research group, along with other graduate students within the group.

11. I served as a teaching assistant for the Computation Structures course several times. This course taught low-level computer architecture and included a laboratory component that involved building a central processing unit (“CPU”) from discrete components from the gate level and higher. As a student this course, I redesigned the CPU hardware and software to raise the average speed by a factor of 30. I then became a head laboratory assistant and teaching assistant as an

undergraduate student, and later became head teaching assistant as a graduate student.

12. I was a research assistant in the Telemedia Network Systems (“TNS”) group in the Laboratory for Computer Science as part of my doctoral research at MIT. This group built a high-speed gigabit network and created applications that ran over the network such as remote video and audio capture, processing, and display on computer terminals.

13. I set up the TNS group’s web server. Using this server, the TNS group was the first group to initiate a remote video display over the World Wide Web. 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; the video was encoded by TNS-designed hardware, streamed over the TNS-designed network and displayed using TNS-designed software. I was also able to modify a web server to determine the location of the client, and present different web pages based on the client’s location. I co-authored and presented papers on these video demonstrations and dynamic webpages at the first World Wide Web conference.

14. 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. My thesis also addressed real-time streamed audio and video. The network traffic that I analyzed was IP protocol traffic, including User Datagram Protocol (“UDP”) and Transmission Control Protocol (“TCP”).

15. I worked at NBX Corporation as a Senior Scientist and Engineer from 1997 to 1999, and worked on the first fully featured business telephone that operated on data networks. I designed the core audio reconstruction algorithms for the telephones which depacketized the voice data and reconstructed the audio, and the voice data packet transmission algorithms. I created a system to capture and analyze network packets sent by devices in the NBX system for aid in testing and debugging. I also designed and validated the core packet transport protocol used by the phone system. In addition, I designed and oversaw the development of the underlying transport protocol used by the NBX100 phone system for reliable packet transport. This transport protocol is still estimated to be used hundreds of millions of times daily. I also served as lead architect in designing NBX’s next-generation system, and worked with NBX’s successor 3Com to demonstrate the phone system over cable equipment infrastructure in 1999.

16. From 1999 to 2004, I worked at Teradyne and its successor Empirix, which developed and provided functional and load test tools for telecommunication protocols and systems. I rebuilt Empirix’s primary testing product, which could pull

data from a database to provide variation of data submitted to the web applications, and then to extract data from a web page to populate a database with key results computed by the web site after customized data is submitted. This product, PacketSphere, was Empirix's most successful new platform introduction and received several industry awards.

17. I also worked at BBN Technologies Corp. from 2004 to 2008. BBN Technologies is a technology R&D company with expertise in acoustics, speech recognition, and communications technology. I helped create EveryZing, formerly PodZinger, which is a public audio and video search engine that utilizes speech recognition technology.

18. I am a named inventor on several U.S. patents. The patents and applications are listed in my CV.

II. Understanding of Relevant Legal Principles

19. I am not a lawyer, and I will not provide any legal opinions. Although I am not a lawyer, I have been advised certain legal standards are to be applied by technical experts in forming opinions regarding the meaning and validity of patent claims.

20. I understand that a patent claim is invalid if it is anticipated or obvious in view of the prior art, and that a claim can be unpatentable even if all of the requirements of the claim cannot be found in a single prior-art reference. I further

understand that invalidity of a claim requires that the claim be anticipated or obvious from the perspective of a person of ordinary skill in the art at the time the invention was made.

21. I have been informed that a patent claim is invalid if it would have been obvious to a person of ordinary skill in the art. In analyzing the obviousness of a claim, I understand the following factors may be taken into account: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art; and (4) any so called “secondary considerations” of non-obviousness, if they are present. I am not aware of any evidence of secondary considerations of non-obviousness relevant to the ’348 patent. I reserve the right to supplement this Declaration if Patent Owner (“PO”) introduces evidence of secondary considerations of non-obviousness.

22. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to:

- (1) identify the particular references that, singly or in combination, make the patent obvious;
- (2) specifically identify which elements of the patent claim appear in each of the asserted references; and
- (3) explain why a person of ordinary skill in the art would have combined the references, and how they would have done so, to create the inventions claimed in the patent. I further understand that exemplary rationales that may support a conclusion of obviousness include:

- combining prior art elements according to known methods to yield predictable results;
- simple substitution of one known element for another to obtain predictable results;
- use of known technique(s) to improve similar devices (methods or products) in the same way;
- applying a known technique to a known device (method or product) ready for improvement to yield predictable results;
- “obvious to try” – choosing from a finite number of identified, predictable solutions with a reasonable expectation of success; known work in one field of endeavor may prompt variations of the work for use in either the same field or a different field based on design incentives or other market forces if the variations are predictable to a person of ordinary skill in the art; and
- some teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

23. I have been informed that, in considering obviousness, hindsight reasoning derived from the patent-at-issue may not be used.

III. ‘348 Patent

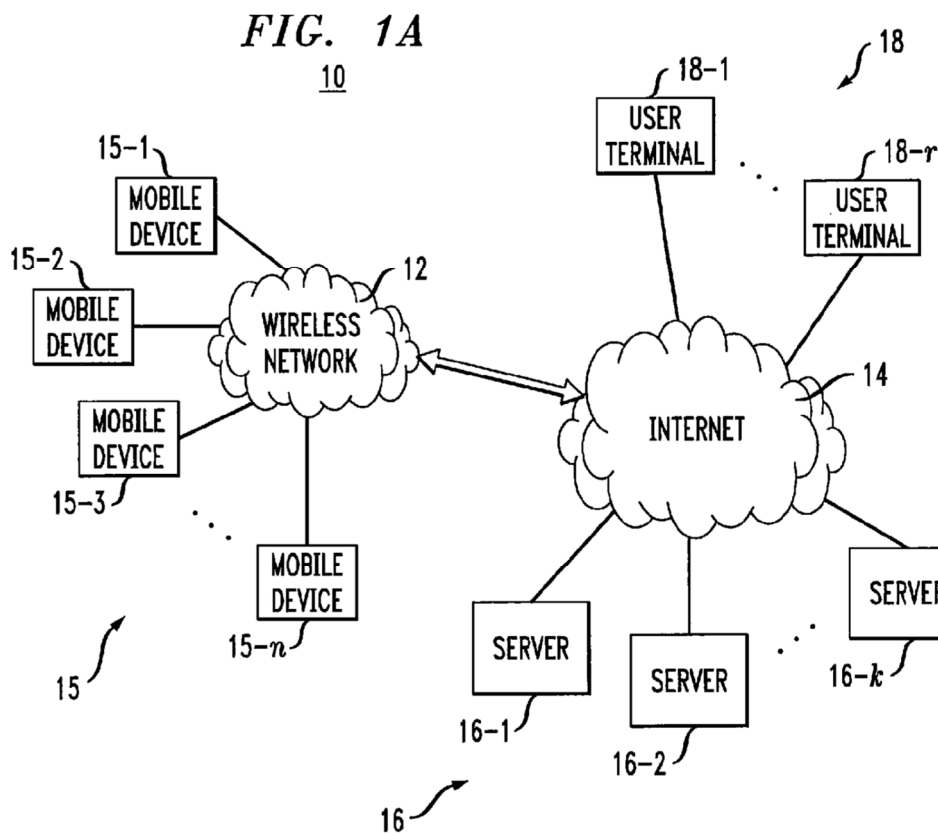
24. The ‘348 patent, filed March 2, 2017, claims priority through six continuations to U.S. Patent 7,599,983, filed June 18, 2003, which claims priority to Provisional 60/389,430 filed June 18, 2002. While I do not have an opinion about

whether the patent is entitled to any of the priority dates, each applied reference was filed or published before June 18, 2002.

25. The '348 patent “relates generally to network-based communications systems, and more particularly to techniques for information content management in such systems.” (EX-1001, 1:29-31.)

A. Overview of the '348 Patent

26. The '348 patent identifies “accessing of information content over wireless networks via web-enabled mobile devices” as among “the most rapidly expanding aspects of wireless networking.” (EX-1001, 1:35-37.) Figure 1A, reproduced below, “shows an example network-based communication system 10” including “wireless network 12 coupled to the Internet 14, a set of mobile devices 15, a set of servers 16 and a set of user terminals 18.” (EX-1001, 3:60-65.)



'348 patent, Figure 1A

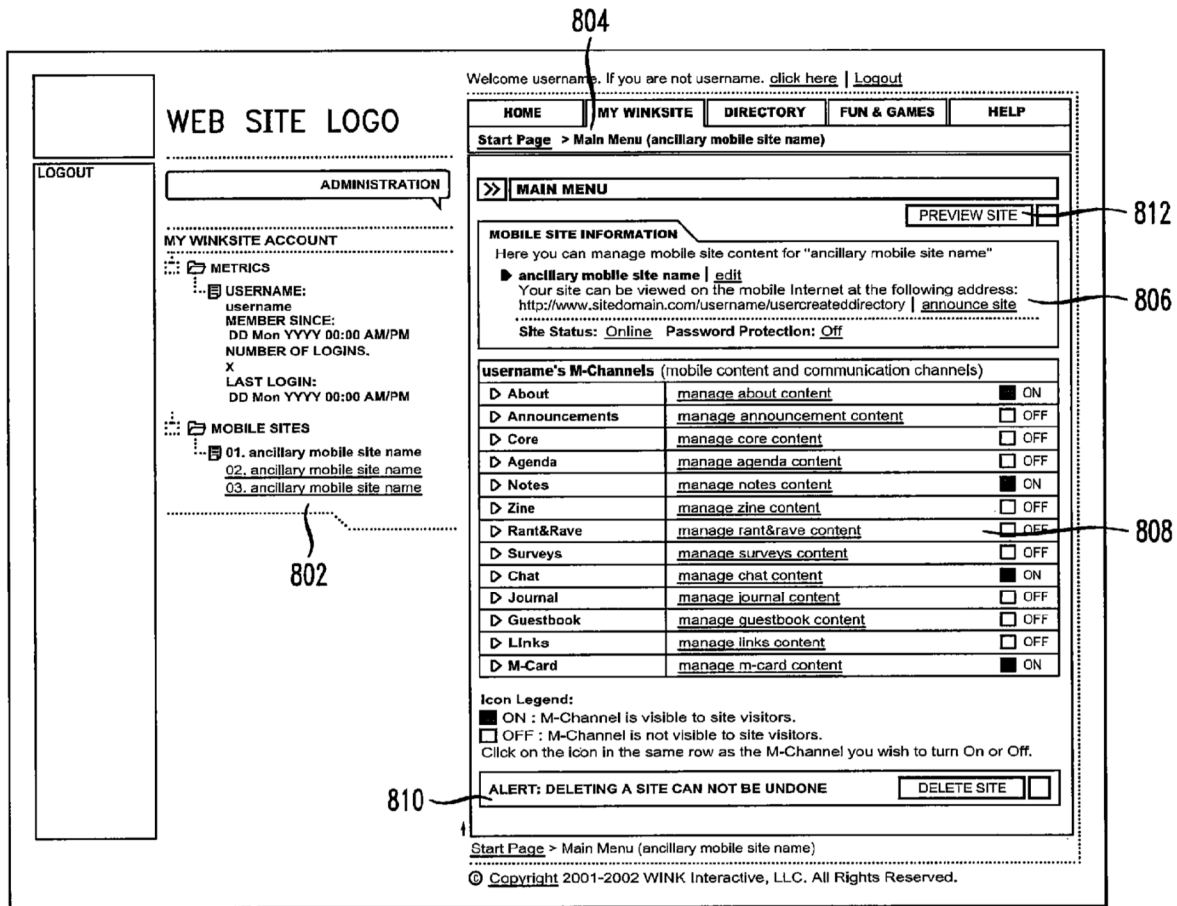
27. The Background purports to address the challenge of “facilitating the process of creating, publishing, distributing or otherwise managing information content so as to provide optimal presentation consistent with the limited display space and navigational capabilities of typical mobile devices.” (EX-1001, 1:45-50.) This section also identifies “mobile telephones, personal digital assistants (PDAs), [and] palmtop computers” as typical mobile devices. (EX-1001, 1:38-39.) Further, the '348 patent admits in this section that it is “well-known” these wireless devices “provide access to the Internet” and “support other types of wireless networking

functionality, such as messaging, distributed collaboration, and location-based services.” (EX-1001, 1:39-44.)

28. The patent discloses that the system “provides at least one content management site accessible to a system user” including “M-channels” which “allow unsophisticated users to easily and efficiently author message data or other types of information content to be made accessible via a collaborative workspace, a data mailbox, a collaborative community, or other type of mobile site.” (EX-1001, 5:27-28, 8:30-35.) Such mobile sites may be associated with “a group comprising multiple members having a common interest,” (EX-1001, 6:39-41), “an event,” (EX-1001, 6:60-65), “a game,” (EX-1001, 7:42-43), or “a user of IM, SMS, MMS, email or other type of messaging service,” (EX-1001, 7:54-56), among other associations. (EX-1001, 6:39-8:25.)

29. The main menu page in this example includes information identifying user account information and the particular mobile sites associated with that user, page navigational links, mobile site information associated with a selected one of the mobile sites associated with the user, M-channel information, and a delete site field. (EX-1001, 14:5-11.)

FIG. 8



'348 patent, Figure 8

30. The '348 patent provides examples of M-channels:

Examples of M-channels suitable for use in the illustrative embodiment include channels denoted herein as mobile ID/business card (also referred to as a "contact" M-channel), announcements, chat, events, guest book, diary/journal, bookmarks/links, discussion forum, survey/poll, newsletter/zine, notes, email, address book, contribute/donate, mobile volunteer management, company directory, in/out board, field reports, feedback, form builder, live data/in-out syndication, mobile document library, products catalog/shopping cart, services catalog/shopping cart, appointments, task list/assignments, promotions, offers, coupons, sweepstakes, contests, photo blog, etc.

(EX-1001, 8:46-57.)

B. Level of Ordinary Skill in the Art

31. I understand that certain issues relating to the validity of the '348 patent must be judged from the perspective of a person of ordinary skill in the relevant art, as I discuss below. I have been asked to define the level of a “person of ordinary skill in the art” or “POSITA” at the time the alleged invention as claimed was made. In deciding the level of ordinary skill, I have considered the following factors, which I have been informed are relevant to the determination:

- levels of education and experience of persons working in the field;
- types of problems encountered in the art;
- prior art solutions to these problems;
- rapidity with which innovations are made; and
- sophistication of the technology.

32. In my opinion, a POSITA would have a bachelor’s degree in electrical engineering, computer science, or similar field, with two years of experience in developing and implementing network-based computer systems that interact with mobile devices, such as systems for storing and retrieving information over the Internet or communicating using the Web using wireless mobile devices. A person could also have qualified as a POSITA with some combination of (1) more formal

education (such as a master's of science degree) and less technical experience, or (2) less formal education and more technical or professional experience.¹

C. Prosecution History

33. During prosecution, the Examiner rejected pending claims 1-20 for double patenting over U.S. Patent No. 9,619,578. (EX-1002, 156-58.) In response, the applicant canceled all pending claims and filed new claims 21-40, arguing that this amendment overcame the double patenting rejection. (EX-1002, 220-25.) The Examiner allowed the claims. (EX-1002, 233.)

D. Claim Construction

34. I understand that “claim construction” is the process of determining a patent claim’s meaning. I understand that the Patent Office applies the same claim construction standard used in district courts which seeks to give claim terms their plain and ordinary meaning to a POSITA at the time of the claimed invention in view of the claims, specification, and prosecution history. I also understand that if the patent applicant gave a term a special meaning in the specification or during prosecution, then the special meaning should be used.

¹ I understand that PO did not dispute this characterization of a POSITA in the Meta-MDT-IPR.

35. I understand that in the Meta-MDT-IPR and the co-pending district court litigation, *Mobile Data Techs. LLC v. Meta Platforms, Inc.*, No. 3:24-CV-00896-WHA (N.D. Cal.) (transferred from No. 7:22-cv-00244-ADA-DTG (E.D. Tex.)) (“MDT-Meta-Litigation”), Meta and PO have taken the following claim construction positions reproduced below. (*See* EX-1009, 2-3; EX-1010, 9-16; EX-1011, 2-5.)

36. For purposes of my analysis here, I do not believe express claim constructions are necessary for the terms of the challenged claims, because the prior art renders the claims obvious under the proposed constructions identified above or any other reasonable construction. My analysis discusses the proposed constructions and explains why, under each of them, the limitations are disclosed and rendered obvious by the prior art.

1. “Mobile Device”

37. I dispute PO’s narrow Meta-MDT-IPR construction because it is contrary to the express definition in the specification. (*See, e.g.*, EX-1001, 4:45-48 (“The term ‘mobile device’ as used herein is intended to include, without limitation, any type of portable information processing device capable of being configured for communication over a network.”).) I apply the plain meaning for the term which is consistent with Meta’s Meta-MDT-IPR and MDT-Meta-Litigation constructions.

MDT-Meta-Litigation	
PO	plain and ordinary meaning; alternatively, “a piece of handheld equipment” (EX-1009, 3)
Meta	“any type of portable information processing device capable of being configured for communication over a network, including but not limited to a mobile telephone, a personal digital assistant (PDA), a palmtop computer, a hand-held computer, a laptop computer, a tablet computer, a global positioning system (GPS) receiver or other GPS-based navigational device, an MP3 player or other type of audio player, a pager, a watch or other timepiece, a camera, or a portable game player” (EX-1009, 3)
Meta-MDT-IPR	
PO	“a portable device with limited display space and limited navigational capabilities that connects to a mobile site and/or mobile channel via a wireless network” (EX-1010, 9)
Meta	construed based on express definition: “The term ‘mobile device’ as used herein is intended to include, without limitation, any type of portable information processing device capable of being configured for communication over a network” (EX-1011, 2)

2. “Web-Based Shared Information Channel”

38. I understand that Meta and PO agreed to the construction “a medium for transferring information accessible to more than one user via the web” for the purpose of the Meta-MDT-IPR. I further note that the term “channel” has different meanings based on the context in which it is used. For example, in the context of an Internet Relay Chat (IRC), a channel is “a named, topical-focused forum where you can chat in real time with other computers.” (EX-1028, 4.) For media pushed to a user device, the term “channel” is “a named link to a network-based transmitter to

which a user can tune.” (EX-1028, 4.) The agreed upon construction uses the term in a manner consistent these exemplary meanings.

IV. GROUND 1: Combination of Randall and Forsyth Renders Claims 1-2, 6-9, 12-14, and 17-18 Obvious

A. Overview of the Combination

39. The combination of WO 02/17652 to Randall, et al. (“Randall”; EX-1005) and U.S. Patent 7,047,030 to Forsyth, et al. (“Forsyth”; EX-1006) discloses every limitation of claims 1-2, 6-9, 12-14, and 17-18. Randall and Forsyth were both assigned to Symbian Limited (“Symbian”) and describe different aspects of functionality provided by Symbian.

40. Symbian was a company jointly owned by Nokia, Ericsson, Motorola, Matsushita (Panasonic) and Psion. (Allin, 1.) “The nucleus of the company was formed from Psion Software” and the “Symbian [operating system (“OS”)] is an evolution of Psion’s EPOC Release 5.” (Allin, 1.) Symbian provided technical documents describing use of its OS devices in a wireless client-server infrastructure that supported a wide variety of application/services. Such a client-server infrastructure is described in Randall which along with Forsyth describes use of this infrastructure to provide the Forums service.

41. Randall is directed to an “open, universal data infrastructure for wireless information devices” used within a wireless client-server infrastructure. (See Randall, 3:10-11.) Randall’s data infrastructure is designed for use “by

application developers to write new applications by extending the attributes of the database” which forms the core of the data infrastructure, “using a *standard protocol*, as opposed to a closed and proprietary protocol.” (Randall, 3:10-13 (emphasis by italics in original).) One application discussed in Randall using its data infrastructure is Forums. (Randall, 40:15-41:14.)

42. Forsyth is directed to a “group communication method” using a “group object” to specify identities of group members. (*See, e.g.*, Forsyth, 1:15-16, 2:17-27.) Forsyth’s “group object” is application independent and as such can be created in one application and then immediately used in other applications to specify a group for group communication. (Forsyth, 24:32.) Forsyth describes use of its “group objects” by Forums. (*See, e.g.*, Forsyth, 2:41-60.) Forsyth provides a detailed discussion of Forums enhanced through the use of group objects and presents numerous use scenarios of this enhanced version of Forums. (*See, e.g.*, Forsyth, 5:35-7:13 (Group Based Text Messaging (Scenario 1)), 7:18-57 (Discussion of Photos (Scenario 2)), 7:58-9:4 (Social Scheduling (Scenario 3)), 9:5-35 (Digital Memento from a User’s Birthday (Scenario 4)).)

43. I describe both Randall and Forsyth in further detail below.

1. Randall

44. Randall published on February 28, 2002. (Randall, Bibliography Page (43).)

45. Randall describes that a “large number of entirely new applications are [] being developed to take advantage of the powerful conflux of personal communications, wireless information transfer and computing made possible by the Symbian platform.” (Randall, 1:26-28.) Many applications “are client-server based (with the wireless information device itself constituting an advanced client), transferring information to and from servers, which are often internet or WAP servers.” (Randall, 1:28-30.) Randall explains that “a major barrier to the fast and efficient design and deployment of applications needing access to shared content is the need to custom build the data sharing infrastructure for each new application.” (Randall, 2:25-27.) Randall therefore presents “an open, universal data infrastructure for wireless information devices which can be used by application developers to write new applications by extending the attributes of the database using a *standard protocol*, as opposed to a closed and proprietary protocol.” (Randall, 3:10-13 (emphasis by italics in original).) Accordingly, “a huge range of new applications requiring access to shared content” can “be rapidly and cheaply constructed and rolled out since the data infrastructure which allows content to be shared is pre-fabricated.” (Randall, 3:17-19.)

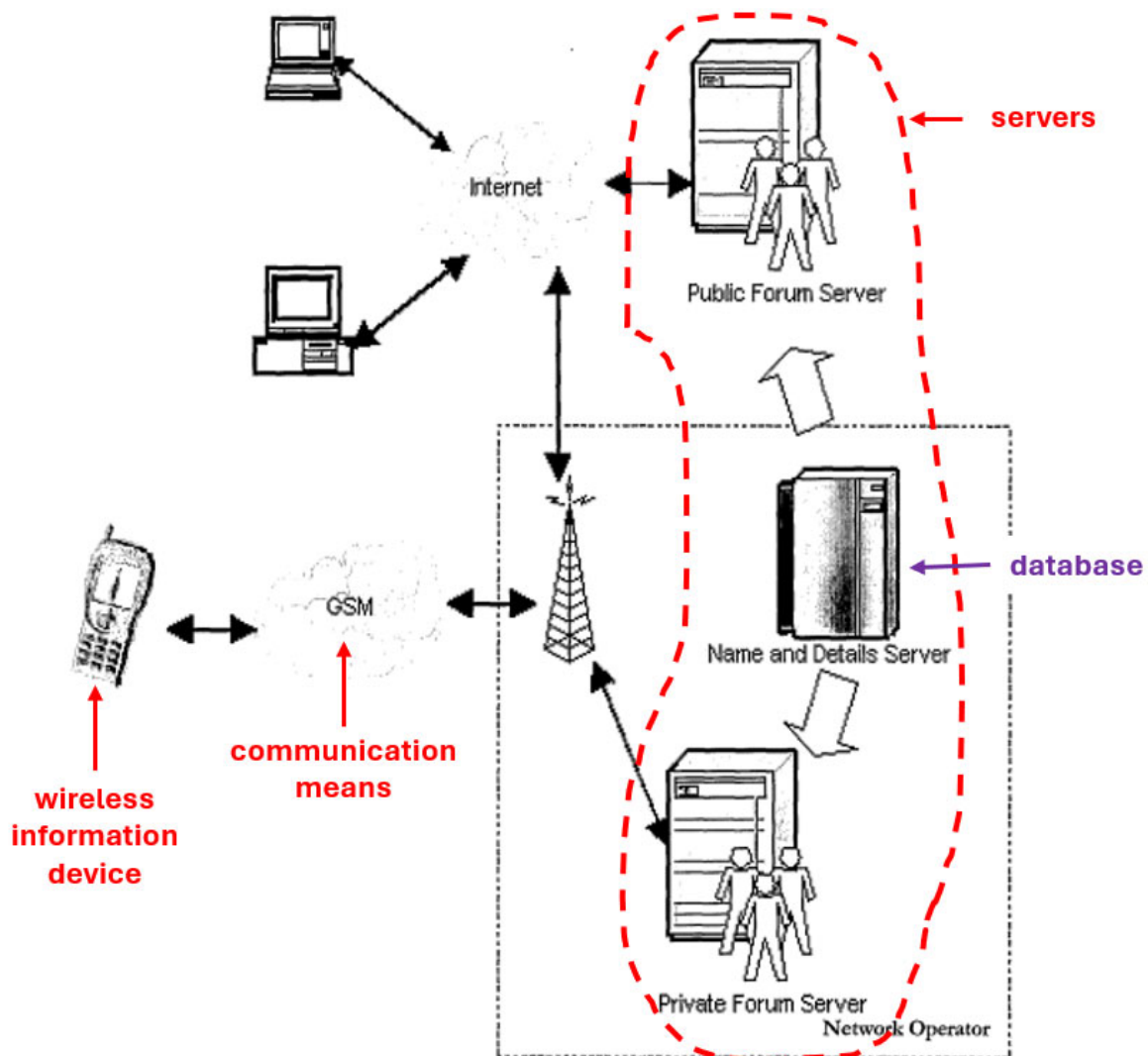
46. Randall also discusses various applications and services using a client-server framework with Symbian’s data infrastructure. One such service is Forums. (See, e.g., Randall, 36:6-9.) Randall explains that “Forums also known as chat rooms

are likely to be very popular on wireless devices, especially in light of the success of SMS.” (Randall, 40:16-17.) Forums “allows several people to be part of a ‘channel’ or room, which is usually themed; for instance supporters of a football team may meet in a channel devoted to that team to discuss the team.” (Randall, 40:17-19.) In use, a “user logs on to a forum” and “he or she will have a name associated with them, it may be a nickname instead of their real name.” (Randall, 40:28-30.) “Once they are logged on they can exchange and receive messages with those also on the channel.” (Randall, 41:1-2.)

47. Randall illustrates an exemplary network infrastructure supporting Forums in Figure 4 below². The Symbian infrastructure, through services like Forums, “acts in effect like a fully personalised web portal, yet with the information links not consolidated in one general area, but instead distributed to the domains in which they are most likely to be relevant to a user.” (Randall, 13:22-24.). The Symbian infrastructure, illustrated below, includes “(a) internet servers hosting extensible databases; (b) wireless information devices which can access information on these databases; and (c) applications resident on these devices which present a common set of APIs to plug-ins from commercial service providers.” (Randall, 7:16-19.) That is, to offer the Forums service, a Forums application resides on the wireless device and a corresponding program exists on the server. The client and server

² Unless otherwise noted, all annotations to Figures have been added.

communicate via a “communication means” (i.e., set of protocols). As shown, Symbian Forums also supports the ability for non-mobile (fixed) computing devices to connect to the Forums servers over what is labeled the “Internet.” I provide an overview of wireless information devices, servers, communications means, and the extensible database below.



Symbian Forums—Randall, Figure 4

a. Client Devices: Wireless Information Devices

48. Wireless information devices used in Forums “run[] applications which access data by interacting with data component plug-ins supplied by commercial data services providers using a standardised set of APIs to access data.” (Randall, 9:6-8.) Randall does not specify the implementation details of the client-side application. However, based on Randall’s disclosure of GSM and WAP, a POSITA would have understood the client-side application is either (1) a standalone application supporting WAP or GSM-messaging protocol (discussed below) or (2) a web browser (such as a WAP microbrowser). Wireless information devices may also “access the information held on the extensible databases running on central servers ... without the plug-ins.” (Randall, 9:11-13.) The “wireless information device (as well as web browsers) can access an entity’s database by sending to the server an unchanging pointer or key (an ‘ADS Number’) which is unique to that entity.” (Randall, 9:13-15.) Randall’s “ADS numbers are typically constructed using text strings and can be though[t] of as defining a namespace.” (Randall, 9:17-18.) The ADS number “in one implementation [is] an address on a web server – for example www.indirect.com/Alice.” (Randall, 64:25-26.)

b. Servers

49. A Symbian Forums server “handle[s] all aspects of **storing and forwarding messages**³ to the intended recipients.” (Forsyth, 3:20-22; 6:9-10 (“message server stores ... and forwards a copy of the message to each of the people on the address list”).) Randall describes the server-side architecture as the “ServML” Framework. (Randall, 45:1-7.) ServML “embraces existing standards and initiatives” and “uses standard data transports such as WAP or http for data access.” (Randall, 45:14-15.) “Although the [Symbian] server architecture is in many ways identical to the present Internet, the usage model is quite different.” (Randall, 46:7-8.) Instead of passive data-viewing, “the Internet and its servers can be used by a mobile device to deliver enchanting services that far surpass the present PC-Internet model.” (Randall, 46:8-10.) “The result will be the ability of wireless information devices to interact closely with applications and data on the Internet to deliver high quality services.” (Randall, 46:12-13.) That is, in services like Forums, a program component exists on the server to provide the end-to-end service.

c. Communication means

50. Randall uses “existing transports” (communication means) for client-server communication such as “WAP to access the services on the server side” and “standard IP formats such as MIME, SMTP and HTTP” to “enable compatibility

³ Unless otherwise indicated, all emphasis by bold has been added.

with Internet Messaging systems.” (Randall, 58:23-27.) In addition to WAP, Randall also discloses use of GSM-SMS for transport over the wireless network. (*See* Randall, 12:11-15 (disclosing that a server could “send a SMS”), 14:10-11 (“This form of data transfer could be via SMS or packet delivery in packet based systems.”), 15:16-17 (“Alice’s device directly transfers this data to Bob using an appropriate mechanism (such as SMS or IPv6 data packet) without any server intervention.”); *see also* Randall, 1:11-13 (“It includes devices able to communicate in any manner over any kind of network, such as GSM ...”), Figure 6.)

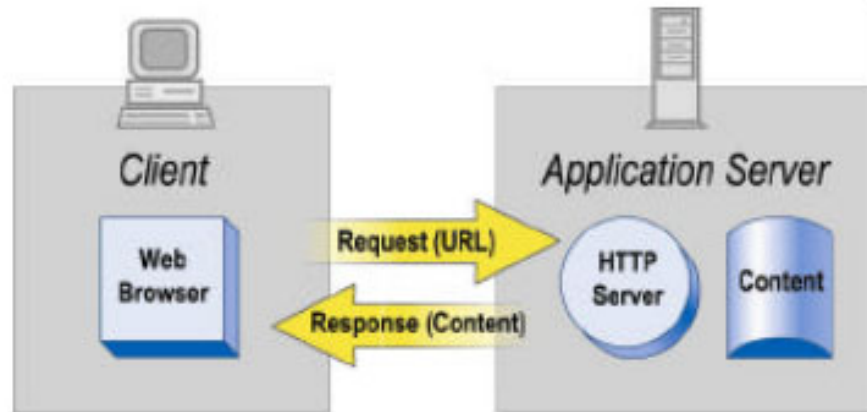
51. The disclosure of HTTP indicates that the communication means, from non-mobile computers shown in Figure 4, is the world-wide web (WWW) because HTTP operating on top off TCP/IP is the most commonly used protocol on the web and because Randall mentions the “web” at various places. (*See, e.g.*, Randall, 8:25-83 (disclosing “internet servers hosting extensible databases with attributes remotely extensible by application authors” where “[t]he database contains information from or relating to many different entities” and “in effect represents a web page containing information specific to that entity”), 64:25-28 (disclosing one implementation where “[a]n ADS Number is ... an address on a web server” (e.g., www.indirect.com/Alice) and “[t]his address is in effect a pointer to entity specific data held on the web server” (e.g., Alice’s information)); WAP Architecture, 13.)

52. I discuss the WWW, WAP, and GSM-SMS communications means referenced in Randall below. I note that Randall does not provide details of these means because each was covered in standards documents and would have been well within the general knowledge of a POSITA by June 2002.

i. **WWW**

53. The Internet World-Wide Web (WWW) architecture provides “a very flexible and powerful programming model.” (WAP Architecture, 12.) Applications and content are “*browsed* by applications known as *web browsers*.” (WAP Architecture, 12 (emphasis by italics in original).) I note that browsers are not the only programs that can initiate valid web transactions; any program that can create a TCP/IP connection and send a valid protocol request can get data from a web server. All servers and content on the WWW are named using an Internet-standard Uniform Resource Location (URL). (WAP Architecture, 12-13.)

54. As shown in Figure 1 from the WAP Architecture Specification published by the WAP Forum on July 21, 2001, a client device initiates a web transaction by making a request to a URL (e.g., through the web browser). If the requested content exists, it is returned by the web server (HTTP server) and displayed through the browser.

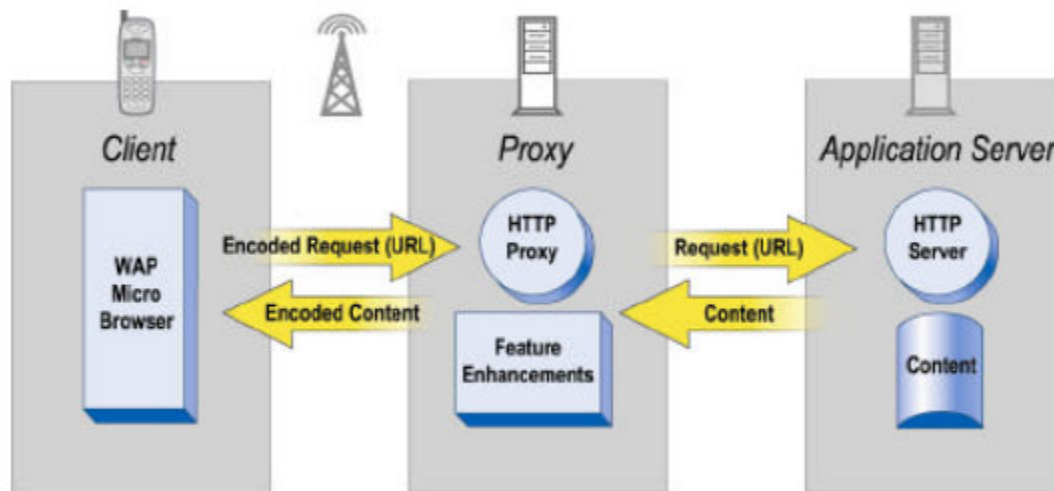


WAP Architecture, Figure 1

ii. WAP

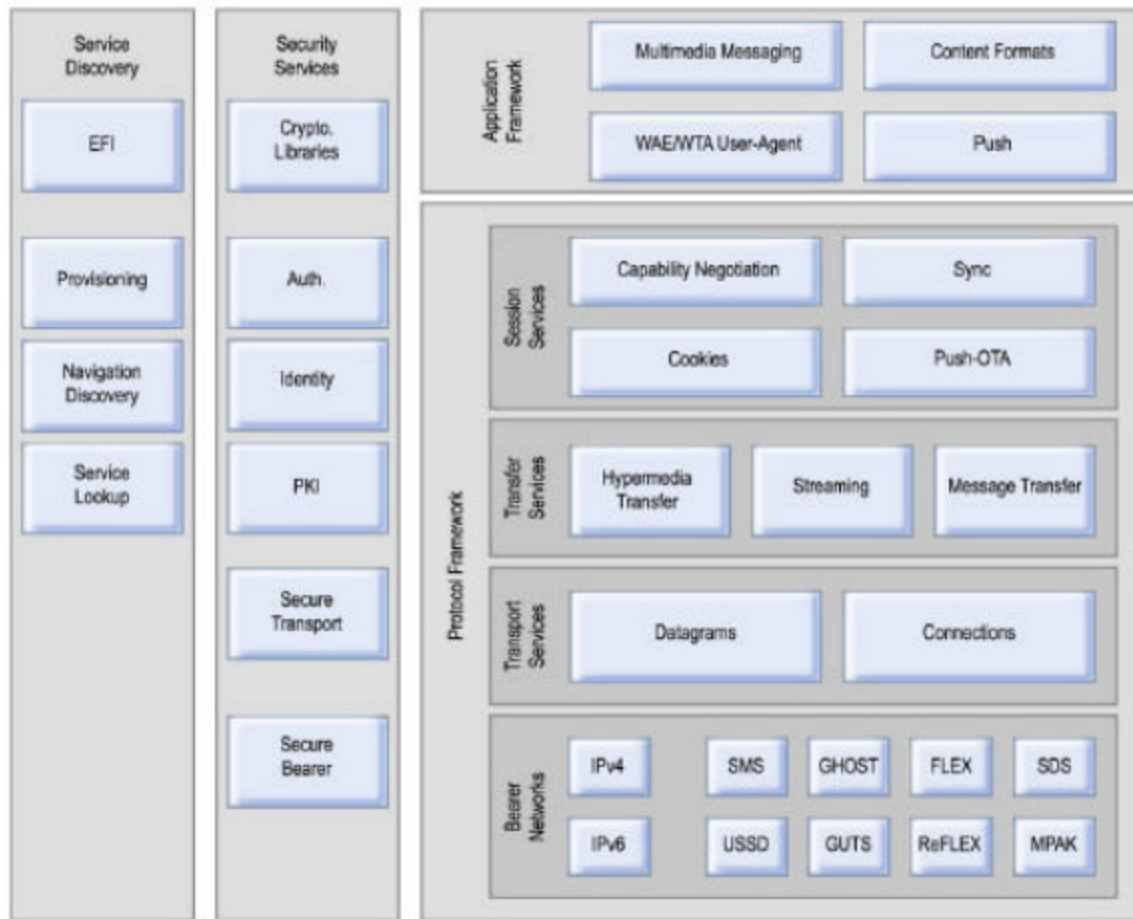
55. “WAP content and applications are specified in a set of well-known content formats based on the familiar WWW content formats.” (WAP Architecture, 13.) “Content is transported using a set of standard communication protocols” which are also “based on the WWW communication protocols.” (WAP Architecture, 13.) As shown below in WAP Architecture Figure 3, a WAP microbrowser “in the wireless terminal co-ordinates the user-interface and is analogous to a standard web browser.” (WAP Architecture, 13.) However, as I noted above for the WWW, a client application can also be used instead of a microbrowser provided the application uses the WAP protocol stack to communicate with the server. WAP also provides a gateway (labeled as proxy) which “translates requests from a wireless protocol stack (e.g., the WAP 1.x stack—WSP, WTP, WTLS, and WDP) to the WWW protocols (HTTP and TCP/IP).” (WAP Architecture, 14.) The WAP proxy “allows content and applications to be hosted on standard WWW servers.” (WAP

Architecture, 14.) WAP Architecture specification explains the “nominal use of WAP will include a web server, a WAP proxy and WAP client.” (WAP Architecture, 14.)



WAP Architecture, Figure 3

56. The WAP Stack, illustrated in WAP Architecture Figure 7 (below) is a layered protocol stack with each layer “provid[ing] a set of functions and/or services to other services and applications through a set of well-defined interfaces.” (WAP Architecture, 18.) At the lowest layer are the “Bearer Networks” which include short message (SMS), circuit-switched data, and packet data (e.g., IPv4, IPv6). (See WAP Architecture, 18.) The transport service layer provides datagram transport via the Wireless Datagram Protocol (WDP). (WAP Architecture, 19.)

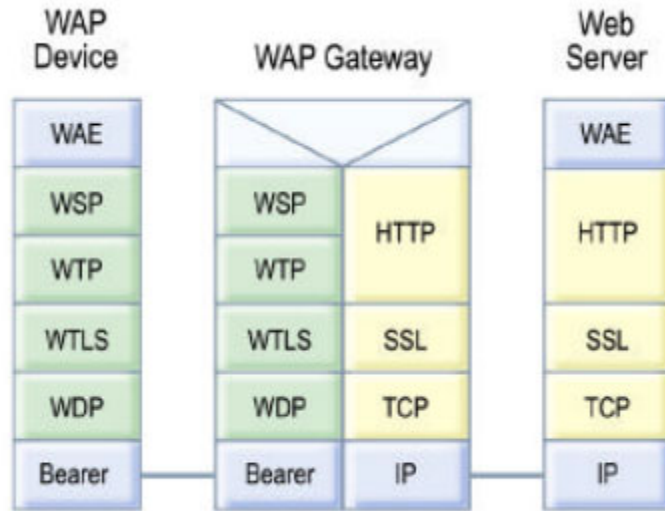


WAP Architecture, Figure 7

57. The transfer services provide streaming and message transfer via Wireless Session Protocol (WSP), Wireless Transport Protocol (WTP), and e.g., MMS Encapsulation protocol. (*See, e.g., WAP Architecture, 19.*) Session services provide “for the establishment of shared state between network elements.” (WAP Architecture, 19.) The application framework “provides a general-purpose application environment based on a combination of World Wide Web (WWW), Internet and Mobile Telephony technologies” with a primary objective “to establish

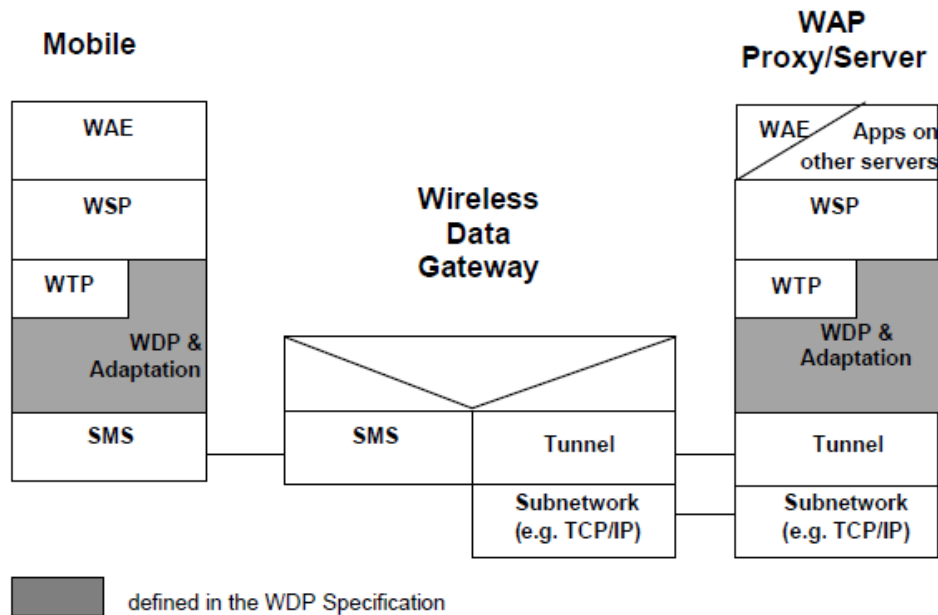
an interoperable environment that will allow operators and service providers to build applications and services that can reach a wide variety of different wireless platforms in an efficient and useful manner.” (WAP Architecture, 20.) The application framework includes multimedia messaging support, support for well-defined data formats such as color images, audio, video, animation, etc. and push service for network initiated data transmission to “applications resident on WAP devices.” (WAP Architecture, 20.)

58. The following Figure from WAP Architecture is an illustrative configuration of a WAP 1.x gateway depicting the protocol stack at a WAP device, a WAP gateway, and a Web Server. As shown, the WAP gateway has an interface supporting the WAP stack allowing communication over a wireless network and an interface supporting the TCP/IP/HTTP stack allowing communication over the Internet.



WAP Architecture, Figure 8

59. The Wireless Datagram Protocol specification, issued June 14, 2001 by the WAP Forum (“WDP”; EX-1014) provides the protocol profiles for operating WDP between a mobile device and server over GMS, as specified by Randall. (*See* WDP, 18-20.) I reproduce Figure 4-4 which illustrates the protocol profile for the WDP layer when operating over the GSM-SMS bearer service. The other profiles in WDP specification such as GSM-USSD, GSM Circuit-Switched Data, GSM-GPRS, and GSM Cell Broadcast are equally applicable.



WDP Specification, Figure 4-4

iii. GSM-SMS

60. The “technical realization of short message service (SMS)” for GSM is set forth in ETSI TS 123 040 (“GSM SMS Standard”; EX-1015). I refer to version 3.6.0 of this standard released in September 2001. In GSM-SMS messaging, a mobile station can either send messages (referred to as mobile originating) or receive messages (referred to as mobile terminating). Mobile originated short messages are sent to a server, called the Service Centre, “which acts as a store and forward centre for short messages.” (GSM SMS Standard, 6.)

d. Database

61. The internet servers of the Symbian infrastructure “host[] extensible databases with attributes remotely extensible by application authors using *a standard*

protocol over a network.” (Randall, 8:25-26 (emphasis by italics in original); *see* Randall, 4:9-12 (“Because the remote server acts as a data repository open to any application which can structure data in conformance with a meta-language schema, it is capable of being used as the central resource which allows data sharing for any new application.”).) The “database contains information from or relating to many different entities” and “is organised into information fields which an entity can complete or have completed.” (Randall, 8:26-28.) “Information is placed onto the database by an entity so that it can be readily shared with other entities: the database in effect represents a web page containing information specific to that entity.” (Randall, 8:29-31.)

62. The system database “is at the heart of much of the [Symbian] System’s extensibility.” (Randall, 66:3.) “Each piece of data on the server (the ‘i-server’) has an associated tag (or name) which defines its meaning.” (Randall, 66:3-4.) The tags, referred to as “i-tags”, “live under a unique category name that is allocated by Symbian to ensure that the global namespace is not polluted.” (Randall, 66:4-6.) Each piece of data further has “an associated list of groups (‘i-Groups[’]) allowed to access the data.” (Randall, 66:9-10.) As shown in Randall’s Figure 4, the Forums service accesses the database when processing received messages from client devices.

63. Randall's Table 1 (reproduced below) provides examples of "the kinds of information fields which are possible for an individual." (Randall, 8:28-29.) Table 1 "is an example application view" of the i-Data for a user, Alice. (Randall, 66:17.) "Some information is entered by Alice (e.g., her name). Other information is entered automatically (e.g., location information from Bluetooth pods)." (Randall, 66:18-19.) A view of this database is "provided on Alice's mobile device to allow her to manage her data." (Randall, 66:19-20.) Although Randall's example uses a person, Randall teaches that other entity types can have a record stored on the database.

Table 1

Alice's iData			
Field/Attribute	Category	Details	i-Groups
First name	personal	Alice	all
Family name	personal	Edwards	all
Title	work	European Marketing Manager	all
Company Name	work	Wireless Information Device gets R Us	all
Company Address	work	1 Science Park Rd, London, N1	all
Company E-mail	work	alice.edwards@Wireless Information Device getsrus.com	business 1
Company switchboard	work	0207 200 2000	all
Company Direct	work	0207 200 2012	business 1
Mobile Phone	work	0840 1234 567	business 1, friends
Home Phone 1	work	0208 341 1234	friends, family
Home Address	work	25 The Gables, Hampstead, London, NW3	family
My photo	photos		friends
Childhood photo	photos		family
Home note	notice	Sorry about dinner ☹	partner
Work note	notice	In a meeting with Tim till 7pm	work 1
My mood now	mood	Very tired	all
Tel Call Subject		"Dinner Tonight"	
Bluetooth:	location	Bluetooth pods 1000-1020 ...Sentinel room 2...	
GPS	location	London W1, Seymour St.	partner
Hobby	preferences	Photography, travel	friends
Book	preferences	Maverick	friends
AlbumOfTheWeek	InstaPoll		friends

Randall, Table 1

2. Forsyth

64. Forsyth issued on May 16, 2006 from U.S. Application 10/476,261, which is a National Stage Entry of PCT/GB02/02046, filed on May 2, 2002.

65. Forsyth enhances the functionality of the Symbian infrastructure through use of group objects which provide “a group communication method for a wireless information device.” (*See* Forsyth, 1:15-16.) Specifically, “the end-user of the device defin[es] the identities of the end-user[s] that form group.” (Forsyth, 2:4-5.) A group object is then constructed “that defines or references members of the group in a way that enables communication to take place from the device and all other members of the group.” (Forsyth, 2:6-9.) This group object is application independent. It can be “used by a first application running on the device to enable communication from the device to be made automatically to all members of the group.” (Forsyth, 2:10-12.) Another application running on the device, “unrelated to the first application,” can also use the same group object “to enable communication from the device to be made automatically to all members of the group.” (Forsyth, 2:13-16.)

66. Through the use of content and application independent group objects “activities performed in different applications but which also involve the same group can re-use the same object.” (Forsyth, 5:21-23.) “In this way, a user can organise people and entities (e.g., companies, clients etc.) into different group objects and can

re-use that group object in many different applications (e.g., instant messaging, voice, e-mail, etc).” (Forsyth, 5:23-26.)

67. Forsyth describes the use of its group objects in Symbian Forums which “is designed specifically to allow current and very popular internet type services (e.g. chat/instant messaging between groups) to be handle[d] effectively between mobile devices and to enable a new generation of group based communication services.” (Forsyth, 2:40-47.) “Forums offers many advantages to group communication since it is an easy to understand messaging tool that facilitates open discussion amongst a group and allows multiple chat-style conversations to take place simultaneously.” (Forsyth, 5:26-30.) Forums described in Forsyth is the Forums application described in Randall, enhanced through the use of group objects.

68. Forsyth describes several Scenarios that illustrate the operation of group-object enhanced Forums: Group Based Text Messaging (Scenario 1), (*see* Forsyth, 5:35-7:13), Discussion of Photos (Scenario 2), (*see* Forsyth, 7:18-57), Social Scheduling (Scenario 3), (*see* Forsyth, 7:58-9:4), and Digital Memento from a User’s Birthday (Scenario 4), (*see* Forsyth, 9:5-35). Forsyth also describes numerous services, features, and functions which that can be used within each individual Forum. I discuss these Scenarios and representative services/features/functions in further detail throughout my analysis.

3. Motivation to Combine Randall and Forsyth

69. A POSITA would have been motivated to combine Forsyth’s teachings regarding the use of group objects and additional features and functions to enhance the Forums service taught by Randall. The resulting combination, utilizing Randall’s Forums network infrastructure, provides a Forums service having a client-based program and a server-based program, which utilizes Randall’s extensible database. The Forums service in the combination utilizes Forsyth’s group objects as well as the features and functions taught by both Randall and Forsyth to provide an enhanced Forums service.

70. Randall and Forsyth are both in the same field of the ‘348 patent—“network-based communication systems.” (*See* EX-1001, 1:28-30 (“The present invention relates generally to network-based communication systems, and more particularly to techniques for information content management in such systems.”); Randall, 40:16-18 (Forums are “also known as chat rooms” and “allow[] several people to be part of a ‘channel’ or room”); Forsyth, 1:15-16 (“This invention relates to a group communication method for a wireless information device.”).) Randall and Forsyth are also reasonably pertinent to problems addressed by the ‘348 patent, namely “overcom[ing] one or more of the drawbacks of” conventional techniques for content sharing for mobile devices. (*See, e.g.* EX-1001, 1:44-2:7.)

71. A POSITA would have been motivated to make the above combination because Forsyth explicitly motivates the combination. Forsyth stresses the benefits of group objects noting that its “invention is founded on the insight of providing an object which defines solely the identities of members of a group” and “as such, it is application (and hence also content) independent.” (Forsyth, 2:24-27.) “This means that a group created in one application (e.g. for text based instant messaging) can immediately be used in other applications (e.g. a diary/agenda application could use that same group as the recipient list for an invitation to a meeting).” (Forsyth, 2:27-32.) “Similarly, data specifically created for one group and in one application can be re-used in a different application and the data viewed appropriately for that different application.” (Forsyth, 2:34-37.) Forsyth further describes the “strengths” of Forums application utilizing group objects “over conventional communications.” (*See* Forsyth, 2:54-57.) These relative strengths are illustrated in Forsyth’s Figure 1 (reproduced below).

Capability:	Can you create a discussion between group members on your own device? (Important since it facilitates setting up a group discussion)	Push delivery? (Push is more convenient to mobile users)	Is it possible to retain a long term record of exchanges between group members? (An important attribute for many new kinds of services)	Can you deliver messages to all members of a group, or is it restricted to one to one? (Clearly critical to group based messaging)	Do all group members see the same, unitary message thread, or are there instead many separate individual messages? (A single, unitary message entity (e.g. a thread) makes message organisation and navigation far easier.)	If a recipient is off-line (e.g messaging app not open), are they alerted anyway? Potentially very important for mobile useage because of the high proportion of time users may not be on-line (i.e. actively using their messaging application).
Web bulletin board	No	No	Yes	Yes	Yes	No
Chat/instant messaging	Yes	Yes	No	Yes	Awkward	No
Group e-mail	Yes	No	Awkward	Yes	No	No
SMS	Awkward	Yes	No	Awkward	No	Yes
Forums	Yes	Yes	Yes	Yes	Yes	Yes

Table 1

Forsyth, Figure 1

72. Therefore, a POSITA would have been motivated to combine Forsyth's teachings with Randall's Forums provided on the Symbian network infrastructure with an extensible infrastructure to obtain the advanced capabilities provided by Forsyth.

73. Additionally, a POSITA when considering Randall's Forums service, would have been motivated to search for other references directed to Forums and its enhancements. As I noted above, Forsyth was originally assigned to Symbian. A POSITA would have been motivated particularly to search for references associated with Symbian for implementation details and enhancements and would have been led to Forsyth.

74. Finally, the combination is nothing more than the application of a known technique (Forsyth's group objects, features and functions) to a known method/product (Randall's Forums service implemented with extensible database infrastructure) which was ready for further improvement.

75. A POSITA would have had a reasonable expectation of success in the combination and the results of the combination would have been predictable because both references are directed to the same service, Forums, are based on devices using the Symbian OS and use features and functionality associated with Symbian. The Symbian operating system was well-known and Symbian offered many technical developer resources prior to the earliest possible priority date of the '348 patent. (*See, e.g.*, EX-1017; Allin, 4-6, 229-31; Jipping, 11-14.)

B. Independent Claims 1, 13, and 17

76. The '348 patent includes three server-side independent claims—an apparatus claim (claim 1), a method claim (claim 17) and a computer program

product (“CPP”)-style claim (claim 17) having substantially overlapping processing limitations ([1C]-[1E]/[13A]-[13C]/[17A]-[17C]). Because of the overlap, I address these limitations together in §IV.B.3. The unique limitations of the claims are provided in the table below.

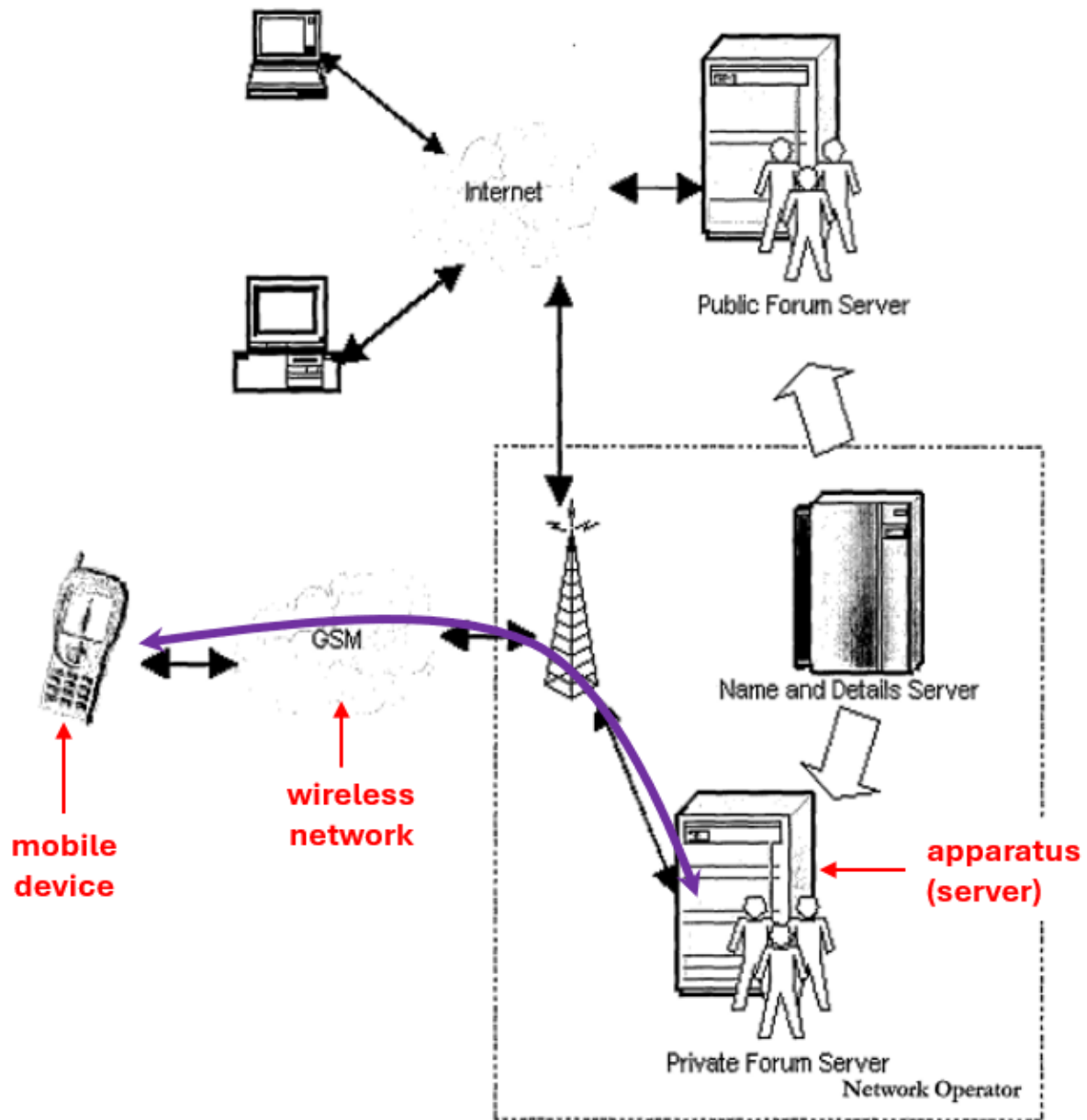
Claim 1	Claim 13	Claim 17
[1P] An apparatus comprising:	[13P] A method comprising:	[17P] A non-transitory computer-readable storage medium having embodied therein executable code of one or more software programs, wherein said executable program code when executed by a processing element causes said processing element:
[1A] a processing element comprising a processor coupled to a memory; and		
[1B] a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network;		
the processing element being configured:		

1. Preambles [1P]/[13P]/[17P]

a. [1P]: “apparatus”

[1P] An apparatus comprising:

77. The combination of Randall and Forsyth discloses a server which is an “*apparatus*” [23P]. As illustrated in Randall’s Figure 4, the Forums network infrastructure includes a server hosting Forums, such as Private Forums. In Forums, the server “handles contacting each group member, storing messages, allowing message to be read, sending, receiving and distributing messages.” (Forsyth, 3:28-31, 3:31-33 (“The central server can also act as a store for resources which group-members may wish to discuss and share (e.g. personal information, personal photographs, music, web sites etc).”).)



Symbian Forums—Randall, Figure 4

b. [13P]: “method”

[13P] A method comprising:

78. The combination of Randall and Forsyth discloses a method for performing the actions recited in limitations [13A]-[13C] discussed in §IV.B.3.

c. [17P]: “non-transitory computer-readable storage medium”

[17P] A non-transitory computer-readable storage medium having embodied therein executable code of one or more software programs, wherein said executable program code when executed by a processing element causes said processing element to:

79. Randall and Forsyth disclose that the server performs processing and therefore has a server-side program component of Forums. And although Randall depicts multiple servers hosting individual Forums and hosting the extensible database, a POSITA would have been motivated to implement the functionalities for hosting a Forum and a database on a single server to achieve cost savings by minimizing amount of network equipment and for efficiency of maintenance and updates. For example, Forsyth explains the server “handles **contacting each group member**, storing messages, **allowing message to be read, sending, receiving and distributing messages.**” (Forsyth, 3:28-31.) Randall specifically mentions “server side software” (Randall, 57:4) and “server side message handling **applications**” (Randall, 38:24). Although not explicit, a POSITA would have understood from these disclosures that the server-side Forums program is “*executable code of one or*

more software programs” which “*when executed by a processing element*” to perform the steps set forth in limitations [17A]-[17C].

80. Neither Randall nor Forsyth explicitly states that the server-side program is stored of a “*non-transitory computer-readable storage medium.*” Memory or another similar computer readable medium storing the software to be executed on the processor would necessarily be included in the mobile device. The 1994 textbook on Operating System Concepts by Silberschatz (“Silberschatz”; EX-1026) confirms this understanding. Silberschatz explains that a “computer system consists of a CPU and a number of device controllers that are connected through a common bus that provides access to shared memory.” (Silberschatz, 29-30.) Silberschatz stresses that for a computer “to do its job of executing programs,” the programs must be stored in memory. (Silberschatz, 37.)

81. To the extent this is not deemed to be inherent in a computing device running software, it would have been obvious to a POSITA and well within the POSITA’s general knowledge. I provide several examples of servers having a “*computer-readable storage medium*” below.

82. **U.S. Patent 7,802,207 to Agboatwalla et al. (“Agboatwalla”; EX-1024):** Agboatwalla describes a “computer program product” used to perform the function of “generating a customizable network user interface.” (Agboatwalla, 3:7-

9.) Its “computer program product” is “embodied on a computer readable medium” and comprises “computer code.” (*See* Agboatwalla, 42:1-38.)

83. **U.S. Patent 7,574,486 to Cheng et al. (“Cheng”; EX-1025):** Cheng describes a “method, and computer readable medium [at a proxy server] for reformatting web content into a format readable on one or more mobile device.” (Cheng, Abstract.) Cheng explicitly discloses “sets of instructions resident” in RAM that “[u]ntil required by the computer system, the set of instructions may be stored in another computer readable memory.” (Cheng, 23:63-24:1.)

84. **U.S. Patent 6,788,949 to Bansal (“Bansal”; EX-1023):** Bansal teaches the memory in a server “can be coupled to a processor 5200 and can store instructions 5400 adapted to be executed by processor 5200.” (Bansal, 7:23-26, 7:3-4 (“one or more memories 5300 contain[s] instructions”), Figure 5.) These instructions “can be embodied in software, which can take any of numerous forms that are well known in the art.” (Bansal, 7:32-34.)

85. Additionally, Pelkey and Eck which I discuss in Ground 2 discloses a computer readable storage medium in a computer which can be used as a server.

2. Server Architecture Limitations [1A]-[1B]

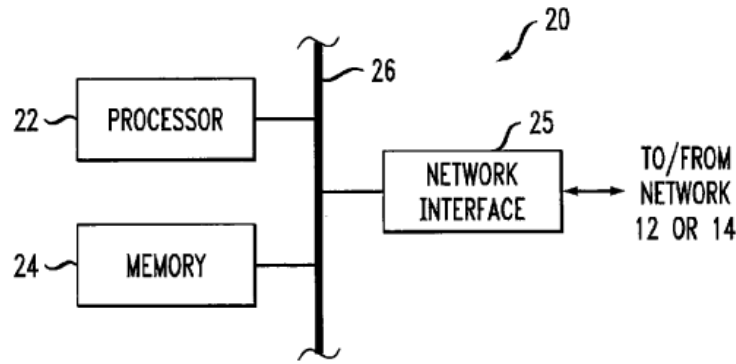
[1A] a processing element comprising a processor coupled to a memory; and

[1B] a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network;

86. “Apparatus” claim 1 further includes limitations [1A] and [1B] which recite the high-level architecture of an “*apparatus*.” Neither Randall nor Forsyth explicitly disclose the architecture of the server. However, it would have been obvious to a POSITA that an “*apparatus*” (server) includes “*a processing element comprising a processor coupled to a memory*” and a “*network interface*” based on the teachings of Randall and Forsyth in light of the general knowledge of a POSITA.

a. Processing Element and Network Interface

87. The ’348 patent provides a high-level “implementation” of an information processing element, shown in Figure 1B, applicable to servers. The implementation has only three components—a processor 22, a memory 24, and a network interface 25 which “provides an interface to the wireless network 12 or Internet 14.” (EX-1001, 5:1-19.)



'348 Patent, Figure 1B

88. Both Randall and Forsyth describe that the server performs processing actions and therefore has a “*processing element*.” For example, Forsyth explains the server “handles **contacting each group member**, storing messages, **allowing message to be read, sending, receiving and distributing messages**.” (Forsyth, 3:28-31.) And Randall specifically mentions “server side software” (Randall, 57:4) and “server side message handling **applications**” (Randall, 38:24). A POSITA would have understood that software and applications execute on “*a processor*” within the “*processing element*.” The server acts as “a store for resources which group-members may wish to discuss and share (e.g., personal information, personal photographs, music, web sites, etc).” (Forsyth, 3:31-34.) The storage at the server is “*memory*.” (See, e.g., EX-1001, 5:13-17 (memory includes “any other type of storage device”).)

89. Should PO contend “*memory*” of the “*processing element*” must store instructions executed by the processor, such memory would have been obvious, if

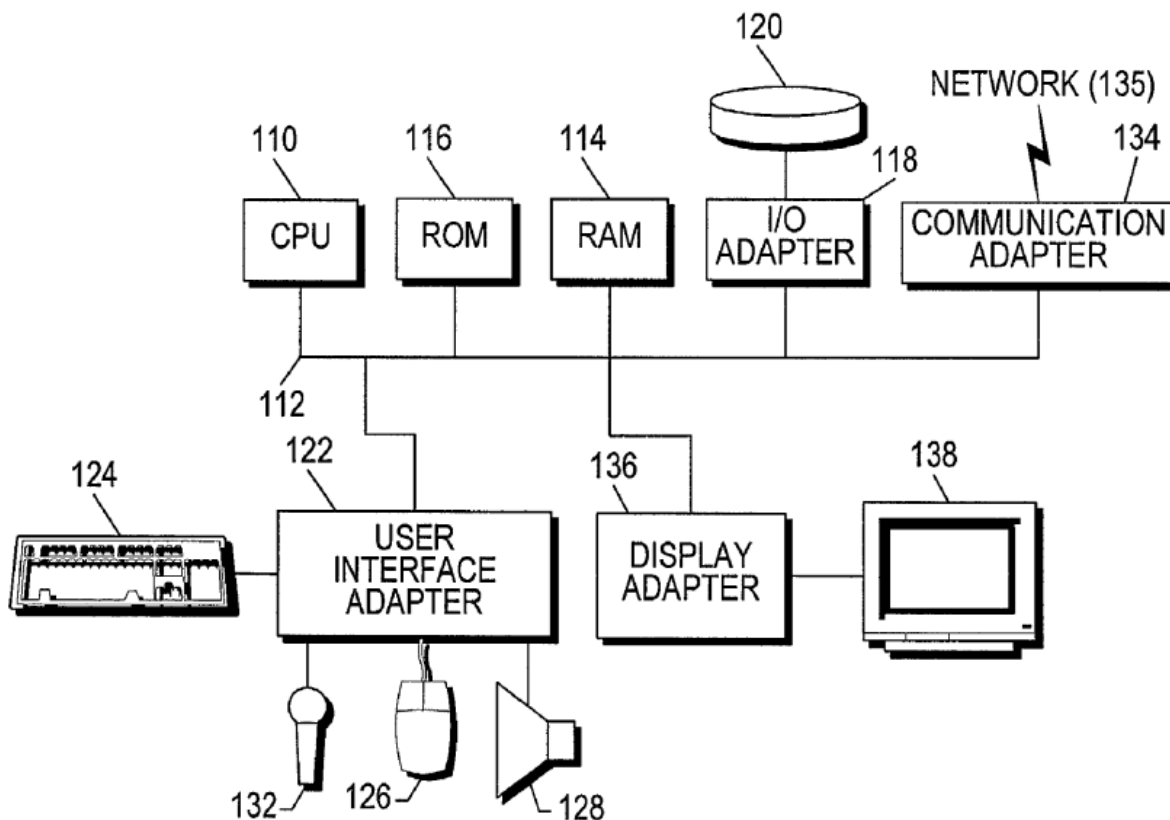
not inherent in Randall and Forsyth which both teach software running on the server. Because the software/applications executing on a processor are stored in memory and also access information stored in memory, a POSITA would have understood Randall and Forsyth further disclose or suggest the “*processor [is] coupled to a memory.*”

90. Randall and Forsyth each discloses or at least suggests to a POSITA the server includes “*a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network.*” Both Randall and Forsyth disclose the wireless devices “communicate” with the server “in any manner over any kind of network, such as GSM or UMTS, CDMA and WCDMA mobile radio, Bluetooth, [802.11,] IrDA [(infrared)] etc.” (Randall, 1:11-13; Forsyth, 1:22-25 (same).) To access these wireless networks, the server requires an interface to the network—a “*network interface.*” Indeed, Randall specifically refers to the “GSM/GPRS interface” and illustrates servers coupled to a GSM network. (Randall, 40:1-2; *see also* Randall, Figure 4.) The server in the Forums infrastructure “handles contacting each group member, storing messages, **allowing message to be read, sending, receiving and distributing messages.**” (Forsyth, 3:28-31.) To receive, store, and distribute messages, the processing element is coupled to the network interface through which these messages are received. That is, the “*network interface is coupled to the processing element and*

communicate[s] with a plurality of” wireless devices “*over at least one network* [e.g., GSM network]”. In the next section, I demonstrate that the wireless devices of Randall and Forsyth are the recited “*mobile devices*” in the next section.

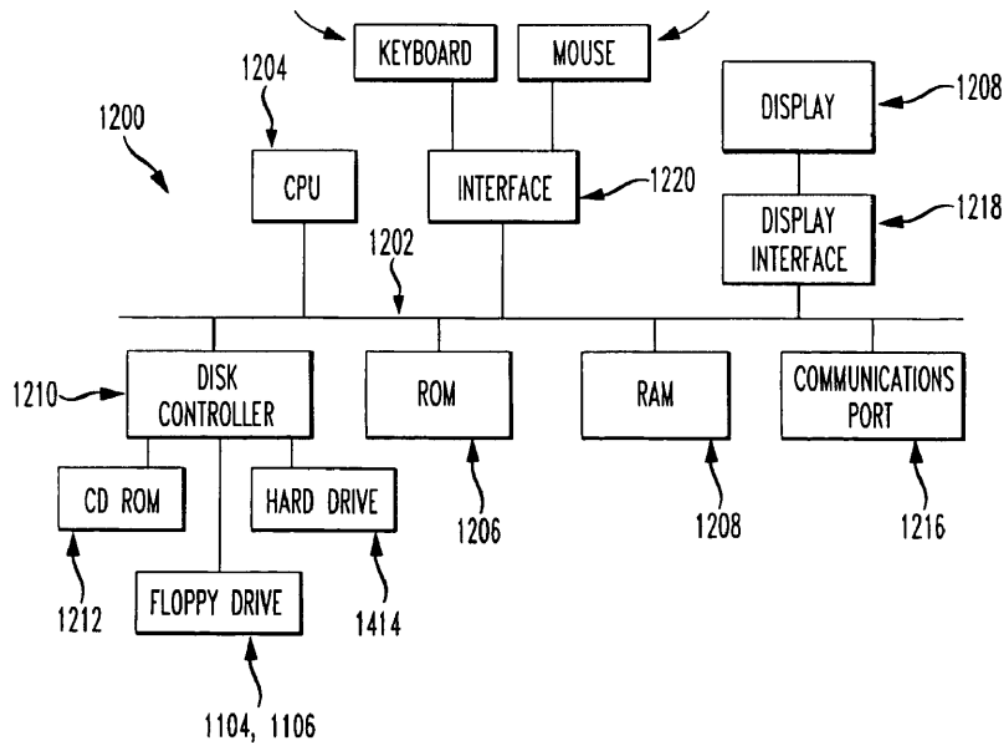
91. Moreover, it would have been within the general knowledge of a POSITA that a server includes “*a processing element comprising a processor coupled to a memory*” and “*a network interface coupled to the processing element.*” As I discussed in §III.B, a POSITA has a “bachelor’s degree in electrical engineering, computer science, or similar field, with two years of experience in developing and implementing network-based computer systems that interact with mobile devices, such as systems for storing and retrieving information over the Internet or communicating using the Web using wireless mobile devices.” The high-level design of a processing element shown in the ’348 patent would have been well-known to such an individual. I provide a sampling of examples below.

92. **Agboatwalla:** Agboatwalla discloses a “typical hardware configuration” of a workstation. (Agboatwalla, 5:40-42.) The configuration includes CPU 110, RAM 114, ROM 116 and “communication adapter 134 for connecting the workstation to a communication network.” (Agboatwalla, 5:45-55.)



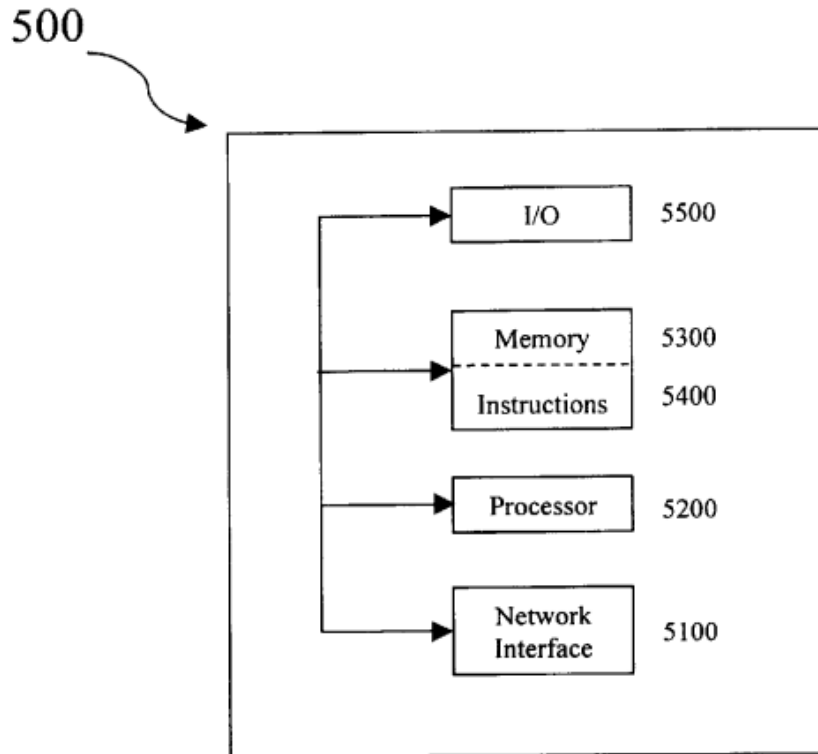
Agboatwalla, Figure 1

93. **Cheng:** Cheng discloses “a block diagram of the internal hardware of [a] computer system,” illustrated in Figure 12 (below). (Cheng, 23:26-27.) The computer system includes a CPU 1204, ROM 1206, RAM 1208, and a communications port 1216 for communications with a transport medium such as wireless communication network. (Cheng, 23:29-51.)



Cheng, Figure 12

94. **Bansal:** Bansal explains that “a typical information device” which can “symbolize” a server, illustrated in Figure 5 (below), includes “**well-known** components such as one or more network interfaces 5100, one or more processors 5200, one or more memories 5300 containing instructions 5400, and/or one or more input/output (“I/O”) devices 5350.” (Bansal, 6:66-7:5.)



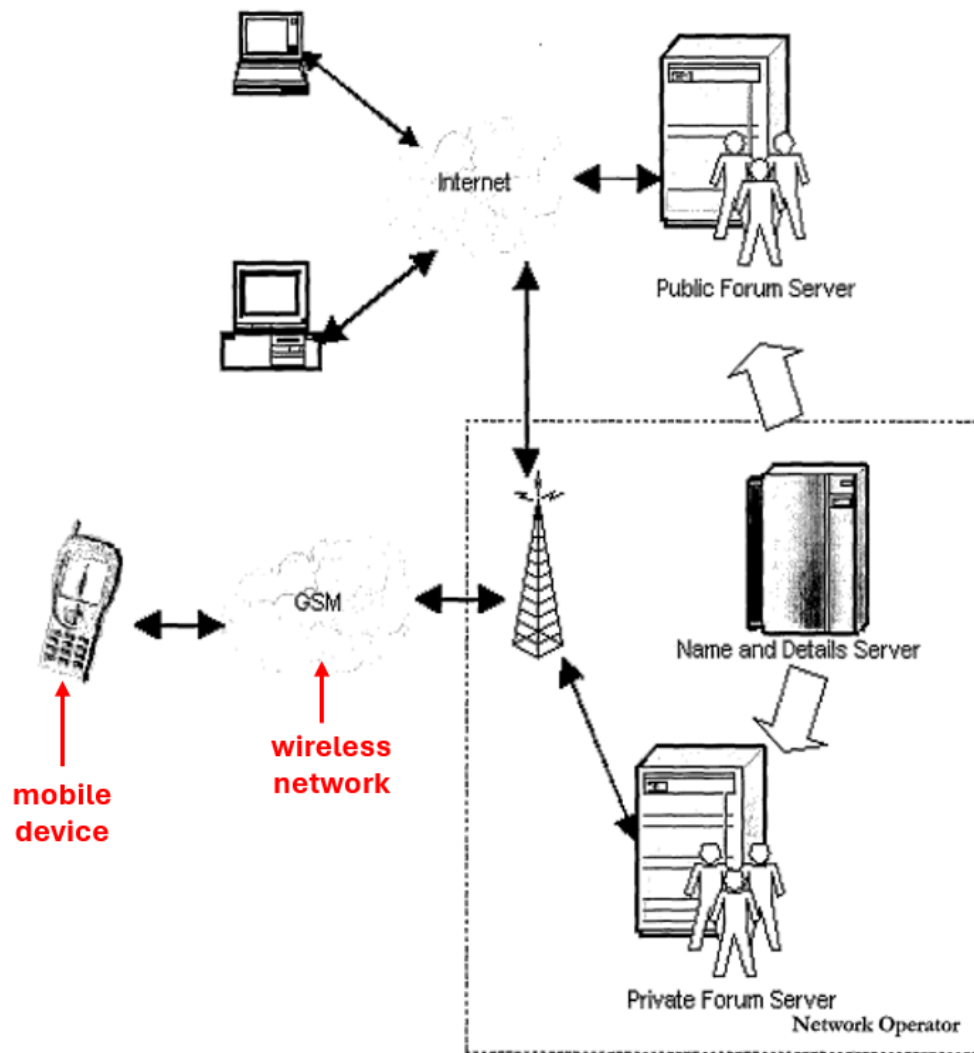
Bansal, Figure 5

95. Additionally, Pelkey and Eck, which I discuss in Ground 2, discloses a server having a CPU, memory, and network interface. (*See, e.g.*, Eck, 3:46-47; Pelkey, 5:7-14.)

b. Mobile Devices

96. The combination of Randall and Forsyth discloses a “*mobile device*.” The Randall-Forsyth combination uses a client-server model, illustrated in Randall’s Figure 4 (reproduced below), that includes wireless information devices and servers implementing network-based services, including Symbian Forums. (*See, e.g.*, Randall, 40:28-30.) Specifically, Randall “relates to the use of an open, universal

data infrastructure for **wireless information devices** which can be used by application developers to write new applications.” (Randall, 3:10-13.) Forsyth “relates to a group communication method for a **wireless information device.**” (Forsyth, 1:15-16.)



Symbian Forums—Randall, Figure 4

97. Randall and Forsyth both disclose that a wireless information device encompasses “any kind of device with one or two way wireless information

capabilities [including] without limitation radio telephones, smart phones, communicators, personal computers, computers and application specific devices.” (Randall, 1:7-11; Forsyth, 1:16-22 (same).) Each of these listed devices is portable and has a form factor allowing the device to be held in the hand (i.e., handheld). Indeed, Forsyth refers to the devices as “mobile devices.” (*See, e.g.*, Forsyth, 2:40-47 (“[a]n implementation of the present invention, called ForumsTM ... is designed specifically to allow current and very popular internet type services (e.g. chat/instant messaging between groups) to be handle[d] effectively between **mobile devices** and to enable a new generation of group based communication services.”).)

98. Each of the wireless information devices enumerated by both Randall and Forsyth are also configured for “communicat[ion] in any manner over any kind of network, such as GSM or UMTS, CDMA and WCDMA mobile radio, Bluetooth”, 802.11, and IrDa (infrared). (Randall, 1:11-13; Forsyth, 1:16-25.) Each listed network allows a device to communicate wireless over a network.

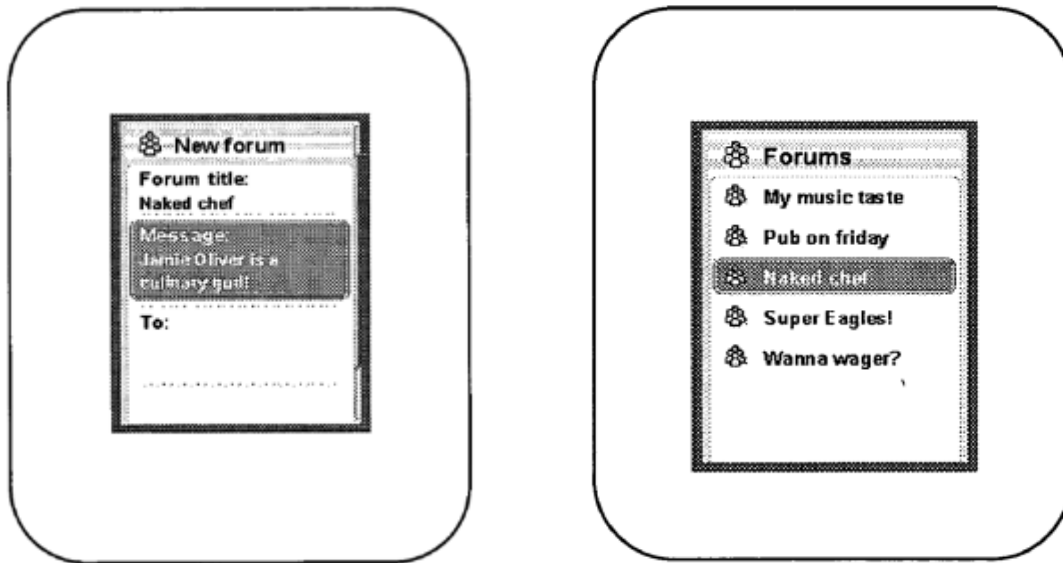
99. The “wireless information devices” described by both Randall and Forsyth are each a “piece of handheld equipment” and therefore a “*mobile device*” under PO’s MDT-Meta-Litigation construction. These portable devices process information and are capable of being configured for communication over a network. Thus, the “wireless information devices” described by both Randall and Forsyth are each a “*mobile device*” under Meta’s MDT-Meta-Litigation and Meta-MDT-IPR

constructions (“any type of portable information processing device capable of being configured for communication over a network”).

100. Although Figure 4 only depicts a single wireless information device, a POSITA would have understood that multiple wireless information devices would be present in the Forums network, because Randall and Forsyth both discuss groups having multiple members and because, for example, Forsyth teaches that content is “sent and received between several wireless information devices” in a group. (Forsyth, 1:64-2:1; *see also* Forsyth, 5:35-7:13 (Group Based Text Messaging Scenario 1), 7:18-57 (Discussion of Photos Scenario 2), 7:58-9:4 (Social Scheduling Scenario 3), 9:5-35 (Digital Memento from a User’s Birthday Scenario 4).) Accordingly, the combination discloses “*a plurality of mobile devices.*”

101. Exemplary mobile devices described by Randall and Forsyth (e.g., radio telephones, smartphones, and communicators) have limited display space and/or limited navigational capabilities. For example, as shown in Forsyth’s Figure 2 (below-left), the device has limited display space. (*See* Forsyth, 4:61-62; Randall, 45:23-25 (“Unfortunately, the current architecture of the Internet is not well suited for the wireless device form factor, providing an inappropriate user experience (the browser/page metaphor) for mobile devices with small displays.”).) And as shown in Forsyth’s Figure 6 (right), the user can navigate to only the listed forums—i.e., the mobile device has limited navigational capabilities. Thus, the “wireless

information devices” described by both Randall and Forsyth are each a “*mobile device*” under PO’s Meta-MDT-IPR construction (“a portable device with limited display space and limited navigational capabilities that connects to a mobile site and/or mobile channel via a wireless network”).



Symbian Forums—Forsyth, Figure 2 (left), Figure 6 (right)

102. Numerous books and papers published prior to June 2002 (or in 2002) confirm the disclosures of Randall and Forsyth regarding wireless devices running the Symbian OS. In addition, the Symbian website available prior to June 2002 included a technology section providing papers, links to books, and other information discussion Symbian devices and client-server infrastructure supporting services/applications. (See, e.g., EX-1018) A POSITA would have been aware of the existing Symbian wireless information devices as well as the reference designs for Symbian devices made publicly available by Symbian. In this section, I primarily

cite to “Wireless Java for Symbian Devices” by Allin (“Allin”; EX-1012) published in August 2001 by Symbian Press and “Symbian OS Communications Programming” by Jipping (“Jipping”; EX-1016) published in June 2002 by Symbian Press for additional supporting evidence. Although other documents pre-dating the ’348 patent are equally applicable.

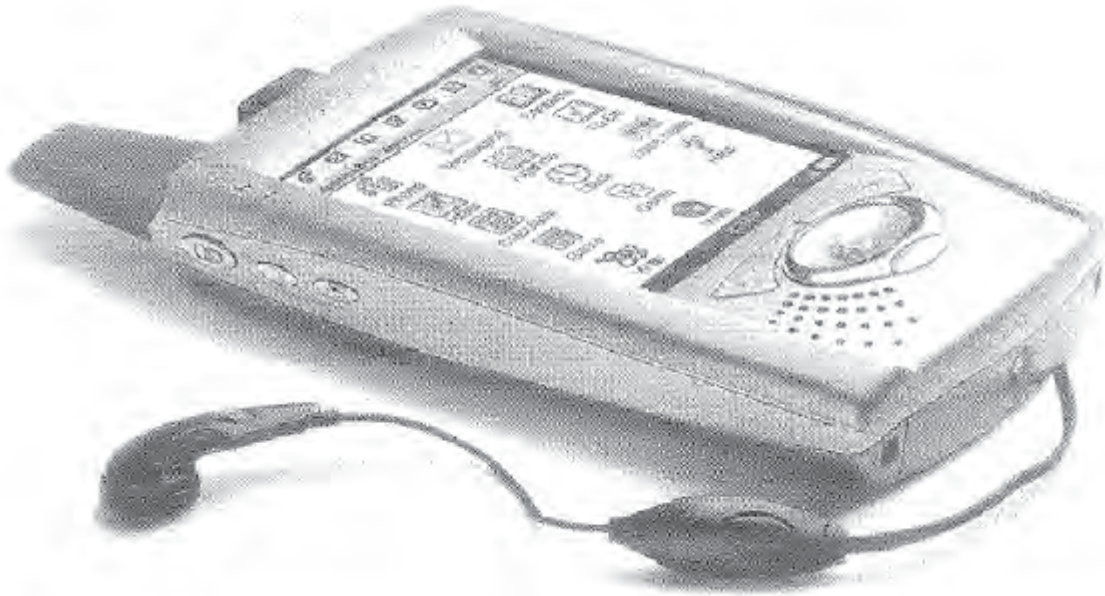
103. The Symbian OS, available prior to 2002, was intended for a range of devices. (Allin, 229; Jipping, 11.) Symbian developed three reference designs for its licensees divided into (1) “[s]martphones, primarily for voice communication, with PDA-like sophistication that allow[] information to be rapidly accessed and reviewed” and (2) “[c]ommunicators with a PDA’s form-factor and fully-integrated communications including voice.” (Allin, 4.) Communicators included two Symbian reference designs, code-named Crystal and Quartz. (Allin, 4.)

104. Allin’s Figure 3 below illustrates the Nokia 9210 Communicator based on the Crystal communicator reference design. (*See* Allin, 5.) The Nokia Communicator uses a 32-bit ARM9-based RISC CPU processor and has 2MB RAM plus 16MB RAM (MultiMediaCard). (Allin, 458-459.)



Allin, Figure 3

105. The Ericsson Communicator concept, illustrated in Allin's Figure 4 (below) is based on Symbian's Quartz communicator reference design. "Quartz is a pen-based tablet device with integrated telephony." (Allin, 4.)



Allin, Figure 4

106. Symbian's smartphone reference design is illustrated in Allin's Figure 5 below. The smartphone design "puts browsing content, messaging, and access to entertainment in the forefront and other information management as a secondary goal." (Jipping, 12.) The Nokia 7650, an example product following this design, included an integrated digital camera and was optimized for picture taking and sending, multimedia messaging, SMS, and email. (See, e.g., EX-1019.)



Allin, Figure 5

107. Table 7.1 of Allin summarizes “the principal characteristics of Symbian devices” including screen size, memory, processor, and type of input (e.g., keyboard and/or pen). (Allin, 229.)

Table 7.1 Principal characteristics of Symbian EPOC Release 5 devices

	Revo Plus	5MX	MC218	netBook	netPad
Manufacturer	Psion	Psion	Ericsson	Psion	Psion
Format	Shirt pocket	Pocket, brief case	Pocket, brief case	Small laptop	Tablet
Screen	480 × 160, mono	640 × 240, mono	640 × 240, mono	640 × 480, color	640 × 240, color
Memory	16 MB	16 MB	16 MB	48 MB	—
Processor	36 MHz ARM 710T	36 MHz ARM 710T	36 MHz ARM 710T	190 MHz StrongArm	190 MHz StrongArm
Java	JDK1.1	JDK1.1	JDK1.1	JDK1.1	PersonalJava
Input	Keyboard, pen	Keyboard, pen	Keyboard, pen	Keyboard, pen	Pen

Allin, Table 7.1

3. Processing Limitation [1C]-[1E]/[13A]-[13C]/[17A]-[17C]

a. “Receive[] device-captured data” Limitations [1C]-[1D]/[13A]-[13B]/[17A]-[17B]

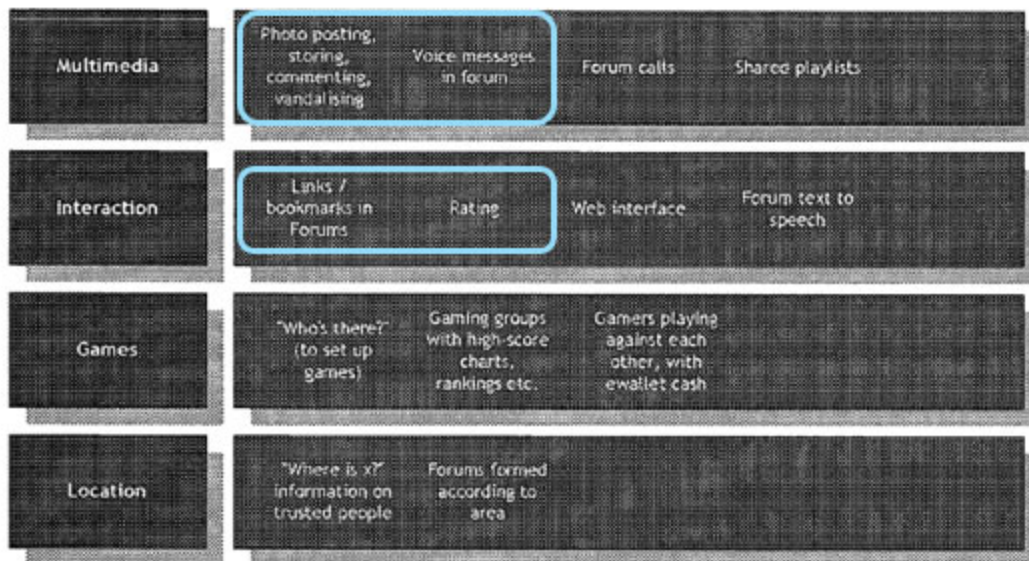
Claim 1	Claim 13	Claim 17
[1C] to receive first device-captured data from a first one of the mobile devices via the network interface;	[13A] receiving first device-captured data from a first mobile device over at least one network;	[17A] to receive first device-captured data from a first mobile device over at least one network;
[1D] to receive second device-captured data from a second one of the mobile devices via the network interface; and	[13B] receiving second device-captured data from a second mobile device over said at least one network; and	[17B] to receive second device-captured data from a second mobile device over said at least one network; and

108. The combination Randall and Forsyth discloses “*reciev[ing] first device-captured data from a first one of the mobile devices via the network interface*” and “*reciev[ing] second device-captured data from a second one of the mobile*

devices via the network interface” [1C]/[1D] and “receiving first device-captured data from a first mobile device over at least one network” and “receiving second device-captured data from a second mobile device over said at least one network” [13A]-[13B]/[17A]-[17B].

i. “Device-Captured Data”

109. Randall and Forsyth each discloses capturing multiple types of data at the mobile device. For example, Forsyth discloses that in Forums “**personal content** such as photographs, opinions, music playlists, music tracks etc.” is shared “amongst a pre-defined group.” (Forsyth, 4:9-11.) Forsyth’s Figure 13 (reproduced below), is a table listing applications/features “enabled using Forums.” (Forsyth, 4:66-67.) This table shows a sampling of the content supported within Forums. For example, in the “Multimedia” row, Forsyth identifies “[p]hoto posting, storing, commenting, [and] vandalising” and “voice messages.” (See Forsyth, Figure 13.) The mention of commenting on photos indicates a forum member posts a message (message content) and vandalizing indicates a forum member posts graphic content. In the “Interaction” row, Forsyth identifies “[l]inks/bookmarks” and “[r]ating[s].” (See Forsyth, Fig. 13.) Links and bookmarks are examples of data content and ratings falls into the category of polls. I specifically discuss capturing a photo, a message, a music file, and a graphic at a mobile device below. However, other examples from Randall and Forsyth are equally applicable.



Symbian Forums—Forsyth, Figure 13

(a) Device-Captured Image Data (Photo)

110. Randall and Forsyth each discloses capturing a photo at a wireless information device. Randall describes a function called “Take a picture” which involves photo capture, upload, and storage. (Randall, 80.) This function is supported by “a special type of mobile phone, with a photographic lens.” (Randall, 80.) I note the Nokia 7650 wireless device that I described above is an example of a commercially available device that included digital imaging (via a digital camera). In the “Take a picture” function, Randall directs the user to “[p]oint the phone at something that interests you or makes you laugh, press the button, and it takes a digital picture which you can send to your friends.” (Randall, 80.) Randall also describes a “[p]ersonal view” feature utilizing a “[c]amera in the wireless information device” for “posting images” to the server. (Randall, 74.)

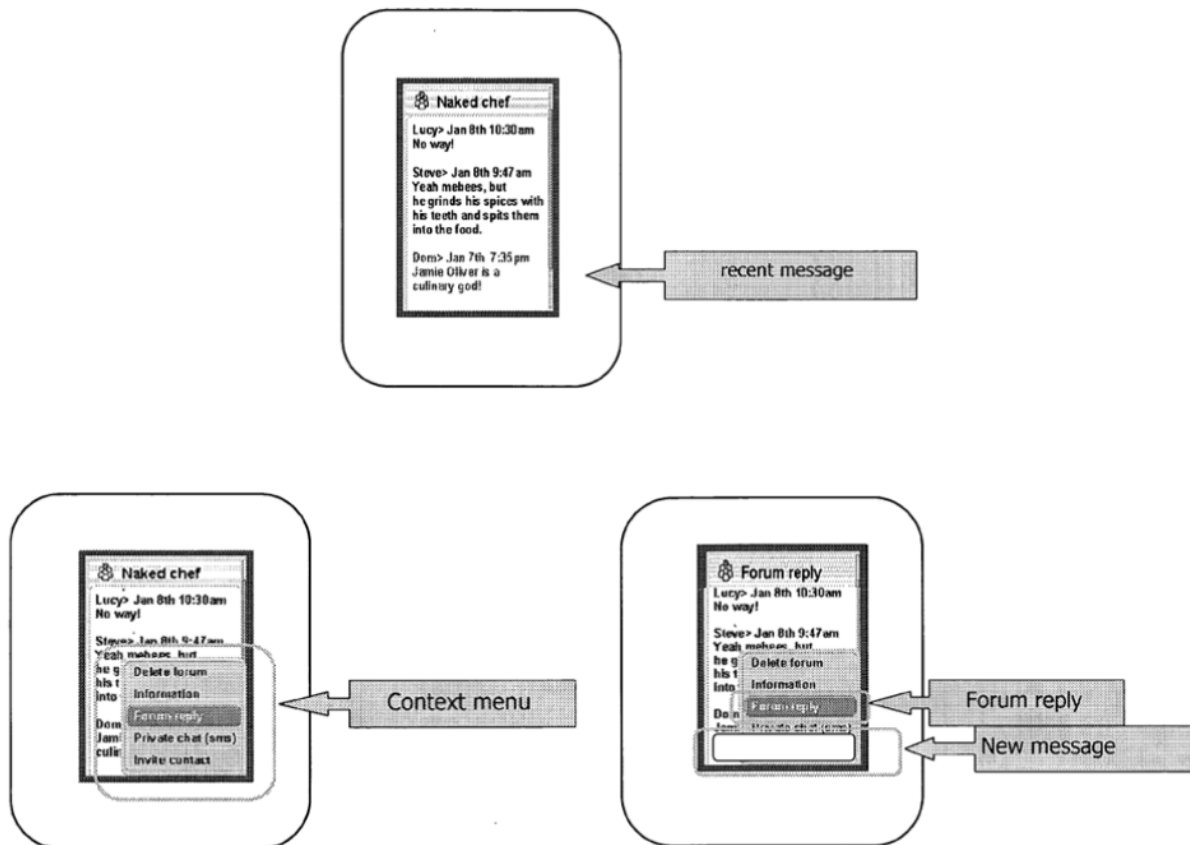
111. Forsyth similarly discloses an exemplary Forum for “Discussion of Photos” (Scenario 2) which uses the function of taking a picture at the wireless device. For example, a “user is on holiday, and he takes a few photographs of the beach with his digital camera.” (Forsyth, 7:30-31.) He then “uploads them to his remote storage area”, “creates a Forum message based on the photographs” and “sends it to a group.” (Forsyth, 7:32-35.) After the group is created, “[s]ome people post their own photos back.” (Forsyth, 7:41-42.) In the exemplary Forum “A Digital Memento from a User’s Birthday” (Scenario 4), Forsyth teaches that Forum members post “photos.” (See Forsyth, 9:5-35.) As I discussed above, Randall describes a mobile device integrating a digital camera. (Randall, 80.) Thus, the combination of Randall and Forsyth discloses capturing a photo at the mobile device either via an integrated camera or via a camera interfacing with the mobile device—*“device-captured data.”*

(b) Device-Captured Text Data (Message)

112. Randall and Forsyth each discloses capturing a message at a wireless information device. Forsyth describes Forums as “an easy to understand **messaging** tool that facilitates open discussion amongst a group.” (Forsyth, 5:27-29.) Forsyth further describes support within Forums for “group based text messaging” and “group based multi-media messaging.” (Forsyth, 3:36-44.) Randall similarly describes that Forums provides real-time messaging. As described by Randall, a user

can log onto a Forum and exchange messages “with those also on the channel.” (Randall, 41:1-2.) As discussed above, in addition to text messaging, Forums discloses that “users may send text or voice messages to a Forum from any communications device.” (Forsyth, 12:65-67.)

113. Forsyth describes text messaging within a Forum in exemplary “group based text messaging” (Scenario 1). (*See* Forsyth, 5:35-7:2.) In this Scenario, after the Forum is created, a Forum member is “shown the messages posted to that Forum.” (Forsyth, 6:38-40, Figure 7 [below-top].) Through this interface, the user can “make a context menu appear” which allows the user to “carry out additional tasks related to the Forum.” (Forsyth, 6:44-49, Figure 8 (below-left).) “If a user selects ‘Forum Reply’ then a new message is posted to the Forum” including posting a response. (Forsyth, 6:54-56; Figure 9 (below-right).) As shown in Figure 9, the user is presented with a field (e.g., box) into which text can be inserted. The text inserted into the field is captured by the device and inserted into a message transmitted to the server via, e.g., WAP protocol for WAP-enabled devices or GSM-SMS messaging. Thus, the combination of Randall and Forsyth discloses capturing a text message at the mobile device via keystrokes entered into text entry fields—*“device-captured data.”*



**Symbian Forums—Forsyth, Figure 7 (top); Figure 8 (bottom-left)
Figure 9 (bottom-right)**

(c) Device-Captured Audio Data (Music File)

114. Forsyth discloses capturing a music file at the wireless information device. Forsyth teaches the central server “act[s] as a store for resources which group-members may wish to discuss **and share** (e.g. personal information, personal photographs, **music**, web sites etc).” (Forsyth, 3:31-34; *see also*, Forsyth, 4:9-11 (“The group object could also be used to share, amongst a pre-defined group, personal content such as photographs, opinions, music playlists, **music tracks** etc.”).) Forsyth describes a “Radio Forums” example in which “users submit tracks

to a communally-built-up playlist” which is achieved “by creating a link between the user’s store of digital music and the playlist stack.” (Forsyth, 11:41-47.) Forsyth further describes an exemplary Forum (Scenario 4) where “[p]eople post MP3s of the kind of music played at each club.” (Forsyth, 9:21-22.) While not explicit, a POSITA would have understood the shared track/MP3 (music file) is captured in some manner on the user’s device, either by recording or via data transfer from another device, so that it can be uploaded to the server.

115. Randall also mentions the function called “[s]end me something” which allows a user “to send someone pictures, words, video clips or **music** while you are talking to them.” (Randall, 80:1-5.) While mentioned in the context of an on-going communication (e.g., a voice call or chat session), Randall describes “send me something” generally as a feature that provides “[r]icher [c]onversations.” (*See* Randall) Therefore, a POSITA would have understood and been motivated to also use this function as part of Forums which supported chat and voice conversations among group members. Thus, the combination of Randall and Forsyth discloses capturing a audio data at the mobile device—“*device-captured data*.”

(d) Device-Captured Graphic Data

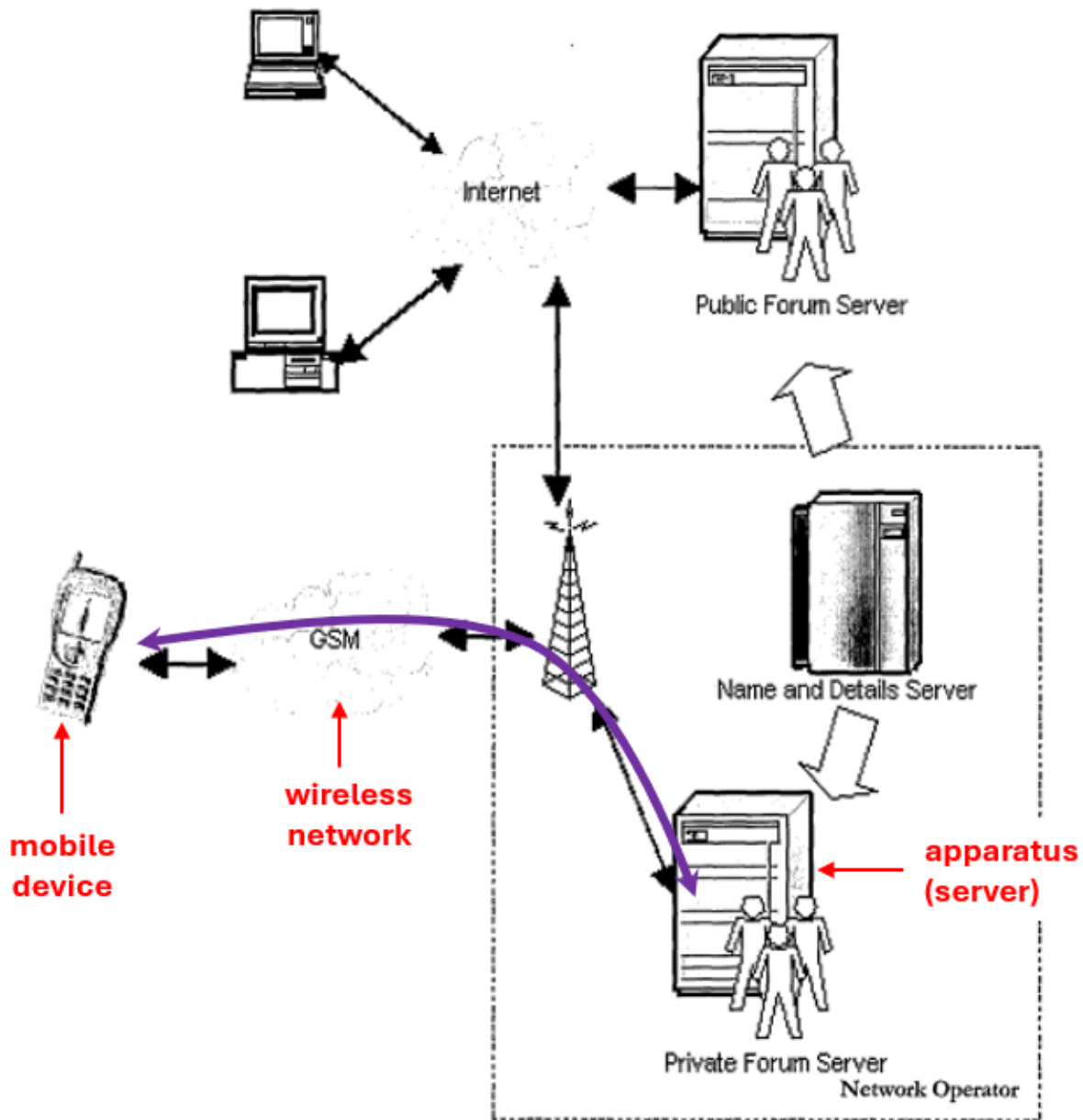
116. The combination of Randall and Forsyth discloses capturing a graphic. For example, Randall describes capturing a graphic via a “[w]rite-[o]n” function. (Randall, 79.) With this function, “[i]nstead of text-messaging and keying-in your

message, a new device which is a cross between a mobile phone and a palm pilot will let you write on the screen – in your own handwriting – and send the entire image as a message instead.” (Randall, 79) And as I mentioned above, Forsyth discloses “vandali[z]ing” a picture posted in a Forum (*see* Forsyth, Figure 13), which I understand involves layering a graphic on an existing picture. Thus, the combination of Randall and Forsyth discloses capturing graphic data at the mobile device—“*device-captured data.*”

ii. **“Receive First” and “Second” Device-Captured Data**

117. Symbian Forums, described by Randall and Forsyth, is designed for interactive communication/discussion within a Forum. Specifically, Forums is a “group communication method for a wireless information device that enables communications to be **sent and received between several wireless information devices operated by end-use[r]s that form a group of end users**” (i.e., a Forum). (Forsyth, 1:64-2:1.) Each of the Scenarios presented by Forsyth illustrates that a mobile device shares data (text messages, photos, graphics, music files, etc.) with other Forum members within a Forum. Thus, a first mobile device sends its content for inclusion in the Forum discussion, including “first captured data,” and a second mobile device also sends its content for inclusion in the Forum discussion, including its “second captured data.” (Forsyth, 5:35-7:13 (Group Based Text Messaging Scenario 1), 7:18-57 (Discussion of Photos Scenario 2), 7:58-9:4 (Social Scheduling

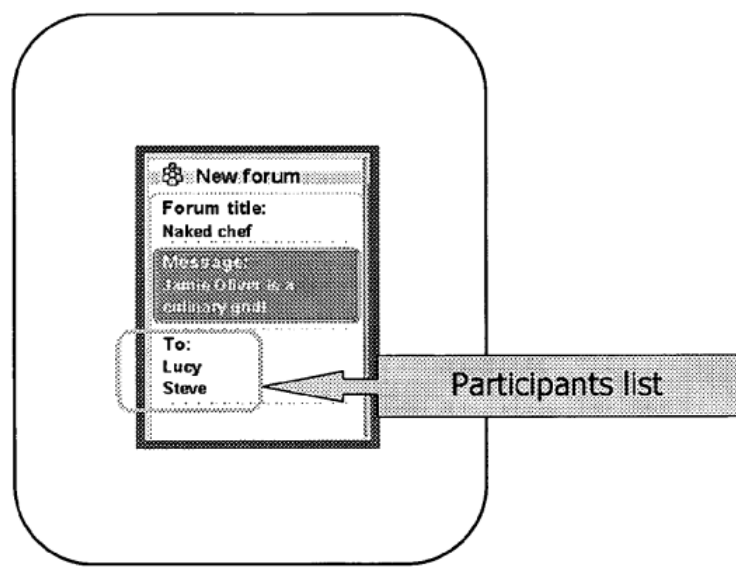
Scenario 3), 9:5-35 (Digital Memento from a User's Birthday Scenario 4).) As I discussed above, the server, illustrated in Randall's Figure 4 below, "handles contacting each group member, storing messages, **allowing message to be read, sending, receiving and distributing messages.**" (Forsyth, 3:28-31; Randall, 57:4 (describing "server side software"), 38:24 (describing "server side message handling applications").) That is, the wireless devices (clients) send their messages containing content data to the server for storage and distribution to other Forum members, and these messages are received over the wireless network via the network interface.



Symbian Forums—Randall, Figure 4

118. Forsyth and Randall describe numerous examples of Forum members posting data/content to a Forum via the Forum Server. For example, in group based messaging Scenario 1, when creating a Forum (e.g., Naked Chef), the mobile device, via the New Forum user interface displayed on the mobile device screen, captures

the initial message entered by the user (including text data content) and sends this text content “to the message server” as part of a “message/communication object.” (Forsyth, 6:1-8, Figure 4 (below).) The wireless device associated with the Forum creator is “*a first one of the mobile devices*” and the text captured through the New Forum user interface is “*first device-captured data*” which is received at the Forums server “*from [the] first one of the mobile devices via the network interface.*” Thus, the server “*receive[s] first device captured data from*” [17D] a first mobile device over the network and “*via the network interface*” [1C]/[13A]/[17A]. (*Id.*)

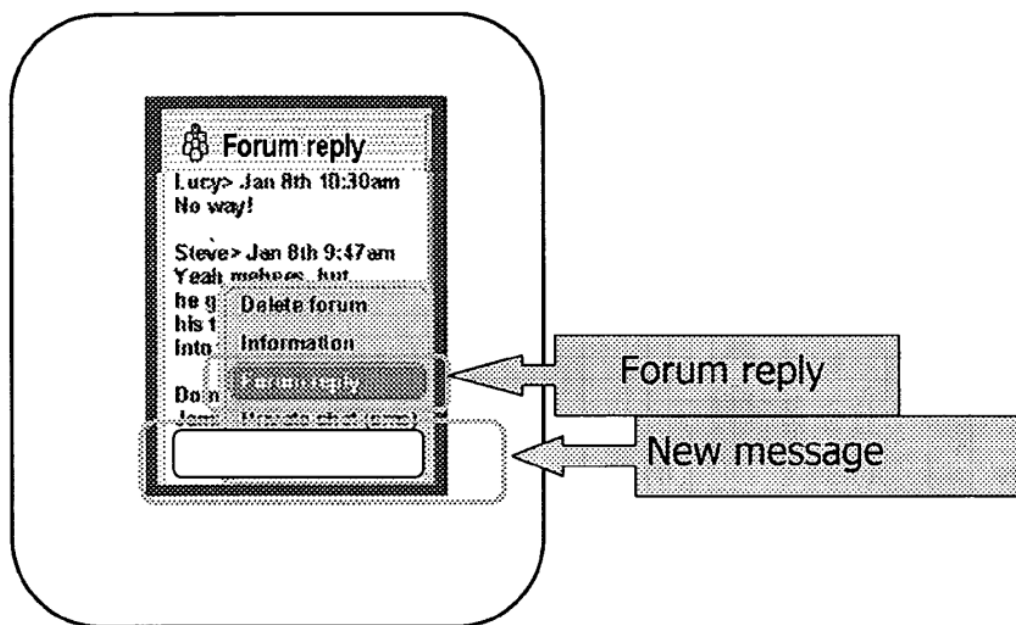


Symbian Forums—Forsyth, Figure 4

119. The server stores the message/communication object, which acts as the store for all communications within the Forum. (Forsyth, 6:9-10, 4:18-24 (message can “be treated as a single communication object” and “[a]ll linked (e.g. threaded) communications, such as replies and comments, then become part of the same

communication object and, like any object are treated as a discrete entity”).) The server then “forwards a copy of the message to each of the people on the address list, along with an abstracted version of the address list.” (Forsyth, 6:10-14.)

120. Subsequent responses to the initial message “are of the form that the new message is sent to the server, when then forwards on the increment to all the people on the current (server-maintained) address list.” (Forsyth, 6:18-22.) For example, when “a user clicks on ‘Forum reply’”, via the user interface shown in Figure 9 (below), “then a new message is posted to the Forum.” (Forsyth, 6:54-55.) The mobile device sending the response to the server over the wireless network is “*a second one of the mobile devices*” and the data contained in the response is the “*second device-captured data.*” Thus, the server “*receive[s] second device captured data from*” a second mobile device over the network “*via the network interface*” [1D]/[13B]/[17B]. (*Id.*)



Symbian Forums—Forsyth, Figure 9

121. A similar process is followed for messages containing captured photos, captured audio files, captured graphics, etc. For example, Forsyth describes several examples of Forums where users post “photos” including “Discussion of Photos” (Scenario 2) and “Digital Memento from a User’s Birthday” (Scenario 4). For example, in Scenario 2 after the group is created and an initial photo shared, “[s]ome people post their own **photos** back.” (Forsyth, 7:41-42.) And in Scenario 4, Forum members “post MP3s of the kind of music played at each club, and links to the club’s pages” (Forsyth, 9:21-24), “**photos**” (Forsyth, 9:29), and even “the bar bill” (Forsyth, 9:30). A POSITA would have understood that the “Discussion of Photos” Forum and the “Digital Memento from a User’s Birthday” Forum are identified via the user interface in the manner discussed in Scenario 1. The mobile device captures

the photo, as I discussed above, for “post[ing] to the Forum”—i.e., sending the captured image to the server for posting to the Forum.

122. Forsyth also describe examples of Forums where users post “music files.” For example, in “Digital Memento from a User’s Birthday” (Scenario 4), Forum members “post MP3s of the kind of music played at each club.” (Forsyth, 9:21-22.) And Forsyth describes that a “Radio Forum” can be created where “users submit tracks to a communally-built-up playlist.” (Forsyth, 11:44-47.) A POSITA would have understood that the Scenario 4 Forum and a Radio Forum are identified via the user interface in the manner discussed in Scenario 1. The mobile device captures the music file, as I discussed above, for “post[ing] to the Forum”— i.e., sending the captured audio file to the server for posting to the Forum.

123. In my discussion for limitations [1C]-[1D]/[13A]-[13B]/[17A]-[17B], I described a “write-on” function allowing graphics to be added into a discussion (Randall, 79) and a function allowing a group member to “vandali[z]e” a photo posted within a Forum (Forsyth, Figure 13). Although not mentioned in an exemplary Forum scenario, a POSITA would have understood that a user can identify a Forum via the user interface into which these exemplary “graphics” are “post[ed] to a Forum”— i.e., sending the captured graphics to the server for posting to the Forum.

b. “Integrating” Limitations [1E], [13C], and [17C]

Claim 1	Claim 13	Claim 17
[1E] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[13C] integrating the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[17C] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.

i. “Personalized Content Applications”

124. The Symbian Forums Service, described by Randall and Forsyth, is an “*application*” with a program component at the wireless device and a program component on the server: “FIGS. 2-11 are screen shots of the display of a wireless information device running the **Forums application**.” (Forsyth, 4:62-63; *see also* Forsyth, 2:47-48 (“Forums runs on the object based operating system Symbian OS.”), 4:64-65 (“FIG. 12 is a table showing typical features of three generations of Forums applications”); Randall, 3:17-19 (“The present invention allows a huge range of new applications requiring access to shared content to be rapidly and

cheaply constructed and rolled out since the data infrastructure which allows content to be shared is pre-fabricated.”), 9:11-13 (system includes “wireless information devices running applications which access the information held on the extensible databases running on central servers”), 40:15-41:14 (describing Forums application).)

125. Forsyth describes Forums as “new approach to group communication ... designed specifically to allow current and very popular internet type services (e.g. chat/instant messaging between groups) to be handle[d] effectively between mobile devices and to enable a new generation of group based communication services.” (Forsyth, 2:40-47.) As explained by Forsyth, “Forums offers many advantages to group communication since it is an easy to understand messaging tool that **facilitates open discussion amongst a group and allows multiple chat-style conversations to take place simultaneously.**” (Forsyth, 5:27-30.)

126. The Forums service is also a “*personalized content application*” because a user manages his or her profile within the service and can personalize his or her experience in a number of ways. The database used in the Forums network infrastructure “contains information from or relating to many different entities; it is organised into information fields which an entity can complete or have completed.” (Randall, 8:26-28.) An entity can be, e.g., a user, a corporation or even a group such as a Forum. Through the Forums infrastructure, a user enters “basic identity data

about themselves” including “name, contact numbers, and addresses” in the database and accesses services to provide location, availability and mood information as well as to define an identity avatar which are associated with the user’s database entry. (Randall, 23:14-17.)

127. Randall’s Table 1 is an application view of data associated with an entity (user, Alice). “Some of the information is entered by Alice” and other information is populated automatically. (Randall, 66:16-19.) A view of this data is “provided on Alice’s mobile device to allow her to manage her data.” (Randall, 66:19-20.) For example, Alice can add personalized notes for home (sorry about dinner) and work (in meeting), her current mood (very tired), and a subject to send when making a telephone call (dinner tonight). (See Randall, Table 1.) She can also provide a list of her hobby and book preferences. (See Randall, Table 1; Forsyth, 7:20-25 (“An ‘embedded discussion’ version of Forums allows the creation of a threaded discussion attached to personal information stored on a remote server. Storing personal information (contact lists, diaries, photographs etc) on a remote server is one possible model of enabling robust storage combined with easy access to personal information.”).)

128. Symbian Forums further provides a user with the capability of creating a personalized Forum which is also a “*personalized content application*” operating within the Forums application. Forsyth describes the creation of both private forum

groups and public forum groups. Public groups “are collections of people with interests in common, who do not necessarily know each other prior to their membership of a group.” (Forsyth, 17:5-7.) A private group, in contrast, is “used amongst individuals who already know each other in some way.” (Forsyth, 13:63-64.) These forums “may be used for example to discuss and arrange an outing to the cinema.” (Forsyth, 13:64-66.) A user can also use a private forum “to share, amongst a pre-defined group, personal content such as photographs, opinions, music playlists, music tracks etc.” (Forsyth, 4:9-11.)

ii. “Web-Based Shared Information Channel”

129. Within the Forums application, a user has the ability to create an individual Forum open to members of a specified group (a Private Forum) or to the public (a Public Forum). (Forsyth, Appendix 1, 13:60-18:18; Randall, 24:13-17.) Forums also provide the ability for the server to create a Forum based on criteria such as location of users. (See Forsyth, 13:29-52.) The individual Forum scenarios presented in Forsyth, “group based text messaging” (Forsyth, 5:35-7:13), “Discussion of Photos” (Forsyth, 7:18-57), “Social Scheduling” (Forsyth, 7:58-9:4), “Digital Memento from a User’s Birthday” (Forsyth, 9:5-35), as well as the other scenarios discussed, provide examples of how a Forum permits communication and information sharing among its members.

130. Each individual Forum is a “*channel*” that is “*accessible to first and second users of the respective first and second mobile devices*” through information (e.g., content) sharing. Specifically, Randall describes that “a forum allows **several people** to be part of a ‘**channel**’ or room, which is usually themed; for instance supporters of a football team may meet in a channel devoted to that team to discuss the team.” (Randall, 40:17-19; *see also* Randall, 82 (“Old Friends: A function that easily lets you create circles of friends you wouldn’t normally keep in touch with – for example people you met on holiday, or at college etc.” and “[y]ou simply create & name a group of people, which you can then text in 6 months or 6 years time” ... “New circles of people: A function that lets you create circles of contacts of people with similar interests who you may never have met before, but have picked up their text details on a website where you share interests in common eg [sic] a particular sport or hobby”), 83 (“Text mates: A service that lets a group of friends communicate at any time of the day via a chat site on their mobile phones.”).)

131. Thus, a Forum created in and available through Symbian Forums provides a means to share content (information) with identified members of the Forum—i.e., it is mechanism through which content/information is transferred to Forum members. It allows creation of individual topical-based Forums through which users can share information (such as the “Naked Chef” Forum described above). By agreeing to participate in a Forum, an individual user is essentially

“tuning into” the Forum to receive content published to the Forum by other members which is provided to the user’s device either by a push mechanism or by a pull mechanism. (See Forsyth, 6:15-26.) Therefore, an individual Forum is “a medium for transferring information accessible to more than one user” and is therefore an “*shared information channel*.”

132. Randall and Forsyth both disclose, or at a minimum suggest, to a POSITA that an individual Forum is also a “***web-based shared information channel***” under the agreed upon Meta-MDT-IPR construction (“a medium for transferring information accessible to more than one user via the web”). As described by Randall, the Symbian Forums infrastructure, illustrated in Randall’s Figure 4, “acts in effect like a fully personalized **web portal**, yet with the information links not consolidated in one general area, but instead distributed to the domains in which they are most likely to be relevant to a user.” (Randall, 13:22-24.) Forums establishes “web portals” (websites) for users of wireless devices through the use of “standard data transports such as WAP or http for data access” to the server (Randall, 45:14-15) and through the use of Randall’s ADS naming scheme which uses web server addresses.

133. Use of WAP teaches or at least suggests Forums user interface pages are provided, e.g., via a website downloaded from the server. WAP, which I discussed in §IV.A.1.c, is “based on the WWW communication protocols” and

“WWW content formats.” (WAP Architecture, 13.) WAP “enables the supplying of advanced Internet services into digital mobile stations of wireless communication networks.” (Salmi, 6:63-65.) The WAP proxy “allows content and applications to be hosted on standard WWW servers.” (WAP Architecture, 14.) For example, when a user of a WAP-enabled terminal enters a URL, the WAP-enabled terminal transmits a wireless Internet service request to the WAP gateway server. (*See, e.g.*, Park, 1:66-2:4.) The WAP gateway may respond to the request if hosting the request web page or may convert the request into an HTTP request for a server on the Internet. (*See, e.g.*, Park, 2:5-10.) The Internet web server responds and the WAP gateway converts the HTTP response into a WAP response for transmission to the WAP-enabled terminal. (*See, e.g.*, Park, 2:15-25.) That is, Forums hosted or accessible on WAP-enabled servers are “web-based.”

134. Randall’s naming convention further underscores that Forums are designed to be mobile websites accessible “via the web.” Randall teaches that a “wireless information device (as well as web browsers) can access an entity’s database by sending to the server an unchanging pointer or key (an ‘ADS Number’) which is unique to that entity.” (Randall, 9:13-15.) Randall’s “ADS numbers are typically constructed using text strings and can be though[t] of as defining a namespace.” (Randall, 9:17-18.) The ADS number “in one implementation [is] an **address on a web server**—for example **www.indirect.com/Alice**.” (Randall, 64:25-

26.) “This address is in effect a pointer to entity specific data held on the **web server**, in this case, Alice’s information.” (Randall, 64:27-28.)

135. Randall describes an exemplary webpage associated with a user’s record stored in the database. Specifically, Randall teaches that “[i]nformation is placed onto the database by an entity so that it can be readily shared with other entities: the database in effect represents a web page containing information specific to that entity.” (Randall, 8:29-31.) The server presents a different webpage based on the access rights associated with the requester. For example, when a user’s device (e.g., Bob’s device) sends the ADS Number associated with another user (e.g., Alice) to the server, “the server recognises Bob’s device and allows the device to read Alice’s information held on the database which is specified as being accessible to Bob.” (Randall, 9:18-21.) Randall’s Table 3 (reproduced below) illustrates the information displayed in the view of Alice’s “website” presented to a user in the business 1 group. This view is different than the webpage presented when Alice’s device requests access. (*See, e.g.*, Randall, 66-67 (Table 1: Alice’s view of data).)

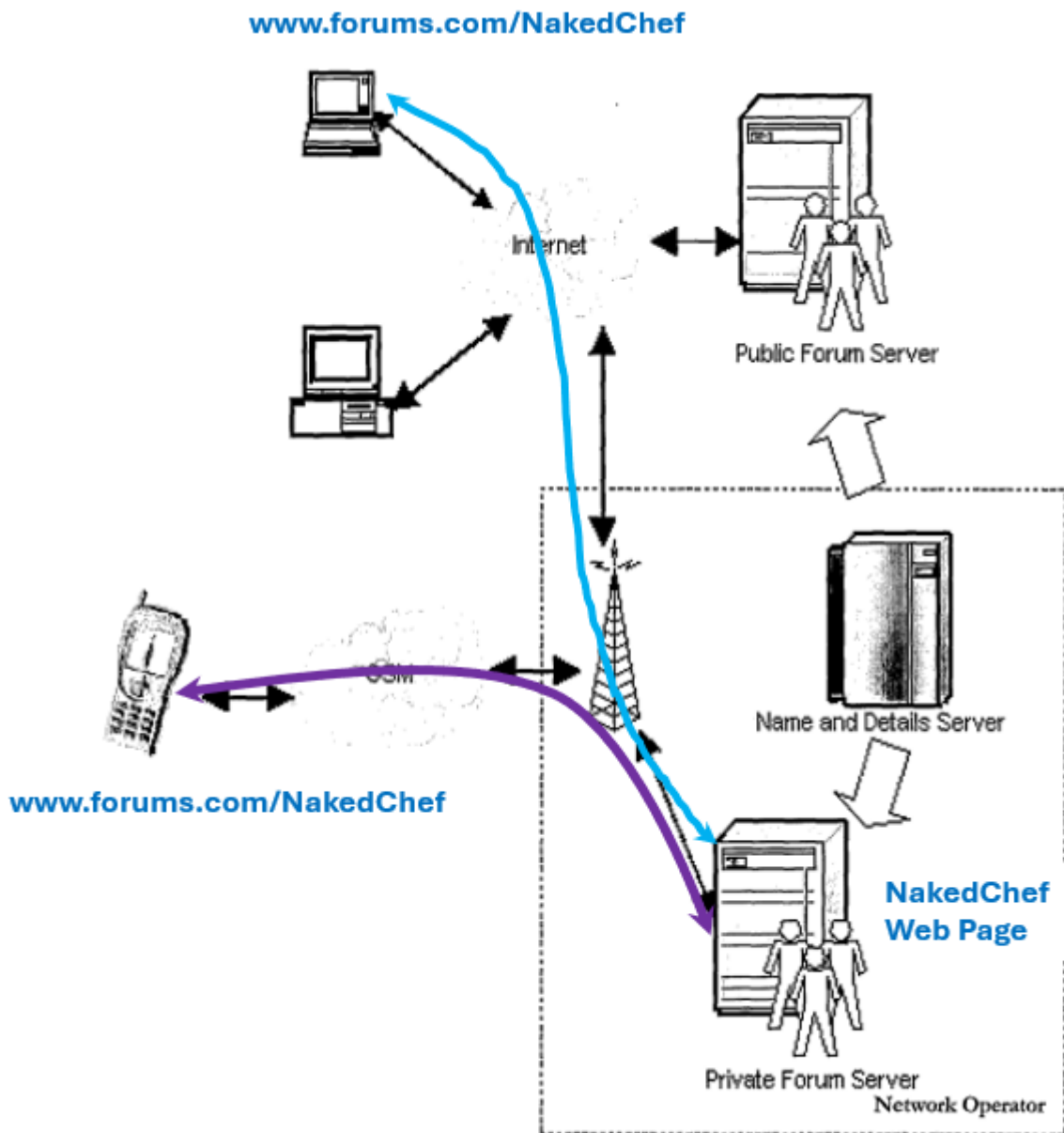
Name	Ms Alice Edwards
Title	European Marketing Manager
Company	Wireless Information Device gets R Us
ADS Number	urls.co.uk/1238947532345235
Last verified	7 th July 2000
e-mail	alice.edwards@Wireless Information Device getsrus.com
Work phone 1	0207 200 2000
Work phone 2	0207 200 2012
Mobile	0840 1234 567
Address	1 The Science Park, London, N1 9PQ
Other info	Met her at meeting with Tom Jones, August 2000.

Randall, Table 3

136. Forsyth confirms that Forums user interfaces are provided by the server via, e.g., webpages, explaining “Forums facilitates the situation where, to a degree, the other members of a group are ‘always there’ for a user” including “ensuring other interfaces—e.g., **via the Web** and PCs, and possibly via normal phones—are available.” (Forsyth, 11:23-31.)

137. I illustrate Forum’s web-based architecture over GSM-WAP (described above and in §IV.A.1 using Randall’s Figure 4 (reproduced below). A user connected to the Internet enters the ADS number associated with the Forum, Naked Chef, which is www.forums.com/NakedChef and connects to the server hosting that Forum via HTTP; the server processes the request and responds using HTTP over the Internet (blue line). A mobile device user similarly enters (directly or via a local

Forums application) the ADS number (www.forums.com/NakedChef) of the Forum and connects to the WAP server over the GSM network (purple). If the WAP server hosts the Forum (as shown below), it processes the request and responds with a webpage. If a different web server hosts the Forum, the WAP server contacts that server via HTTP to retrieve the webpage which is then forwarded to the mobile device to generate the user interface display, as I discussed above.



Symbian Forums—Randall, Figure 4

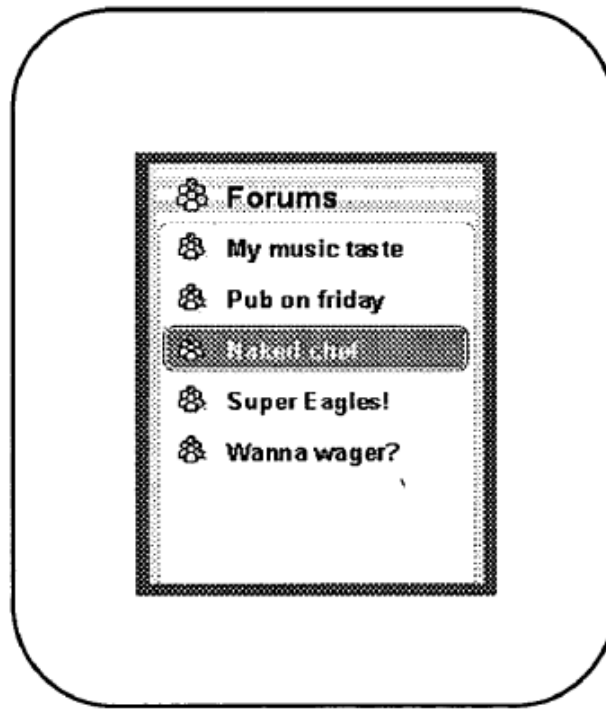
138. Thus, the combination of Randall and Forsyth discloses a “*web-based shared information channel*” that is “*controllably accessible to first and second users of the respective first and second mobile devices*” via the Forums service running on the “*first and second mobile devices.*”

iii. **“Integrate First/Second Device Capture Data Into Web Information Channel”**

139. Forums achieves integration of messages from multiple Forum members within a Forum through use of a single communication object associated with a Forum. (Forsyth, 4:19-20, 4:20-26, 7:6-8.) Forsyth discloses that when a Forum is created, the original message posted to the Forum is “treated as a single ‘communication object.’” (Forsyth, 4:19-20.) “All linked (e.g. threaded) communications, such as replies and comments, then become part of the same communication object and, like any object are treated as a discrete entity.” (Forsyth, 4:20-24.) “Hence, the entire communication object can be sent to a new person, or be archived etc.” (Forsyth, 4:25-26, 7:6-8 (“The contents of a Forum can be forwarded-on, for example, to contacts who are not participating in the Forum, or to the Jotter application.”).) That is, in Forums, all messages are integrated by the server into this single communication object.

140. Forsyth describes an exemplary use of “communication objects” in the “group based text messaging” Scenario (Scenario 1). In this Scenario, a communication object is created when the Forum creator sends the initial message. (Forsyth, 6:9-10.) When new response messages are sent to the server, the server stores these messages in the message/communication object thereby “maintaining [the] m[e]ssage thread” for the Forum. (Forsyth, 3:19-22, 3:28-30.)

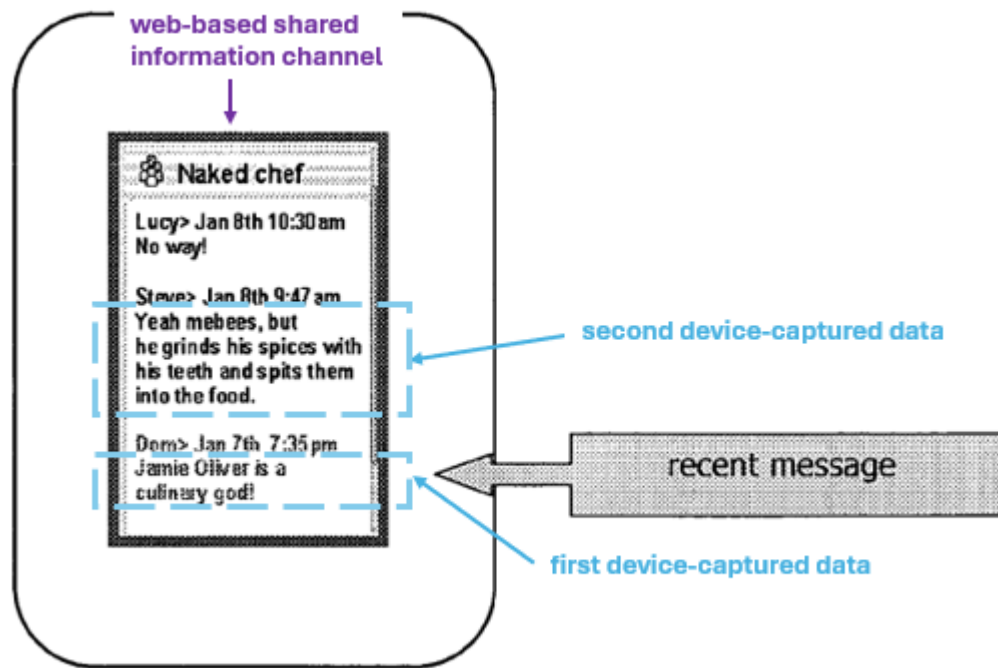
141. The integration of content (device-captured data) into a Forum (“*web-based information channel*”) that is “*controllably accessible to first and second users of the respective first and second mobile devices*” is further illustrated by this exemplary scenario. As shown in Forsyth’s Figure 6 (below), the user interface of the Forums application displays a listing of established Forums of which the user is a member (e.g., “Pub on [F]riday,” “Naked chef,” “Super Eagles!,” “Wanna wager?”). (See Forsyth, 6:28-35.) This screen is customized to list the Forums to which the user is a member and therefore varies from user to user. That is, the messages associated with a specific Forum are accessible “*via respective personalized content applications of the first and second mobile devices.*” The view shown in Figure 6 “distinguishes Forums with unread (new) messages from those with read (old) ones.” (See Forsyth, 6:29-32.)



Symbian Forums—Forsyth, Figure 6

142. When the user selects a Forum from the list, the display associated with that Forum is shown, as illustrated in Forsyth’s Figure 7 below. Such a display is available to all Forum members including the first and second user. That is, the Forum (“Naked Chef”) is “*controllably accessible*” to users of the Forums server (e.g., “*to first and second users of the respective first and second mobile devices*”). Through this user interface, “the user is shown the messages posted to that Forum.” (Forsyth, 6:38-40.) “Messages appear in date order, i.e. newest messages appear at the bottom.” (Forsyth, 6:40-42.) As shown, captured data from multiple users is presented on a single “*integrated*” display. Thus, the “*first and second device*

capture data” are integrated into the Forum (“web-based shared information channel”).



Symbian Forums—Forsyth, Figure 7

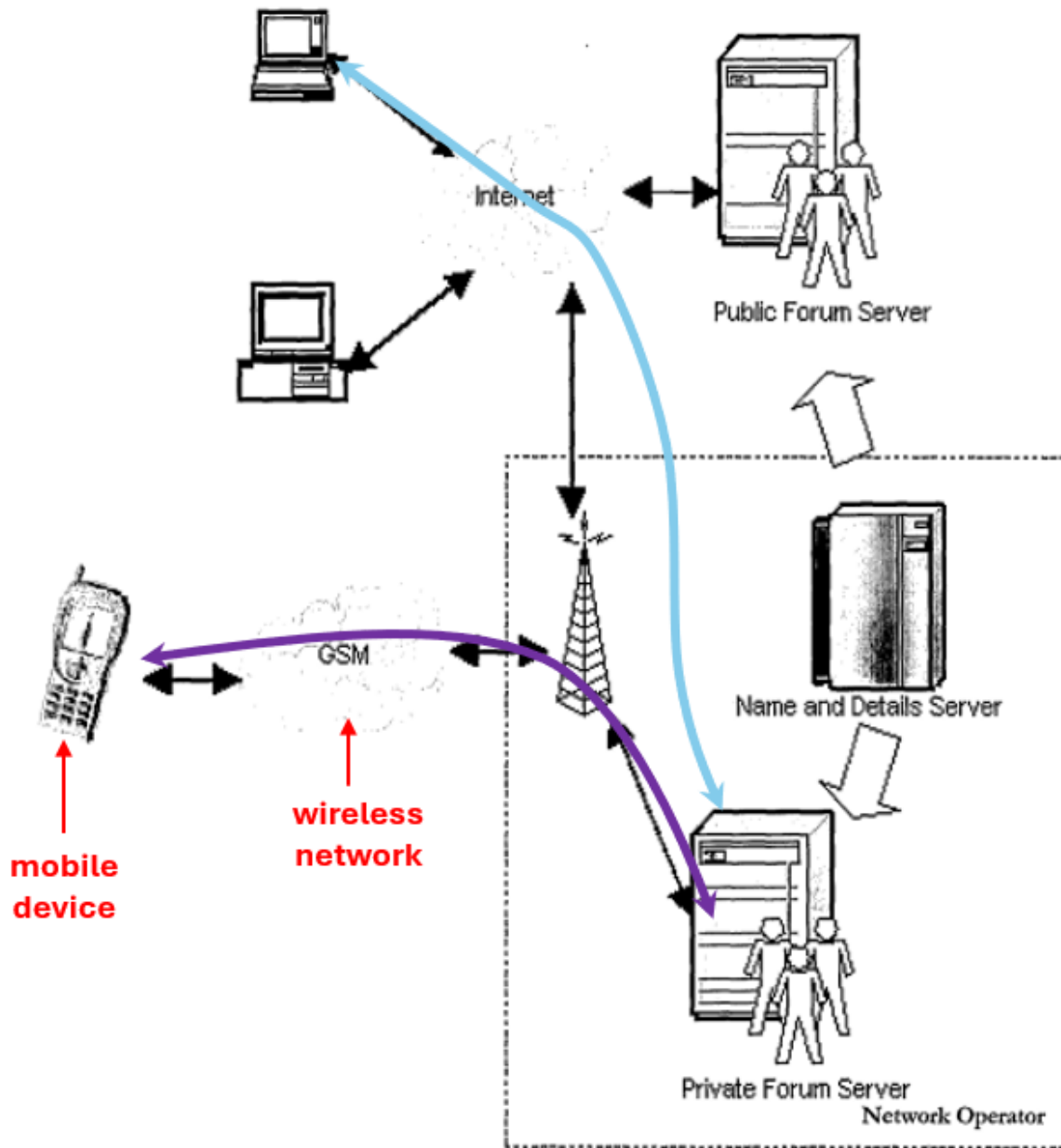
143. Thus, the combination of Randall and Forsyth discloses “*integrat[e]/[ing] the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.*”

C. Independent Claim 12

12. A network-based communication system comprising a plurality of servers configured to communicate over said at least one network, a given one of the servers comprising the apparatus of claim 1.

144. The combination of Randall and Forsyth discloses a “*network-based communication system comprising a plurality of servers configured to communicate over a network, a given one of the servers comprising the apparatus of claim 1*” [12]. The Forums service is based on a client-server model and is implemented on a network such as the one illustrated in Randall’s Figure 4 (below). Through this network architecture, services, like Forums “act[] in effect like a fully personalised web portal, yet with the information links not consolidated in one general area, but instead distributed to the domains in which they are most likely to be relevant to a user.” (Randall, 13:22-24.) The Symbian Forums infrastructure, illustrated below, includes “*a plurality of servers*”: “internet servers” hosting individual Private and Public Forums (as enhanced by Forsyth) and “internet servers” hosting extensible databases (as taught by Randall). (Randall, 7:16-19.) As shown, wireless devices access these servers/databases via the wireless network and non-mobile devices access these servers via Internet respectively. That is, this “*plurality of servers*” is “*configured to communicate over a network.*” As I noted in §IV.A.3, a POSITA would have been motivated, e.g., to implement the functionality associated with providing Forums and the functionality of hosting a database on a single server to obtain the benefits of more efficient maintenance and cost savings of reduced amount of network equipment. Therefore, one of these plurality of servers, e.g., hosting the Private Forums and the user extensible database, is the apparatus

described above in §IV.B.2 in my analysis of claim 1. Other servers are also provided, e.g., to host other forums (e.g., the Public Forum server).



Sybian Forums—Randall, Figure 4

D. Claim 2—“device captured data”

2. The apparatus of claim 1 wherein at least one of the first device-captured data and the second device-captured data comprises image data.
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145. As I discussed in §IV.B.3.a for limitations [1C], [13A], and [17D], the combination of Randall and Forsyth describes “*first device-captured data*” and “*second device-captured data*” including captured photo/image and captured graphics image data.

146. As I discussed in §IV.B.3.a.i.(a), Randall describes a function called “[t]ake a picture” which involves photo capture. (See Randall, 80.) This function is supported by “a special type of mobile phone, with a photographic lens.” (Randall, 80.) I note that the Nokia 7650 that I described above included digital imaging (via a digital camera). In this “[t]ake a picture” function, Randall directs the user to “[p]oint the phone at something that interests you or makes you laugh, press the button, and it takes a digital picture which you can send to your friends.” (Randall, 80.) Randall also describes a “[p]ersonal view” feature utilizing a “[c]amera in the wireless information device” for “posting images” to the server. (Randall, 74.) Thus, the combination of Randall and Forsyth discloses a photo (image) (“*device captured data*”) “*comprises image data.*”

147. Randall describes capturing a graphic via a “[w]rite-[o]n” function and Forsyth describes a feature called “vandaliz[ing].” (Randall, 79; Forsyth, Fig. 13.)

With the “[w]rite-[o]n” function, “[i]nstead of text-messaging and keying-in your message, a new device which is a cross between a mobile phone and a palm pilot will let you write on the screen – in your own handwriting – and send the entire image as a message instead.” (Randall, 79.) Thus, the combination of Randall and Forsyth discloses a graphic (image) (“*device captured data*”) “*comprises image data.*”

E. Claim 6—“mobile device”

6. The apparatus of claim 1 wherein a given one of the first and second mobile devices comprises one of a mobile telephone, a tablet computer, a GPS-based navigational device, a watch and a portable game player.

148. Randall and Forsyth both discloses that the “*mobile device*” is a “*mobile telephone.*” Specifically, both disclose that “[t]he term ‘wireless information device’ used in this patent specification should be expansively construed to cover any kind of device with two way wireless information capabilities and includes without limitation radio telephones, smart phones ...” (Randall, 1:7-10; Forsyth, 1:16-22.) A “radio telephone” and a “smart phone” are each a “*mobile telephone.*”

149. Randall and Forsyth also both disclose or suggest that the “*mobile device*” is a “*tablet computer.*” Both teach that a wireless information device includes a “communicator.” (Randall, 1:7-11; *see also*, Forsyth, 1:16-35.) As I discussed in §IV.B.2.b, a POSITA would have known one communicator designed by Symbian is based on the Quartz design which “is a pen-based tablet device with

integrated telephony.” (Allin, 4.) Randall suggests such a product design in the discussion of the “[w]rite-[o]n” function that I described above. (Randall, 79.)

150. Randall and Forsyth also both disclose that the “*mobile device*” is a “*GPS-based navigational device*.” Forsyth teaches that device location is obtained “via some onboard method such as **GPS**.” (Forsyth, 13:45-58.) Randall similarly discloses obtaining location “via a GPS wireless information device.” (Randall, 74; *see* Randall, cl. 7 (reciting that user location “is obtained using a GPS system”).) GPS location data is stored in the database associated with the user, as shown in the excerpt of Table 1 (reproduced below).

Table 1

<u>Alice's iData</u>			
Field/Attribute	Category	Details	i-Groups
First name	personal	Alice	all
Family name	personal	Edwards	all
Title	work	European Marketing Manager	all

•
•
•

Bluetooth	location	Bluetooth pods 1000-1020 ...Sentinel room 2...	
GPS	location	London W1, Seymour St.	partner
Hobby	preferences	Photography, travel	friends
Book	preferences	Maverick	friends
AlbumOfTheWeek	InstaPoll		friends

Randall, Excerpts from Table 1

151. Randall describes several navigation-like features. For example, in the people tracking feature, after the user has subscribed to the location service, associated groups (e.g., friends/parents) “could add a ‘map’ application to their own devices, which could show their position on digital maps and also, by using the location attribute of the user’s database, it could also show the position of the user.” (Randall, 6:1-4.)

152. Randall also describes a feature called “[y]our map and then some” where “[a]t the touch of a button, your phone can display a map of the area you are standing in.” (Randall, 83.) Randall further describes a feature called “[r]endezvous” where a “service on your mobile phone [] help[s] you meet friends and family in crowded or unfamiliar places” and “you can elect to have your location visible to others - so using your phones everyone in your group can tell precisely where the other are.” (Randall, 83.)

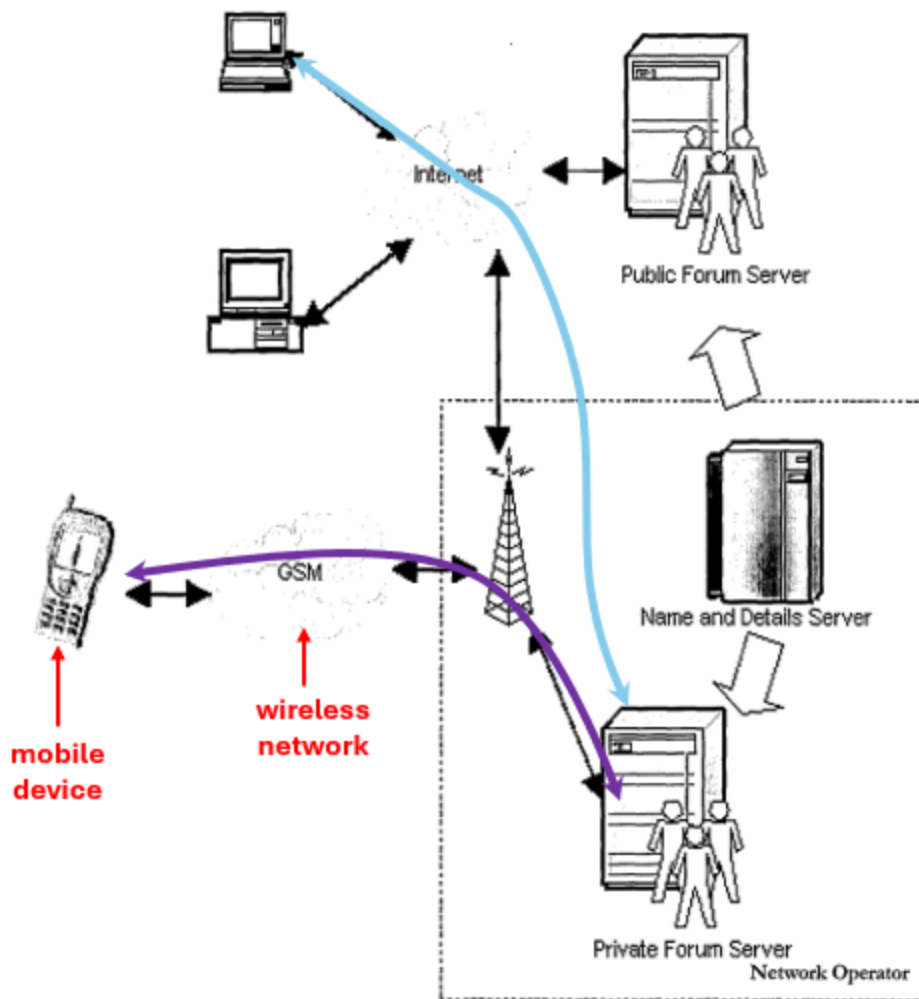
153. Because the mobile device includes a GPS component and integrates navigational features, the combination of Randall and Forsyth discloses that “*a given one of the first and second mobile devices comprises . . . a GPS-based navigational device.*”

F. Claim 7—“web server”

7. The apparatus of claim 1 further comprising a web server that includes the network interface and the processing element and wherein the web server is accessible to the first and second mobile devices over the Internet via the network interface.

154. The combination of Randall and Forsyth discloses a “*web server that includes the network interface and the processing element.*” Randall explains that the Symbian infrastructure implementing Forums includes “internet servers.” (Randall, 7:16-19.) The servers used in the infrastructure “embrace[] existing standards and initiatives” and “use[] standard data transports such as **WAP or http for data access.**” (Randall, 45:14-15.) That is, as illustrated in Figure 4 below,

Randall uses “existing transports” (communication means) for client-server communication such as “WAP to access the services on the server side” and “standard IP formats such as MIME, SMTP and HTTP” to “enable compatibility with Internet Messaging systems.” (Randall, 58:23-27, 45:14-15.) As discussed in §IV.B.2, the server includes a “network interface” supporting one or more of these access protocols. As stressed by Randall, “the Internet and its servers can be used by a mobile device to deliver enchanting services that far surpass the present PC-Internet model.” (Randall, 46:8-10.) As discussed in §IV.B.3.b.ii, because Randall teaches the servers hosting Forums are accessible via the web through WAP and/or http protocols, the servers are “*web servers [] accessible to the first and second mobile devices over the Internet via the network interface.*”



Symbian Forums—Randall, Figure 4

G. Claims 8, 14, and 18

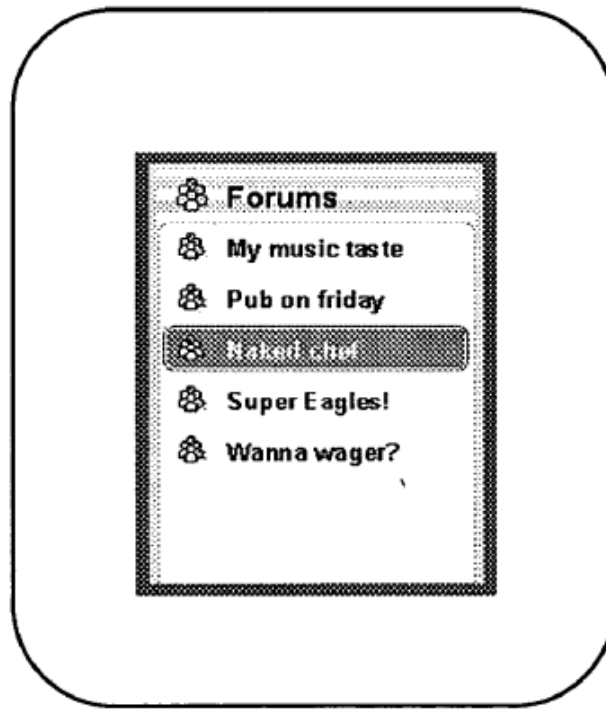
155. Claims 8, 14, and 18 recite substantially overlapping subject matter so I address these claims together.

1. Limitation [8A]

[8A] wherein the web-based shared information channel is configured to allow a given one of the first and second users to enter a message via the personalized content application of its corresponding mobile device and

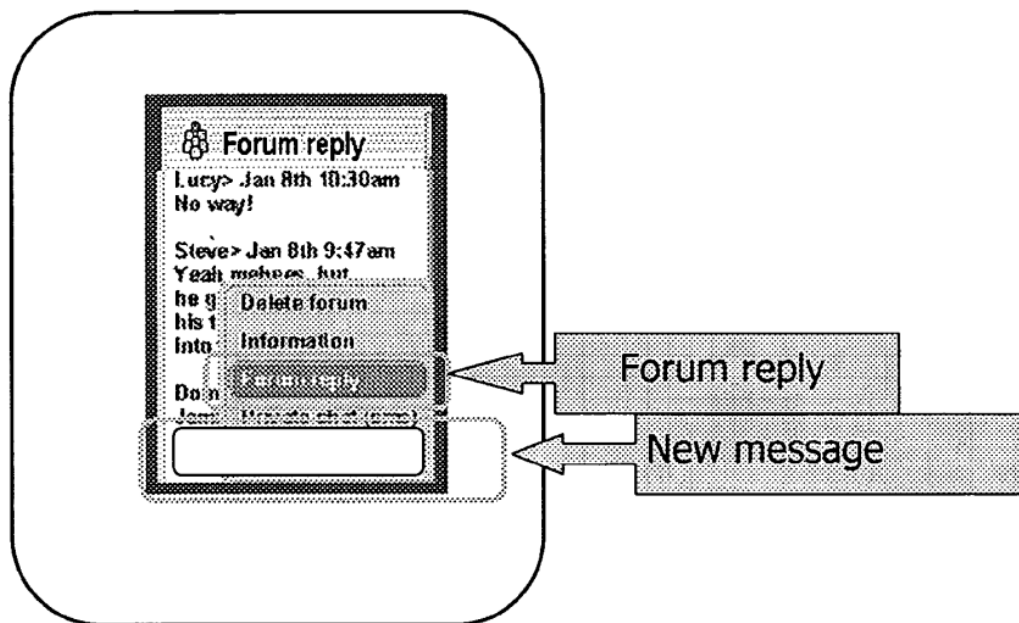
156. The Forums service (“*the personalized content application*”) uses a client/server model with a program component running on a wireless information device which communicates over the wireless network to a program component on the server, as illustrated in Forsyth’s Figure 4. Through the Forums service running on a mobile device, an individual Forum (“*web-based shared information channel*”) allows a user “*to enter a message,*” as I discussed above in my analysis of [1C]/[13A]/[17A].

157. The exemplary group text message scenario of Forsyth illustrates the operation of the Forums service and an individual Forum. Within Forums, a user is presented with a user interface displaying a list of his/her Forums on a screen such as the screen shown in Forsyth’s Figure 6 (reproduced below). The user selects one of these individual Forums which causes the user to navigate to a user interface associated with the Forum (e.g., Forsyth Figure 8) where the user can enter and post content. (*See, e.g., Forsyth, 6:28-35.*)



Symbian Forums—Forsyth, Figure 6

158. The user interface displayed to the user provides the ability for a user to reply within the Forum by posting a Forums message with content. For example, through the Forum Reply user interface displayed in Figure 9 (below), a user can enter content and designate that content “for insertion” into the Forum by clicking on “reply.” (Forsyth, 6:54-55.) A new message is then “posted to the Forum” when the mobile device sends the Forums message to the server.



Symbian Forums—Forsyth, Figure 9

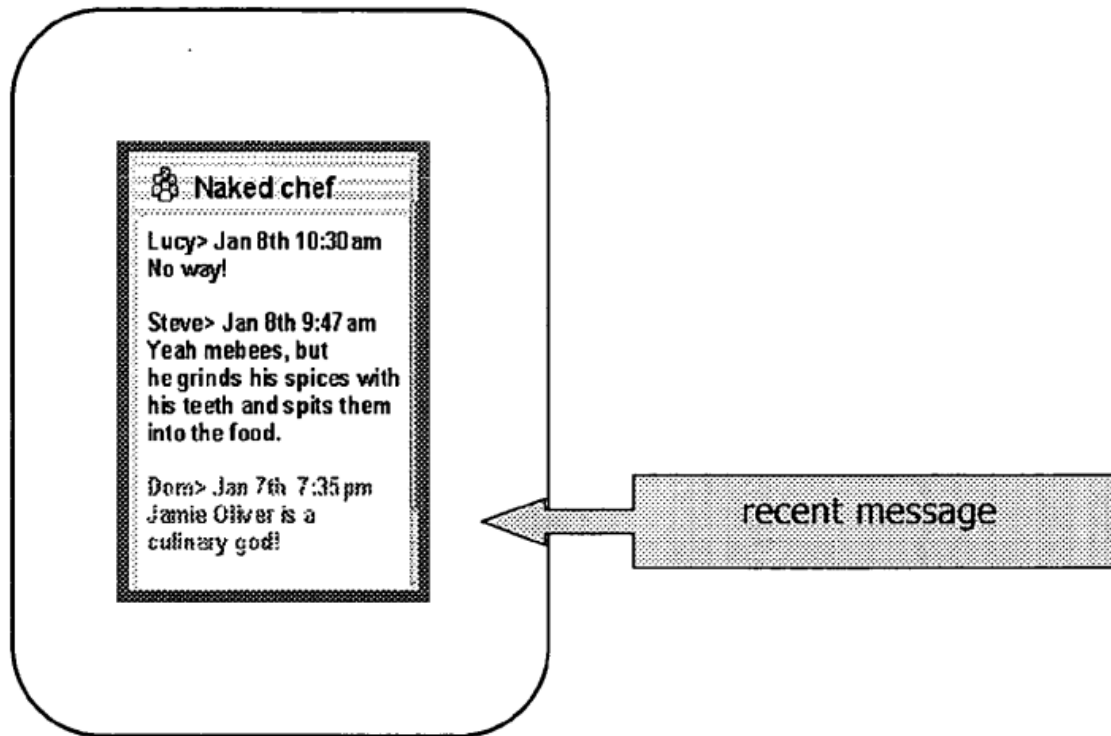
159. This user interface listing Forum communications and providing the user with the ability to respond is displayed to each Forum member. Thus, the combination of Randall and Forsyth discloses that the “*web-based shared information channel [individual Forum; Naked Chef] is configured to allow a given one of the first and second users [e.g., Lucy] to enter a message [e.g., No way!] via the personalized content application [Forums service] of its corresponding mobile device*” [8A].

2. “Receiving and Delivering” Limitations [14A]-[14B]/[18A]-[18B]

Claim 14	Claim 18
[14A] receiving in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device; and	[18A] to receive in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device; and
[14B] delivering the message over said at least one network to another one of the first and second users via the personalized content application of its corresponding mobile device	[18B] to deliver the message over said at least one network to another one of the first and second users via the personalized content application of its corresponding mobile device;

160. The response messages entered by a user through the user interface display by Forum on the mobile device “are of the form that the **new message is sent to the server, which then forwards on** the increment to all the people on the current (server-maintained) address list.” (Forsyth, 6:18-22.) For example, when “a user clicks on ‘Forum reply’”, via the user interface shown in Figure 9 (below), “then a new message is posted to the Forum.” (Forsyth, 6:54-55.) That is, the server receives the message from the user in the Forum (“Web-based shared information channel”). The message is then forwarded to other members of the Forum (delivered to “*another one of the first and second users*”) over the wireless network for display via the Forums application on their mobile device. Specifically, as shown in Figure 7, Forum members are “shown the messages posted to that Forum.” (Forsyth, 6:38-

40.) “Messages appear in date order, i.e. newest messages appear at the bottom,” confirming delivery of the messages to the members. (Forsyth, 6:40-42.)



Symbian Forums—Forsyth, Figure 7

161. Thus, the combination of Randall and Forsyth discloses that the server “receiv[es] in the web-based shared information channel [Forum; Naked Chef] a message from one of the first and second users [e.g., Lucy and Steve] via the personalized content application [Forums Service] of its corresponding mobile device” [14A]/[18A] and “deliver[s] the message over said at least one network [wireless network] to another one of the first and second users [e.g., Dom] via the personalized content application [Forums service] of its corresponding mobile device” [14B]/[18B].

3. “Integrated ... Into a Persistent Version” [8B]/[14C]/[18C]

[8B]/[14C]/[18C] wherein the message is integrated with the first and second device-captured data into a persistent version of a given set of shared information content of the web-based shared information channel so as to be accessible with the first and second device-captured data to the first and second users of the respective first and second mobile devices via the respective personalized content applications of the first and second mobile devices.

162. A Forum is persistent—it remains in existence after the initial message is transmitted to the participants. (Forsyth, 3:6-9 (“Being able to make such groups persistent (i.e., group members can still be reached even if they are not sitting at their desks and working on their PCs) using wireless information devices again increases the importance of the group.”).) Forsyth describes that members of a Forum can “continue[] to return to it from time to time and make postings because they knew that this was a way of staying in touch with a whole group of people.” (Forsyth, 9:40-44.) For example, as explained by Randall, a user can log on to a forum and “exchange and receive messages with those also on the channel.” (Randall, 41:1-2.)

163. Because a Forum is persistent, the communication object storing its messages is also “*persistent*.” As I discussed above, in Forums, “[a]ll linked (e.g. threaded) communications, such as replies and comments, then become part of the same communication object and, like any object are treated as a discrete entity.” (Forsyth, 4:20-24.) Because the communication object is persistent, “the entire communication object can be sent to a new person, or be archived etc.” (Forsyth,

4:25-26, 7:6-8 (“The contents of a Forum can be forwarded-on, for example, to contacts who are not participating in the Forum, or to the Jotter application.”).)

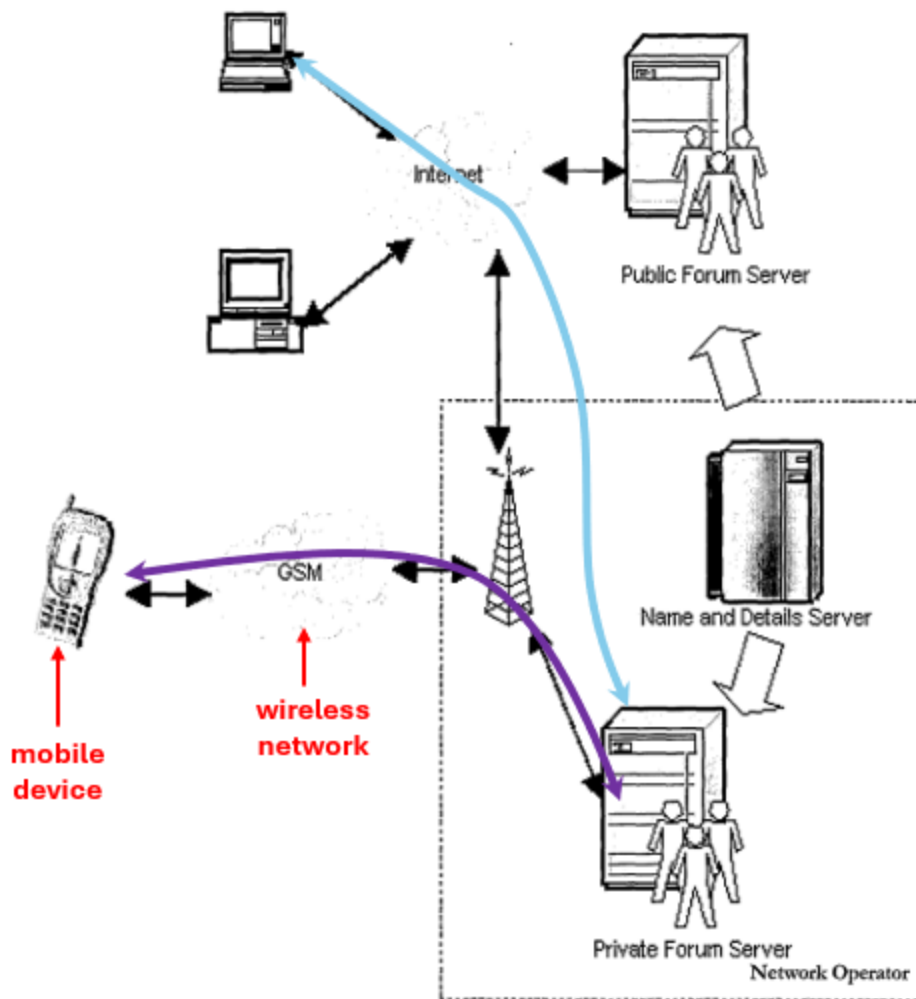
164. As I discussed in §IV.B.3.b, the Randall-Forsyth combination discloses “integrating the first and second device captured data” received in messages from mobile devices through the use of the single communication object for the Forum. Thus, for the above reasons and the reasons in the next section, the combination of Randall and Forsyth discloses “*the message is integrated with the first and second device-captured data into a persistent version of a given set of shared information content of the web-based shared information channel [the communication object for the Forum] so as to be accessible with the first and second device-captured data to the first and second users of the respective first and second mobile devices via the respective personalized content applications of the first and second mobile devices.*”

H. Claim 9

9. The apparatus of claim 8 wherein the message is delivered to one or more of the mobile devices over a wireless network.

165. Forums uses a client/server model with a program component running on a wireless information device (e.g., a local application or microbrowser) which communicates over the wireless network to a program component on the server, as illustrated in Forsyth’s Figure 4 (reproduced below). As I discussed in §IV.A.1.c, Randall and Forsyth teach that the wireless network may be a GSM network (as shown in Figure 4) with the communication protocol means being GSM-SMS/WAP.

(See, e.g., Randall, 1:11-13 (wireless devices “communicate in any manner over any kind of network, such as GSM or UMTS, CDMA and WCDMA mobile radio, Bluetooth, [802.11,] IrDA [(infrared)] etc.”); Forsyth, 1:22-24 (same).) As shown in Figure 4 below, in the wireless infrastructure supporting Forums mobile devices send messages to the servers via the wireless network which routes the messages (delivers) to the proper servers. Thus, in the combination of Randall and Forsyth, *“the message is delivered to one or more of the mobile devices over a wireless network.”*



Symbian Forums—Randall, Figure 4

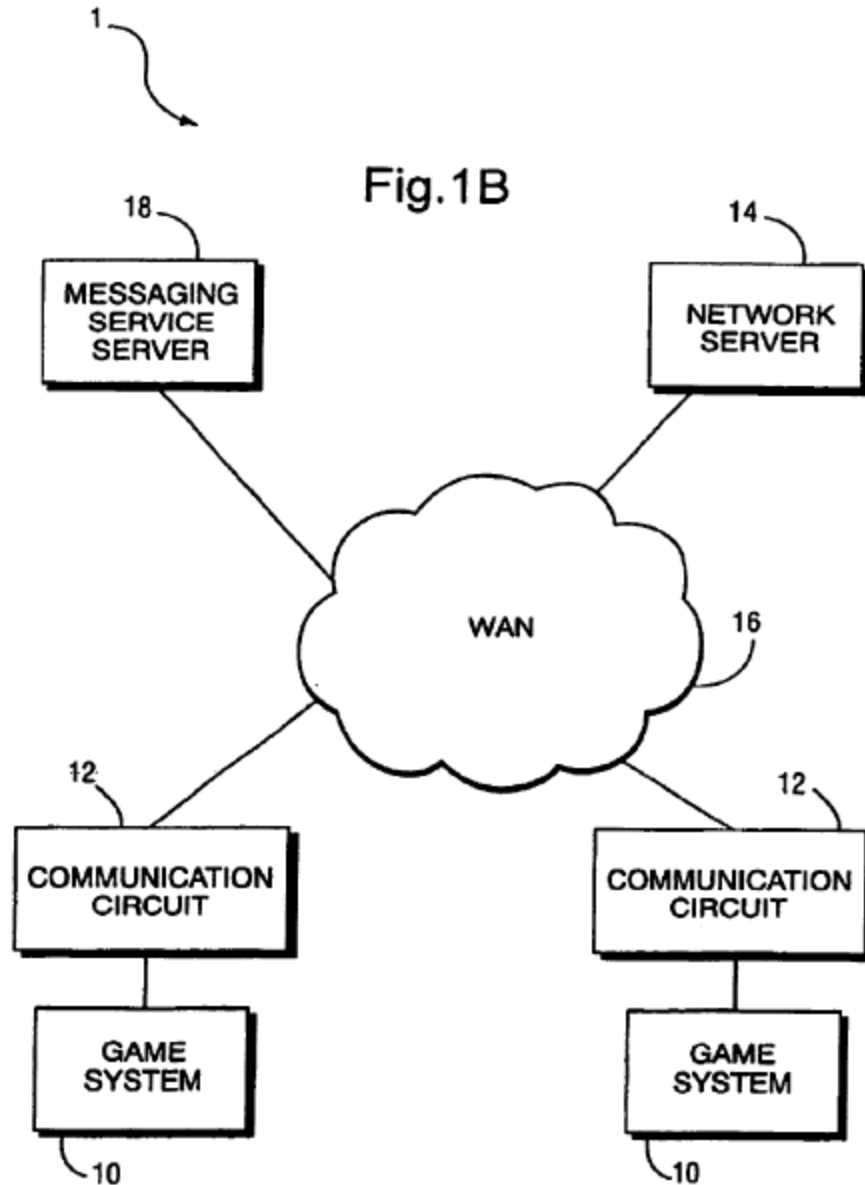
V. GROUND 2: Combination of Pelkey and Eck Renders Claims 1, 2, 6-9, 12-14, 17, 18 Obvious.

A. Overview of the Combination

166. U.S. Patent 7,056,217 to Pelkey et al. (“Pelkey”) and U.S. Patent 6,716,103 to Eck (“Eck”), both assigned to Nintendo Co., Ltd., relate to different aspects of a messaging system established for users of handheld Nintendo game machines, specifically the well-known Nintendo Game Boy® device.

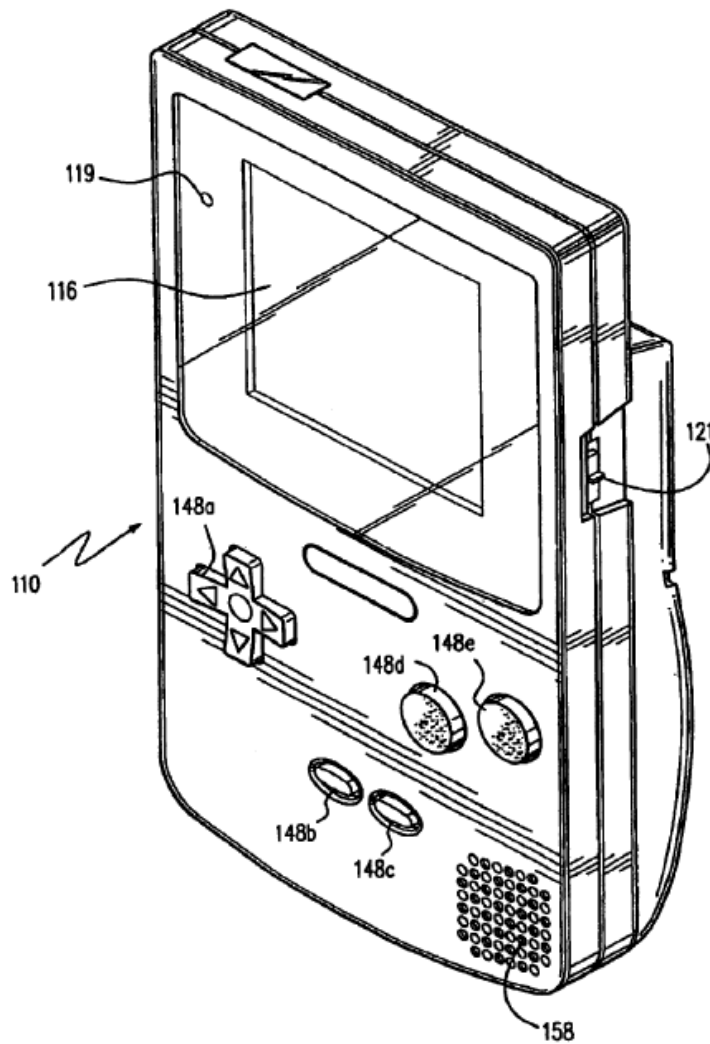
1. Pelkey

167. Pelkey was filed on November 28, 2000. Pelkey relates “to a messaging service for communicating messages between and among users of video game systems.” (Pelkey, 1:14-16.) Figure 1B of Pelkey, reproduced below, illustrates a network “in which the messaging service described herein may be implemented.” (Pelkey, 2:58-60.) The network “includes game systems 10 connected via communications circuits (e.g., modems, network interfaces, etc.) to a wide area network.” (Pelkey, 2:60-62.) A network server 14 “stores games that may be played by users of the network.” (Pelkey, 3:4-5.) A messaging server may be included within the network server or as a standalone component. (Pelkey, 3:9-31.)



Pelkey, Figure 1B

168. Two game systems may be used for gate system 10. (Pelkey, 3:32-33.) First, “a portable (hand-held) color-display game system,” shown, for example, in Figure 3B (below) may be used. (Pelkey, 4:55-57.) Second, a game console such as the N64 video game system may be used. (Pelkey, 3:38-48, Figure 2.)



Pelkey, Figure 3B

2. Eck

169. Eck was filed on September 11, 2000. Eck discloses a modified version of the Nintendo Game Boy® (“portable game machine”) that “provides enhanced multi-player capabilities through communications with other game machines.” (Eck, 1:48-51.) Multi-player game play is achieved using a “pager cartridge” which is inserted into the “portable game machine” which may contain “a modem or other

network interface means for establishing communications over a network such as the Internet.” (Eck, 9:43-46, 9:60-61, 27:51-53.) One class of games capable of being used with the “portable game machine” is “Multiple User Dungeon (MUD) games” which “are Internet-based on-line exploration and quest games in which an open-ended number of players simultaneously exist in the same game world, sharing experiences and adventures.” (Eck, 10:1-7.)

170. In an exemplary multi-user embodiment, Eck uses a “pager cartridge” to access “PagerWorld, a virtual community for the network of all users having pager cartridges.” (Eck, 10:20-23.) In “PagerWorld,” “[p]layers can find pen-pals” and “view message boards,” among other activities. (Eck, 10:40-42.) “Players are represented in PagerWorld by a ‘persona character’ ... that all other PagerWorld players will see.” (Eck, 10:23-25.) “The system also enables bidirectional transmission of messages with images and sound bytes to other pagers in the network using, for example, a digital camera cartridge in combination with a pager cartridge.” (Eck, 16:42-45.) Importantly, “image data obtained with a digital camera cartridge” can be used to “customize the persona character.” (Eck, 12:38-40.)

171. The “pager cartridge provides a two-way paging device that has the ability to receive messages from other users in the paging system as well as from the paging system operator.” (Eck, 9:40-43.) A user can conduct “messaging” activities within PagerWorld including “broadcasts to all pagers,” “group messages,” “digital

camera picture transmission (with/ without sound),” “messages plus sound bites,” and “messages to and from Internet.” (*See* Eck, 20:6-36.) Messages are read, composed and sent from the “Message Center” inside PagerWorld. (Eck, 11:27-29.) “Message Center” includes an “Address Book” that “provides a listing of other users by their handles” and “the persona character of the other user as it appeared on his/her last communication with the user.” (Eck, 11:32-35; *see* Eck 12:16-19.) “Messages from the paging system operator may be sent to all users in the paging system, to certain groups of users in the paging system or to a particular user in the paging system.” (Eck, 9:46-49.)

172. “PagerWorld is updated” is updated at regular intervals including “via night-time downloads when pager cartridge is in SLEEP mode.” (Eck, 13:1-5.) “When this occurs, new areas are made available for the player to ‘adventure’ within.” (Eck, 13:5-6.)

3. Motivation to Combine Pelkey and Eck

173. A POSITA would have been motivated to combine Eck’s teachings regarding PagerWorld with the network and message server architecture taught in Pelkey.

174. Pelkey and Eck both disclose an enhanced version of the Nintendo GameBoy® that is in the same field as the ’348 patent—“network-based communication systems.” (*See* EX-1001, 1:26-28; Pelkey, 1:37-42; Eck, Abstract.)

Pelkey and Eck are also reasonably pertinent to problems addressed by the '348 patent, namely “optimizing” the sharing of information content on mobile devices. (*See, e.g.*, EX-1001, 1:50-55.)

175. Eck discloses the features of a multi-player game, PagerWorld. Eck further discloses the ability to share photos and sound clips and exchange messages with other players. In the preferred embodiment, such information is exchanged using a “pager cartridge” where “message charges are generally based on the number of characters in the message.” (Eck, 16:57-60.) While Eck discloses that its “invention” can be applied to other technologies like WAP (Eck, 25:17-20), it does not specifically disclose a client-server structure as taught in Pelkey.

176. Pelkey discloses the use of a network server and message server to facilitate game play and exchanging messages amongst users. But it does not specifically disclose the integration of messaging and sharing content like photos and sound clips with other users within its client-server environment. A POSITA would be motivated to apply the network and message server architecture in Pelkey to Eck in order to avoid the charge-based system for exchanging messages and photos via pager cartridge in Eck. In addition, a POSITA would be motivated to modify the “pager cartridge” in Eck as necessary to use PagerWorld in Pelkey given the disclosed benefits of PagerWorld including “exploration and adventure,” “chat and community interaction,” and “character growth.” (Eck, 10:13-19.) Notably,

Pelkey does not describe any game play that includes in-game messaging in conjunction with the aforementioned features. In addition, the combination is nothing more than the application of a known technique (Eck's PagerWorld game) to a known method/product (Pelkey's client-server based messaging server) which was ready for further improvement to achieve predictable results. Replacing the pager system infrastructure in Eck with the client-server architecture in Pelkey is the simple substitution of a one known element for another to achieve a predictable result (internet-based functionality). As is using the PagerWorld "pager cartridge" in the Pelkey portable game machine.

177. A POSITA would have had a reasonable expectation of success in the combination and the results of the combination would have been predictable because both references are directed to the same product and activity (game play). Both Pelkey and Eck disclose the desirability of combining messaging capabilities with game play in a portable gaming system. (Pelkey, 2:20-23; Eck, 10:32-44.) And as explained below, the complimentary network architecture disclosed in Pelkey and Eck further demonstrates that such a modification could be made with a reasonable expectation of success.

B. Independent Claims 1, 13, 17

178. The '348 patent includes four server-side independent claims—an apparatus claim (claim 1), a method claim (claim 17) and a computer program product (“CPP”)-style claim (claim 17).

179. Claims 1, 13, and 17 include substantially overlapping processing limitations ([1A]-[1E]/[13A]-[13C]/[17A]-[17C]), as shown in the table below. Because of the overlap, I address these limitations together. In this table, I also provide a citation to the section discussing each limitation.

Claim 1	Claim 13	Claim 17	Section
[1P] An apparatus comprising:			V.B.1.a
	[13P] A method comprising:		V.B.1.b
		[17P] A non-transitory computer-readable storage medium having embodied therein executable code of one or more software programs, wherein said executable program code when executed by a processing element causes said processing element:	V.B.1.c
[1A] a processing element comprising a processor coupled to a memory; and			V.B.2
[1B] a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network;			V.B.2
the processing element being configured:			

Claim 1	Claim 13	Claim 17	Section
[1C] to receive first device-captured data from a first one of the mobile devices via the network interface;	[13A] receiving first device-captured data from a first mobile device over at least one network;	[17A] to receive first device-captured data from a first mobile device over at least one network;	V.B.3.a
[1D] to receive second device-captured data from a second one of the mobile devices via the network interface; and	[13B] receiving second device-captured data from a second mobile device over said at least one network; and	[17B] to receive second device-captured data from a second mobile device over said at least one network; and	V.B.3.a
[1E] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[13C] integrating the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[17C] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	V.B.3.b

1. Preambles [1P]/[13P]/[17P]

a. [1P]: “apparatus”

[1P] An apparatus comprising:

180. The combination of Pelkey and Eck discloses a server; an “*apparatus*” [23P].

b. [13P]: “method”

[13P] A method comprising:

181. The combination of Pelkey and Eck discloses a method for performing the actions recited in limitation [13A]-[13C] discussed in §V.B.3.

c. [17P]: “non-transitory computer-readable storage medium”

[17P] A non-transitory computer-readable storage medium having embodied therein executable code of one or more software programs, wherein said executable program code when executed by a processing element causes said processing element to:

182. The combination of Pelkey and Eck discloses this limitation.

183. Eck explains that a cartridge including messaging functionality (e.g., a pager cartridge) “is provided for use with a game machine having a game program executing processing system including a microprocessor.” (Eck, 1:60-65.) The messaging cartridge “includes a memory 145 for storing software used in the pager operations.” (Eck, 7:7-9.) Pelkey similarly discloses “[a] messaging service client is implemented by program code contained in an application (e.g., a video game, a web browser) executed by the game system.” (Pelkey, 1:42-44.)

184. The inserted messaging cartridge includes ROM 42 which “contain[s] instructions” pertaining to, e.g., the messaging function. (*See, e.g.*, Eck, 4:5-6, 7:7-12 (“[p]ager cartridge 100 includes a memory 145 for storing software used in the pager operations ... [i]t is of course possible to store the software for implementing at least some of these operations in the memory of game machine 10”).) When inserted, the “game machine circuitry [] access[es] information contained with ROM 42 (and read/write memory 46), which information controls the game machine ... under control of the ROM game program information.” (Eck, 4:9-20.) The game machine 10 then “automatically activates a display of messages on the display thereof in accordance with the operating software stored in the memory of the pager.” (Eck, 22:10-14.)

185. Eck likewise discloses the use of executable software code to perform the disclosed functions:

Certain of the above-described system components could be implemented as other than the portable game machine 10 described above. For example, one could run graphics application or other software written for the system on a platform with a different configuration that emulates the system or is otherwise compatible with it. If the other platform can successfully emulate, simulate and/or provide some or all of the hardware and software resources of portable game machine 10, then the other platform will be able to successfully execute the software.

(Eck, 25:42-51.)

186. Therefore, the combination of Pelkey and Eck discloses “*non-transitory computer-readable storage medium having embodied therein executable code of one or more software programs, wherein said executable program code when executed by a processing element*” causes the processing element to perform the remaining steps in claim 17.

2. Server Architecture Limitations [1A]-[1B]

[1A] a processing element comprising a processor coupled to a memory; and [1B] a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network;
--

187. The combination of Pelkey and Eck discloses a server having a “*processing element comprising a processor coupled to a memory.*” Pelkey recites, in its claim 18, a “server process for a game network server embodied on a storage device and comprising instructions executable by a server processing system.” (Pelkey, 16:44-46.) Thus, Pelkey discloses “*a processor* [processing system] *coupled to a memory* [storage device].” While Pelkey does not discuss this structure in the detailed description, a POSITA would have understood that the hardware used for a server is a digital computing device such as a personal computer. Such a personal computer is the host 1201 shown in Pelkey’s Figure 6B below. (See Pelkey, 12:43-45.)

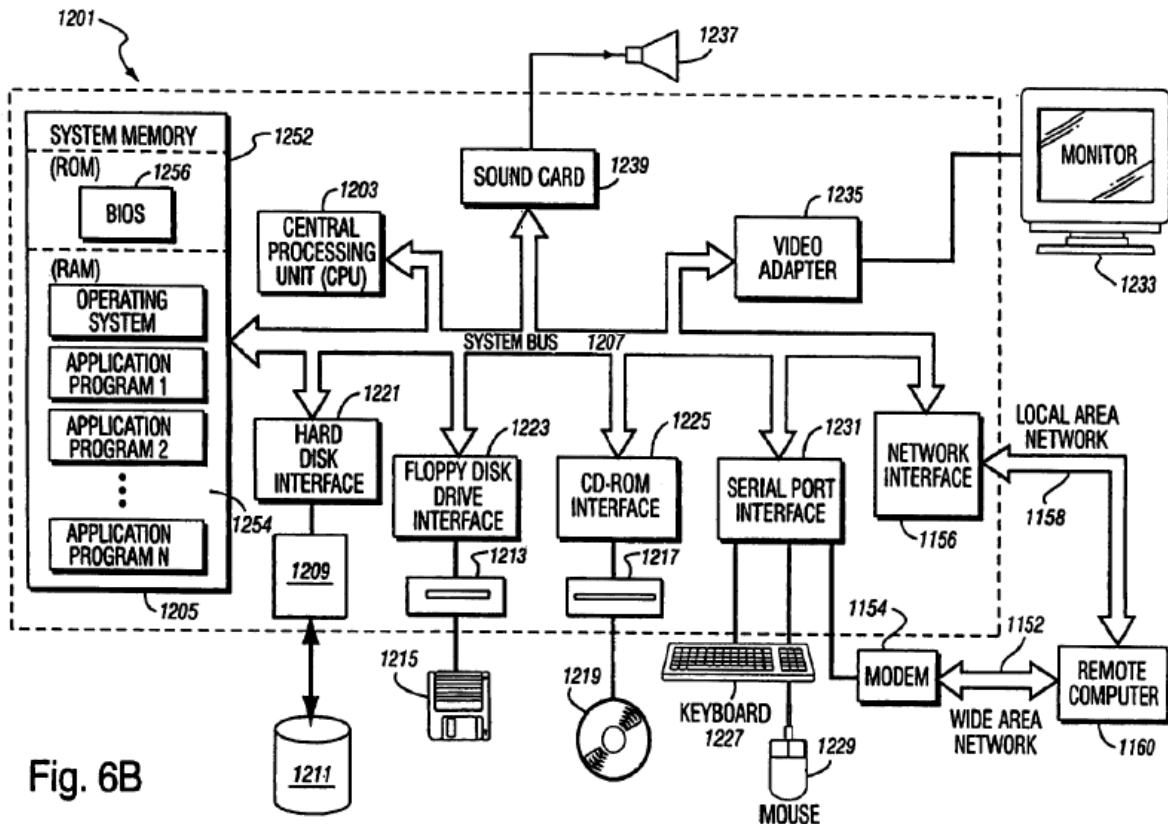


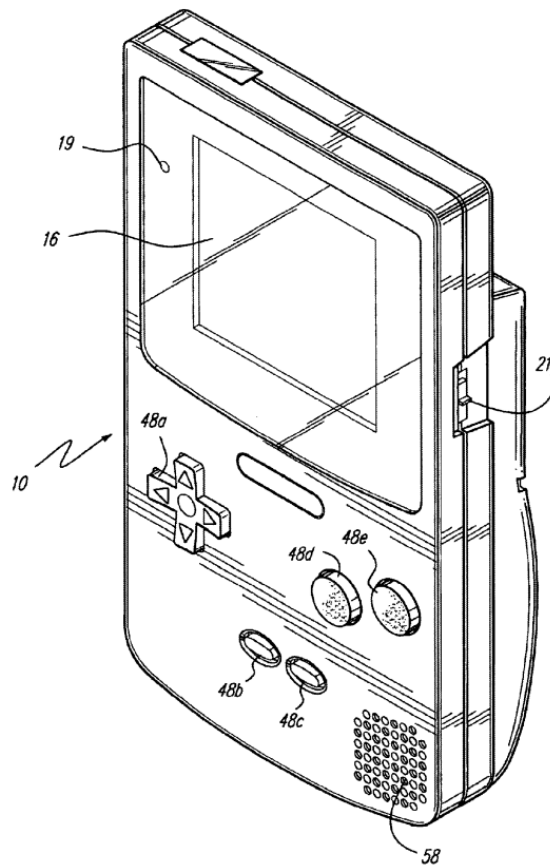
Fig. 6B

Pelkey, Figure 6B

188. Should PO contend “*memory*” of the “*processing element*” must store instructions executed by the processor, such memory would have been obvious, if not inherent in Pelkey and Eck which both teach software running on the server. Because the software/applications executing on a processor are stored in memory and also access information stored locally in memory, a POSITA would have understood Pelkey and Eck further disclose or suggest the “*processor [is] coupled to a memory.*”

189. The combination of Pelkey and Eck discloses a “*plurality of mobile devices*.” As an initial matter, and as I noted in Ground 1, I understand that several constructions of the term “mobile device” have been proposed in the MDT-Meta-Litigation and in the Meta-MDT-IPR. As I noted in that section, the term does not require construction in the present IPR because both Pelkey and Eck discloses a “*mobile device*” under any reasonable interpretation of the term.

190. Specifically, both Pelkey and Eck disclose a “portable game machine and, more particularly, to a portable game machine that is selectively configurable for one or more different operations such as wireless communications, global positioning, image capturing and combinations thereof.” (Eck, 1:12-16, Fig. 1B (below); *see* Pelkey, 4:55-57 (“FIGS. 3A, 3B and 3C show a portable (hand-held) color-display game system 110”), Fig. 3B.) An exemplary game machine is the “GameBoy® Color game machine,” (Eck, 3:29-33; *see* Pelkey, 4:66-67), a commercially available product widely known by the general public and those skilled in the art as of the earliest possible priority date.



Eck, Figure 1B

191. The portable game machine described by both Pelkey and Eck is a “piece of handheld equipment” and therefore a “*mobile device*” under PO’s MDT-Meta-Litigation construction. This portable game machine processes information and is capable of being configured for communication over a network, as I discussed above. Thus, the portable game machine is a “*mobile device*” under Meta’s MDT-Meta-Litigation and Meta-MDT-IPR constructions. Finally, as illustrated by Eck’s Figure 1B, the portable game machine has limited display space and because it lacks a physical or soft keyboard, a POSITA would have understood the portable game

machine also has limited navigational capabilities. Thus, the portable game machine is also a “*mobile device*” under PO’s Meta-MDT-IPR construction (“a portable device with limited display space and limited navigational capabilities that connects to a mobile site and/or mobile channel via a wireless network”).

192. The combination of Pelkey and Eck discloses a “*plurality of mobile devices*.” Pelkey is directed to “[a] messaging system [that] includes a web server computer and at least two video game systems.” (Pelkey, Abstract.) Eck provides “a portable game machine that provides enhanced multi-player capabilities through communications with other game machines, portable or otherwise.” (Eck, 1:48-51.) For example, when discussing an example player intervention, Eck notes that “[t]he portable game machine equipped with a pager cartridge as described above has the ability to wirelessly intervene in a video game either by result of a player solicitation or an unsolicited action from another player (using a similar pager-equipped portable game machine) on the fly—wherever the portable game machine is operational.” (Eck, 14:12-17.)

193. The combination of Pelkey and Eck also discloses a “*network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network*.”

194. As shown in Pelkey, Figure 6B above, the host system includes a processing unit 1203, system memory 1205, and network interface 1156. Thus, the

server also includes a “*network interface*.” A POSITA would understand that the disclosed network interface is coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network given the disclosure in Pelkey that “[g]ame network server 14 maintains a list of registered usernames. The usernames are checked to confirm that a particular user is a registered user of the messaging service prior to granting that user access to the messaging service.” (Pelkey, 7:1-6.)

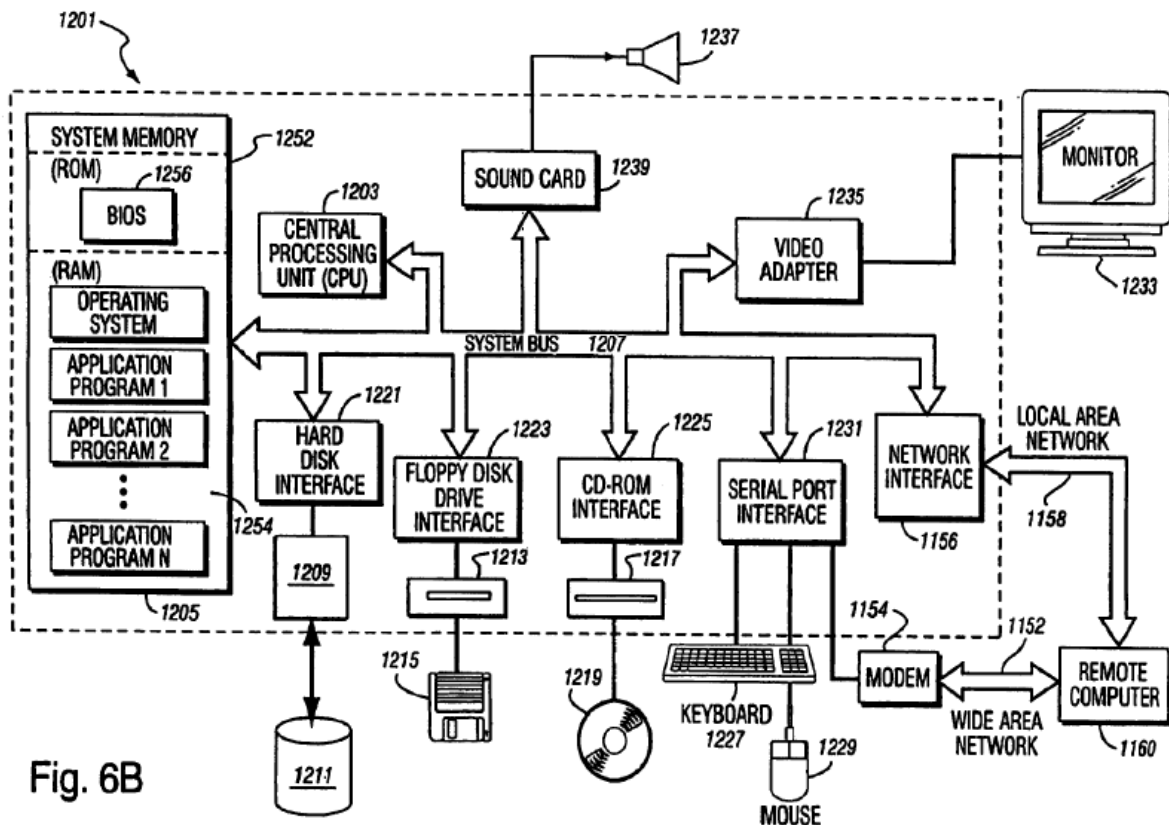


Fig. 6B

Pelkey, Figure 6B

3. Processing Limitations [1C]-[1E]/[13A]-[13C]/[17A]-[17C]

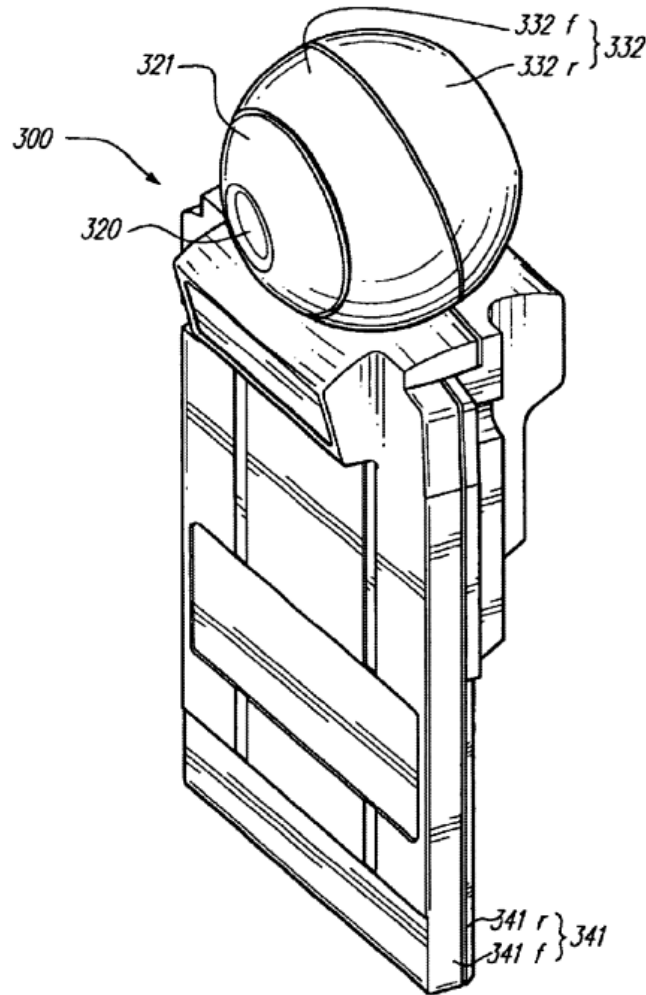
a. “Receive[] device-captured data” Limitations [1C]-[1D]/[13A]-[13B]/[17A]-[17B]

Claim 1	Claim 13	Claim 17
[1C] to receive first device-captured data from a first one of the mobile devices via the network interface;	[13A] receiving first device-captured data from a first mobile device over at least one network;	[17A] to receive first device-captured data from a first mobile device over at least one network;
[1D] to receive second device-captured data from a second one of the mobile devices via the network interface; and	[13B] receiving second device-captured data from a second mobile device over said at least one network; and	[17B] to receive second device-captured data from a second mobile device over said at least one network; and

195. The combination Pelkey and Eck discloses “*reciev[ing] first device-captured data from a first one of the mobile devices via the network interface*” and “*reciev[ing] second device-captured data from a second one of the mobile devices via the network interface*” [1C]/[1D] and “*receiv[e]/[ing] first device-captured data from a first mobile device over at least one network*” and *receiv[e]/[ing] second device-captured data from a second mobile device over said at least one network* [13A]-[13B]/[17A]-[17B].

196. First, the Pelkey-Eck combination discloses that the “*plurality of mobile devices*” include “*device captured data*” including at least capturing photos/images and sound clips/audio files at the portable game machine. Eck

discloses “a game machine is provided with ... digital camera circuitry configured to capture an image.” (Eck, 2:16-18.) For example, Eck discloses that a messaging cartridge (e.g., pager cartridge), “is itself provided with a slot for receiving” another cartridge. (*See, e.g.*, Eck, 5:23-25.) One example of a “piggy-backed” cartridge is a “digital camera cartridge,” illustrated in Figure 14 (below): “pager cartridge 1000 itself includes a built-in cartridge slot to accept game cartridges or other accessories (such as read/write memory cartridges, a digital camera, etc.), thereby enabling game play or digital camera operations while pager cartridge 100 is attached to game machine 10.” (Eck, 22:14-20, 23:36-38 (“digital camera cartridge is also selectively insertable ... into the slot of another cartridge such as pager cartridge 100”).)



Eck, Figure 14

197. The portable game machine having an inserted messaging cartridge and an inserted camera cartridge “*captur[es] content.*” Eck’s digital camera cartridge “is usable to **capture images**, which images may then be transmitted to others via an operation using” the messaging cartridge into which the camera cartridge is inserted. (Eck, 23:38-41; *see also* Eck, 2:15-18 (“a game machine is provided with ... digital camera circuitry configured to capture an image”).) The “digital camera cartridge” may also be “configured to **capture sounds** [and] these captured sounds may be

used by game machine 10 and/or transmitted as a message using pager cartridge.” (Eck, 9:20-23.)

198. In addition to the camera cartridge, Eck discloses other cartridges that can be piggybacked with the messaging cartridge to “*captur[e] content*.” For example, Eck discloses that “a separate ‘sound card’ may be ‘piggy-backed’ to game machine 10” via the messaging cartridge. (Eck, 9:23-25.) Eck further discloses a “global positioning system (GPS) cartridge” that captures “user portion information” (i.e., user location). (See Eck, 22:28-29.)

199. Pelkey likewise discloses that a digital camera can be attached to its portable game machine. (Pelkey, 7:26-31.) Indeed, both Pelkey and Eck incorporate by reference the same Nintendo patent disclosure describing the camera in detail. (Pelkey, 7:26-31 *citing* U.S. Patent 6,435,969; Eck, 23:41-48 *citing* Ser. No. 09/430,169.)

200. The Pelkey-Eck combination also discloses “*reciev[ing] first device-captured data from a first one of the mobile devices via the network interface*” [1C] and “*receiving first device-captured data from a first mobile device over at least one network*” [13A/17A].

201. One way the server in the Pelkey-Eck combination receives device-captured data is by receiving messages prepared by a user containing text, photos or sound clips. The message, photos and sound clips are each examples of “device

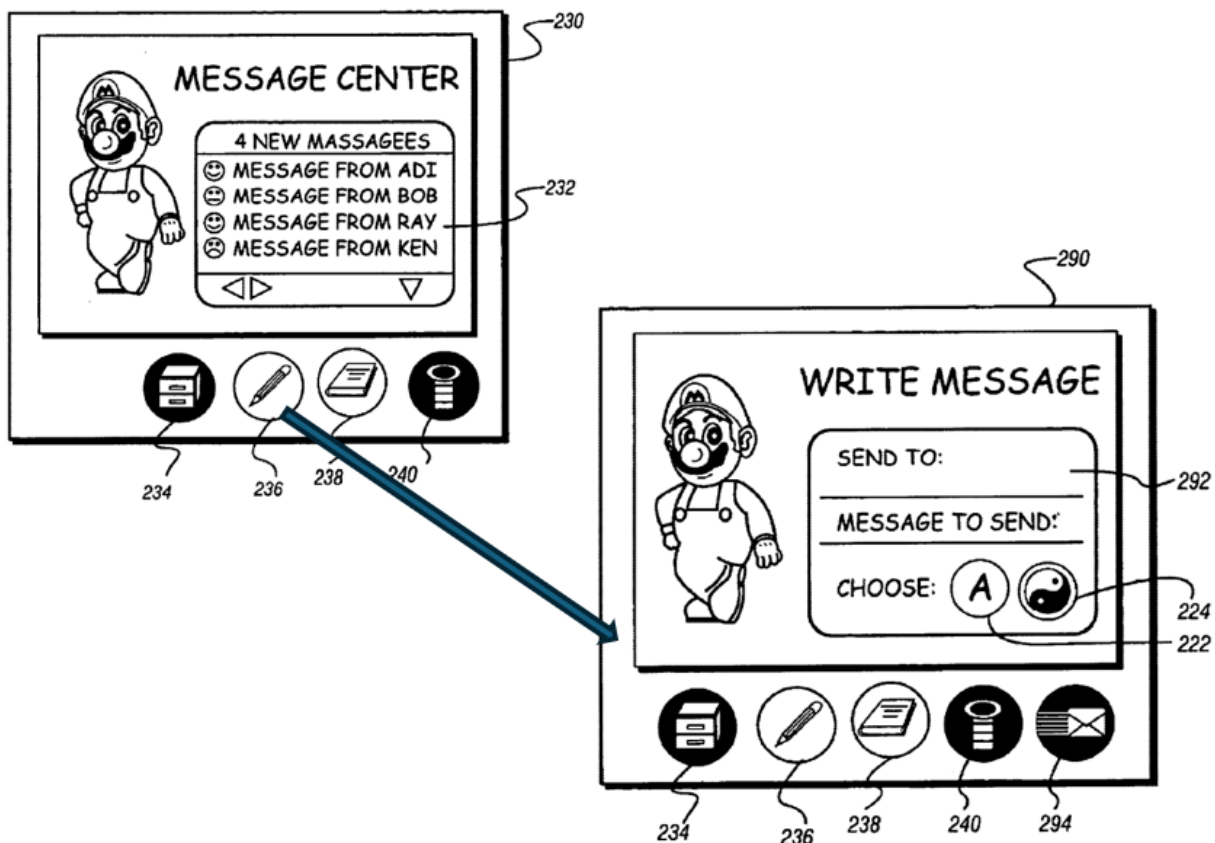
captured data.” The network implementing the messaging service of Pelkey and Eck, illustrated in Pelkey’s Figure 1A (reproduced below), includes the game system (e.g., portable game machine) coupled via a network to a server. (Pelkey, 2:58-3:4.) The network server “provides the messaging service.” (Pelkey, 3:9-10.)

202. PagerWorld includes a “Message Center” that “permits users, among other things, to read their messages and to compose and send new messages. The Message Center screen features a window **232** that lists unread messages.” (Eck, 11:27-31.) “When a message is selected from Message Center screen, the contents of the message appear, along with the user’s persona character and ‘handle’ of the person that sent the message.” (Eck, 11:53-57; *see also* Eck. 12:36-38 (“Any time the user sends a message, his/her persona character appears alongside the message on the other user’s screen.”).)

203. PagerWorld supports transmission of messages “with images and sound bytes to other pagers in the network using, for example, a digital camera cartridge in combination with a pager cartridge.” (Eck, 16:42-45, 24:30-36 (“the images stored in the read/write memory of digital camera cartridge 300 may be transmitted to other [sic] using the radio circuitry of pager cartridge 100”), 2:15-23 (inputs “cause the image captured by the digital camera to be transmitted as part of a message”).) In addition to photos/images, the message can include sounds (audio file). (Eck, 20:12-14 (discussing messages containing “digital camera picture transmission

(with/without sound)” and “messages plus sound bites”), 21:47-48 (“Digital images can be exchanged and optionally supplemented by sound bites from a sound dictionary”).)

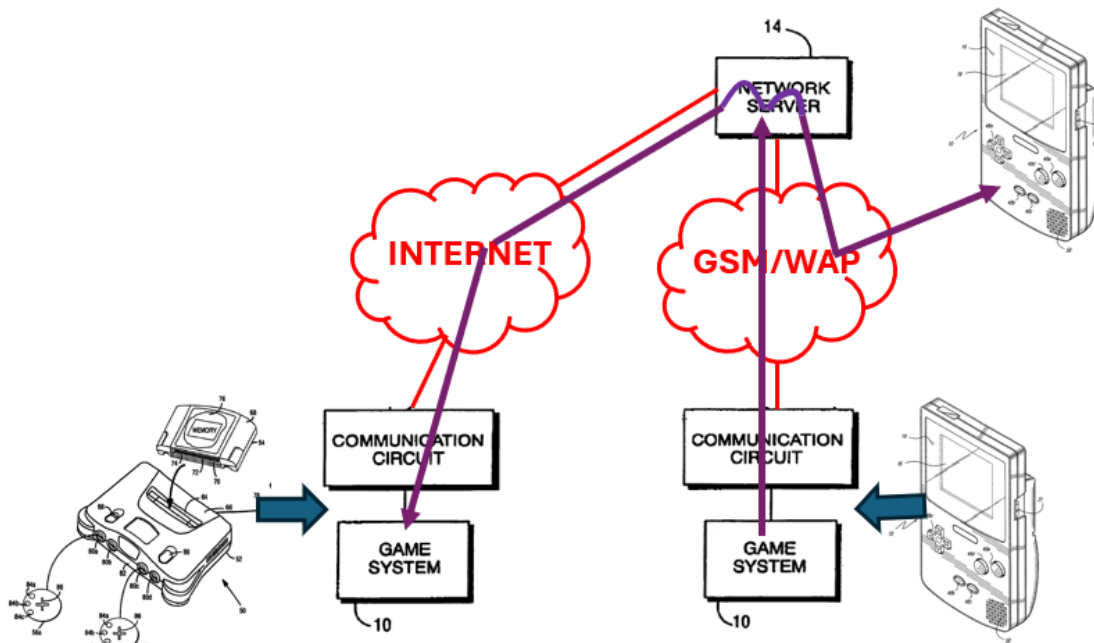
204. Such a message can be sent through the Message Center accessed through an icon on the main screen. (Eck, 11:26-28.) While in the Message Center (e.g., screen illustrated in Figure 8C (below-left)), user activates the quill icon 236 to navigate to the “Compose Message screen 290” of Figure 8F. (Eck, 11:37-38.) The “send to” window 292 “allows the user to choose to whom the message will be sent.” (Eck, 12:10-11.) A user can opt to send the message to an individual, to a pre-defined group (e.g., a buddy list), (Eck, 20:9), or as a broadcast to all messaging devices in PagerWorld, (Eck, 20:8, 9:46-49 (“messages from the paging system operator may be sent to all users in the paging system, to certain groups of users in the paging system or to a particular user in the paging system”)). For group messaging, Pelkey teaches that the messaging service client “allows the user to create a list (‘buddy list’) of other users (‘buddies’) with whom he/she wishes to remain in contact.” (Pelkey, 7:33-35.) The buddy list “is stored by the network server.” (Pelkey, 7:35-36.) In the combination of Pelkey and Eck, the PagerWorld user can identify a “buddy list” in the “send to” window to send a “carbon copy” of the message.



Eck, Figure 8C (left), Figure 8F (right)

205. The portable game machine transmits messages “with images and sound bytes to other pagers in the network using, for example, a digital camera cartridge in combination with a pager cartridge.” (Eck, 16:42-45, 24:30-36, 2:15-23.) As explained by Eck, this “image and sound data may be compressed/decompressed in accordance with well-known compression/decompression techniques to more effectively utilize the available bandwidth.” (Eck, 16:45-48.) The message may further include the sending user’s persona. (See Eck, 11:53-57, 12:36-38 (“Any time the user sends a message, his/her

persona character appears alongside the message on the other user's screen.”.) Pelkey discloses that the server “suppl[ies] messages received from one logged-in player to another logged-in player.” (Pelkey, 17:1-5.) The message is thus provided “via the network interface” as shown in the Figure below. (See, e.g., Eck. 2:15-18 (“a game machine is provided with radio circuitry configured to transmit messages”).) This is consistent with Eck’s use of GSM-SMS which requires a server to act as a message service centre for storing and forwarding messages from originators to recipients. (See *supra* §IV.A.1.c.iii.) I illustrate this message flow in Pelkey’s Figure 1 below, showing a message from a portable game system being sent to the server.



Pelkey, Figure 1A

206. Another way the server in the Pelkey-Eck combination receives device-captured data is by receiving image data to permit a user to personalize their persona character. Players in PagerWorld are represented “by a ‘persona character’ and it is this character that all other PagerWorld players will see.” (Eck, 10:23-25.) As I discussed above, the user’s persona is a feature element on the PagerWorld screens and “function[s] as a sort of ‘pager’ tour guide.” (Eck, 10:62-64.) A user’s persona is shared with other members of the PagerWorld community: “the contents of the message appear, along with the user’s persona character and ‘handle’ of the person that sent the message.” (Eck, 11:54-57.) The user’s address book is a list of “other users by their handles,” and next to the user’s handle “is the persona character of the other user as it appeared on his/her last communication with the user.” (Eck, 12:16-19.)

207. A user can customize their persona. The messaging service client (PagerWorld client program) “provides the user with an opportunity to create a user profile that is stored in memory of network server 14.” (Pelkey, 7:9-11.) The users may be “provided with the capability of including in their profiles customized faces (images) made up of various user-selected features” or “digital images of their own faces” to “enhance the ‘persona’ of the user.” (Pelkey, 7:20-27.) For example, in Eck, the “persona character” can be “customize[d] ... using image data obtained with a digital camera cartridge.” (Eck, 12:38-40.) The persona character, is stored,

in the Pelkey-Eck combination at the network server. In addition to including the persona character in messages, in the PagerWorld game universe, players “walk their persona characters in a world featuring attractions and sideshows.” (Eck, 10:38-40, 13:29-31 (during game play “the player may control his/her persona character to fight, flee or use some item in the player’s possession”).) Thus, the image (persona) is inserted into PagerWorld for inclusion in the virtual world and message exchanged between players.

208. The Pelkey-Eck combination also discloses “*reciev[ing] second device-captured data from a second one of the mobile devices via the network interface*” [1D] and *receiving second device-captured data from a second mobile device over said at least one network* [13B]/[17B]. For example, each user is capable of sending messages, photos and sound clips and customizing their persona using, e.g., photos taken with the integrated digital camera. (Eck, 11:32-35, 12:16-19.)

b. “Integrating” Limitations [1E], [13C], and [17C]

Claim 1	Claim 13	Claim 17
[1E] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[13C] integrating the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.	[17C] to integrate the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.

209. As discussed in §III.D.2, the parties in the Meta-MDT-IPR agree the term “*web-based shared information channel*” should be construed as “a medium for transferring information accessible to more than one user via the web.” The combination of Pelkey and Eck discloses a “*web-based shared information channel*” under this construction.

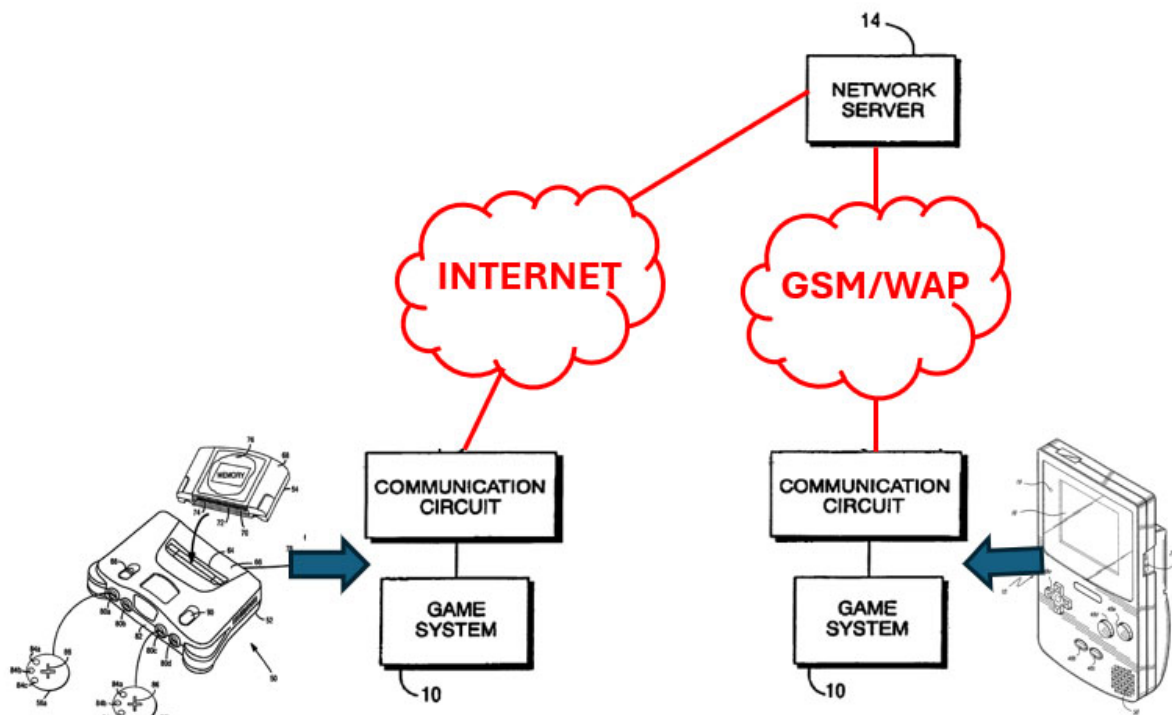
210. PagerWorld is a “shared information channel.” Eck discloses that the messaging cartridge includes a memory “storing software used” in the messaging (e.g., pager) operations and “one or more video game programs that are executable by CPU 26 of game machine 10.” (Eck, 7:7-22.) In addition to messaging (e.g.,

paging functions), the messaging cartridge “can be used in game playing.” (Eck, 9:60-61.) An example of a gaming application is “Multiple User Dungeon (MUD) games” which are “Internet-based on-line exploration and quest games in which an open-ended number of players simultaneously exist in the same game world, sharing experiences and adventures.” (Eck, 10:2-7.) “[K]ey components” of such games include “exploration and adventure,” “**chat and community interaction**,” and “character growth and perpetual, dynamic worlds that grow, adapt and change.” (Eck, 10:13-19.)

211. An exemplary MUD game described by Eck is “PagerWorld, a virtual community for the network of **all users having pager cartridges**.” (Eck, 10:20-23.) Although Eck uses the word “PagerWorld” in the MUD title to reflect the communication means is paging, a POSITA would have understood that such a MUD is equally applicable when the communication means is another messaging type such as SMS or messaging via a WAP protocol. PagerWorld includes client software in the portable game machine (client program) and corresponding software in the server (server program). (See Eck, 4:61-5:7, 9:40-59.) As such, PagerWorld is persistent—it remains in existence after individual users exit the world. PagerWorld is therefore a “*shared information channel*.”

212. The Pelkey-Eck combination discloses a “*web-based shared information channel*.” Both Pelkey and Eck are directed to a messaging service

provided using a portable game machine as I have discussed above. Pelkey discloses a network “in which the messaging service” may be implemented. (Pelkey, 2:58-60.) The network “includes game systems 10 connected via communications circuits 12 (e.g., modems, network interfaces, etc.) to a wide area network 16 such as the Internet.” (Pelkey, 2:60-62.) Pelkey explains that game system 10 may be a video game system, such as the N64 video game system, connected to a television. (See Pelkey, 3:38-48.) Game system 10 may also be the portable game machine 110. (Pelkey, 4:55-57.) I reproduced Pelkey’s Figure 1A below with the game system 10 on the left using the N64 game system illustrated in Pelkey’s Figure 2 and the game system 110 on the right using the portable game machine in Eck’s Figure 1B. I have also illustrated the connection from the N64 game system to the server via the Internet as taught by Pelkey.



Pelkey, Figure 1

213. Pelkey does not disclose details of the wireless network used to provide wireless messaging from the game system to the server. However, while Eck mentions use of a paging network for this functionality, Eck also explicitly discloses that its “present invention” may be “applied to other wireless technologies such a GSM (Global System for Mobile Communications) and WAP (Wireless Application Protocol).” (Eck, 25:17-20.) A POSITA would have been motivated to use either GSM-SMS or WAP for the messaging service, rather than paging, to obtain the enhanced features of those protocols. Based on Eck’s disclosure, a POSITA would

have understood that the portable game machine communicates with the server via messaging available via the GSM network (e.g., SMS) or messaging available via WAP.

214. GSM-SMS is functionality implementable over a wireless network and, as shown in Pelkey's Figure 1, the GSM network is separate from the Internet connecting the N64 game system to the server. As I discussed in §IV.A.1.c.ii, the WAP protocol stack transports data over GSM's SMS. I provided an overview of a mobile originated message in SMS in a GSM network in my analysis of this limitation in Ground 1. As discussed in that section, the SMS message includes a header with data fields indicating control and content details for the message. The Pelkey-Eck combination thus discloses a medium (PagerWorld) "for transferring information accessible to more than one user via the web" under the agreed construction in the Meta-MDT-IPR.

215. As noted above, Eck discloses that its invention may be applied to wireless technologies including "GSM (Global System for Mobile Communications) and WAP (Wireless Application Protocol)." (Eck, 25:17-20.)

216. Use of WAP teaches or at least suggests that selection of a specific portal from the main PagerWorld screen constitutes selecting a web-based action. WAP is "based on the WWW communication protocols" and "WWW content formats." (WAP Architecture, 13.) WAP "enables the supplying of advanced

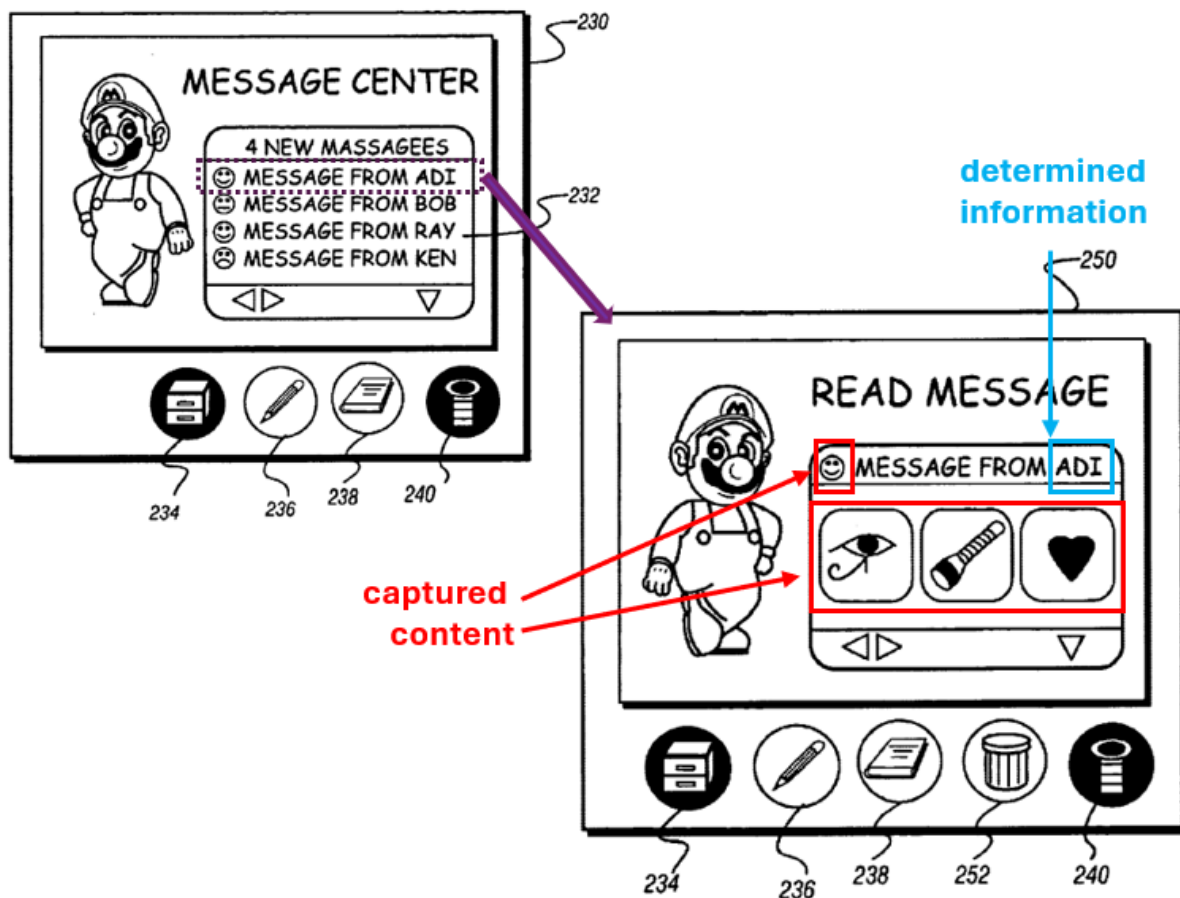
Internet services into digital mobile stations of wireless communication networks.” (Salmi, 6:63-65.) The WAP proxy “allows content and applications to be hosted on standard WWW servers.” (WAP Architecture, 14.) For example, when a user of a WAP-enabled terminal enters a URL, the WAP-enabled terminal transmits a wireless Internet service request to the WAP gateway server. (See, e.g., Park, 1:66-2:4.) The WAP gateway may respond to the request if hosting the request web page or may convert the request into an HTTP request for a server on the Internet. (See, e.g., Park, 2:5-10.) The Internet web server responds and the WAP gateway converts the HTTP response into a WAP response for transmission to the WAP-enabled terminal. (See, e.g., Park, 2:15-25.) Thus, where PagerWorld is implemented in a WAP environment, a POSITA would understand that selecting a specific portal from the main PagerWorld screen constitutes a web-based activity.

217. The combination of Pelkey and Eck also discloses that the “*first and second device-captured data*” is integrated “*into a web-based shared information channel*.”

218. A message “may be sent to all users in the paging system, to certain groups of users in the paging system or to a particular user in the paging system.” (Eck, 9:46-49, 20:8-9.) As noted above, the server forwards the message received from the portable game device to the intended recipients (one or more (or all) messaging system users). The users of the messaging (paging) system are members

of the PagerWorld community (i.e., “*the web-based shared information channel*”). Thus, the combination of Pelkey and Eck discloses that the “*first and second device-captured data*” is integrated “*into a web-based shared information channel.*”

219. The “*first and second device-captured data*” is provided to the server for integration into the “web-based shared information channel.” When a message is forwarded to a recipient, the header information remains in the forwarded GSM-SMS message. This is again reflected in Eck’s Figure 8C (below-left) and Figure 8D (below-right). Figure 8C provides a list of unopened message and “[s]electing a message takes the user to a Read Message screen” shown in Figure 8D. (Eck, 11:26-32.) As shown in this figure, the message received at the user’s device includes the captured content and the determined information.



Eck, Figure 8C (left), Figure 8D (right)

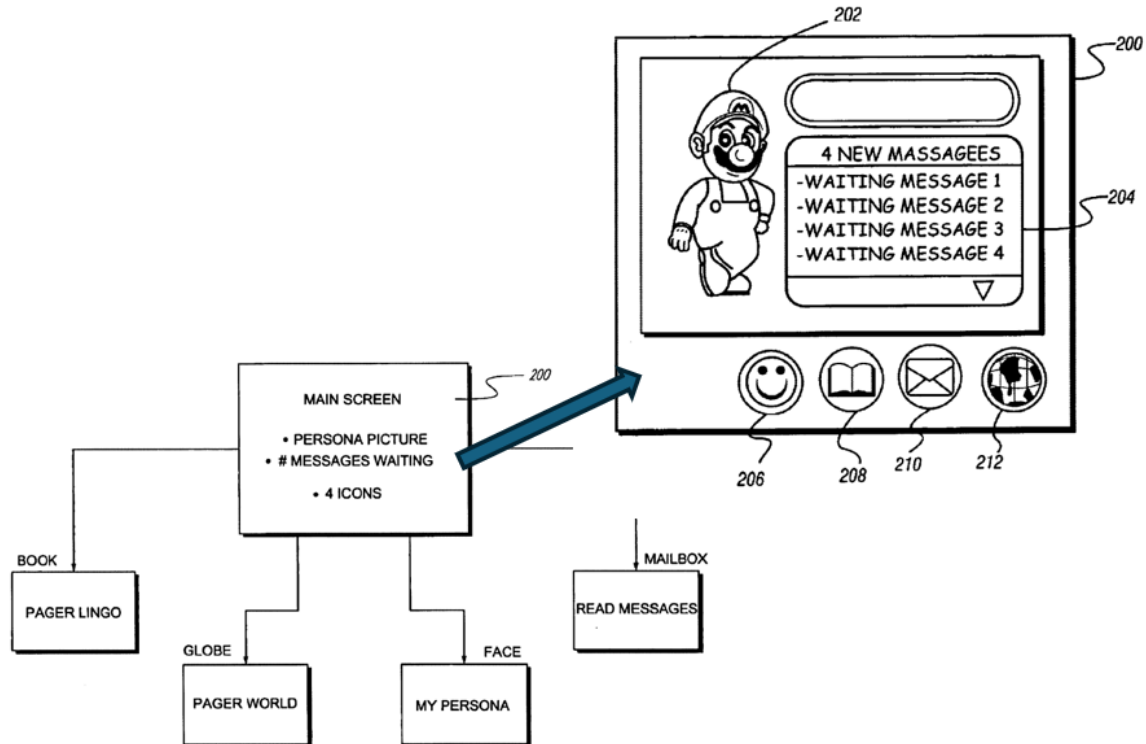
220. As with Forums in Ground 1, PagerWorld is a “*personalized content application*” because a user manages his or her profile and can personalize his or her experience in a number of ways.

221. The messaging service client (PagerWorld client program) “provides the user with an opportunity to create a user profile that is stored in memory of network server 14.” (Pelkey, 7:9-11.) The users may be “provided with the capability of including in their profiles customized faces (images) made up of various user-

selected features” or “digital images of their own faces” to “enhance the ‘persona’ of the user.” (Pelkey, 7:20-27.)

222. “Players are represented in PagerWorld by a ‘persona character’ ... that all other PagerWorld players will see.” (Eck, 10:23-25.) The “persona character” can be “customize[d] using image data obtained with a digital camera cartridge.” (Eck, 12:38-40.) In addition to including the persona character in messages, in the PagerWorld game universe, players “walk their persona characters in a world featuring attractions and sideshows.” (Eck, 10:38-40, 13:29-31 (during game play “the player may control his/her persona character to fight, flee or use some item in the player’s possession”).)

223. The “main PagerWorld screen 200,” illustrated in Figure 7 (below-left), is “the starting point for every user session.” (Eck, 10:57-60.) Figure 8A is “an illustrative, but non-limiting, implementation of the main screen 200.” (Eck, 10:65-66.) The main screen presents the user’s persona character, shown in Figure 8A as the character Mario, from the Mario Bros Nintendo game. (See Eck, 10:60-61.) The main screen also includes a set of icons including a book (“Pager Lingo”), an unopened envelope (“Message Center”), a globe (“PagerWorld”), and a face (“My Persona”). (Eck, 11:2-7.)



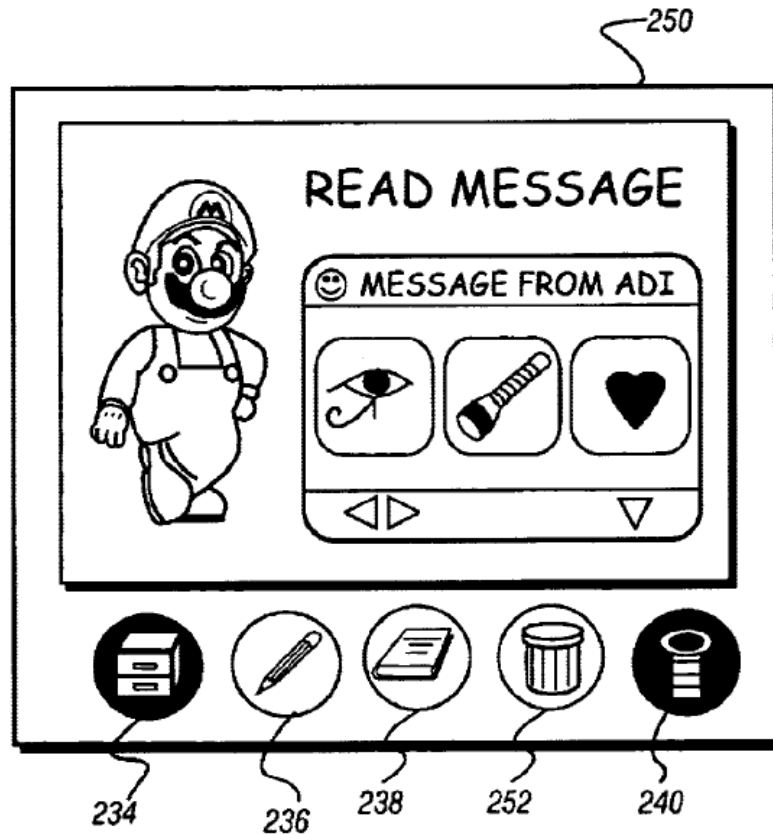
Eck, Figure 7 (left), Figure 8A (right)

224. The user’s persona is a feature element on the PagerWorld screens and “function[s] as a sort of ‘pager’ tour guide.” (Eck, 10:62-64.) A user’s persona is shared with other members of the PagerWorld community: “the contents of the message appear, along with the user’s persona character and ‘handle’ of the person that sent the message.” (Eck, 11:54-57.) The user’s address book is a list of “other users by their handles” and next to the user’s handle “is the persona character of the other user as it appeared on his/her last communication with the user.” (Eck, 12:16-19.)

225. In addition, in the Pelkey-Eck combination, the user can specify, e.g., the user's alias, "favorite game, favorite food, favorite sport, [and] hobbies." (Pelkey, 7:12-16.)

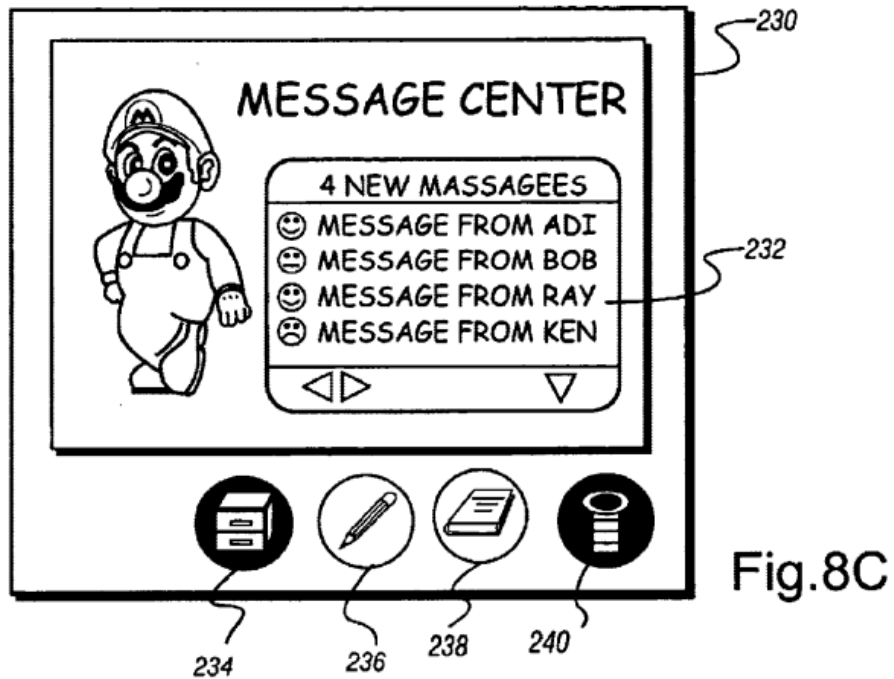
226. The Pelkey-Eck combination also discloses that "*the first and second device-captured data*" that is "*integrat[ed] ... into a web-based shared information channel [is] controllably accessible to first and second users of the respective first and second mobile devices via respective personalized content applications of the first and second mobile devices.*"

227. For example, the Message Center is personalized for each user. As shown in Figure 8D, "[w]hen a message is selected from Message Center screen **230**, the contents of the message appear, along with the user's persona character and 'handle' of the person that sent the message." The exemplary "user persona" shown in Figure 8D is Mario from the Super Mario Brothers video game.



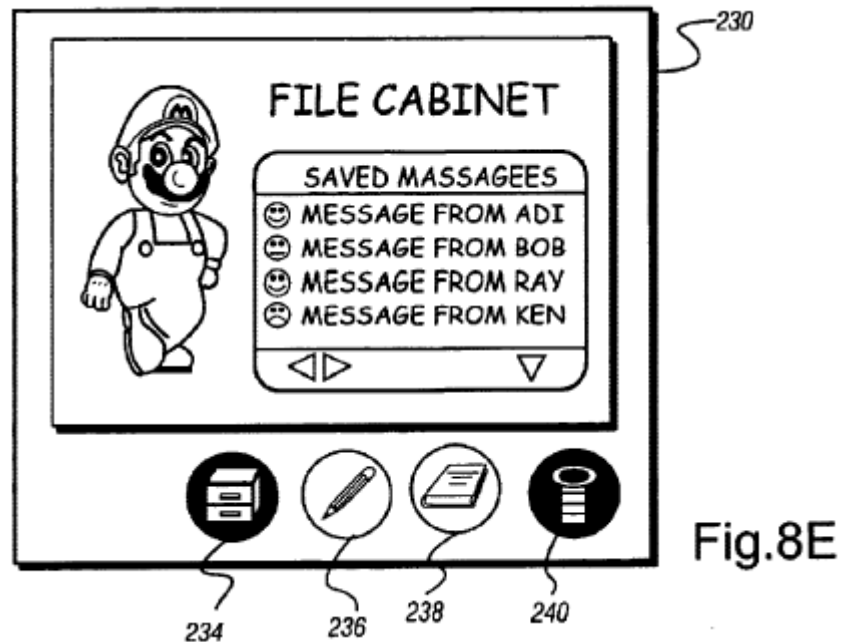
Eck, Figure 8D

228. Figure 8C in Eck depicts the Message Center user interface screen presented to the player which shows a list of unread received messages with each message including the sending user's name and associated persona image.



Eck, Figure 8C

229. In addition, PagerWorld users have access to a File Cabinet which “displays a list of saved messages. In some implementations, the saved messages may be organized by topic” (Eck, 11:66-12:3) as shown in Figure 8E.



Eck, Figure 8E

230. PagerWorld users likewise have access to a personalized address book. The address book “provides a listing of other users by their handles. Next to each handle is the persona character of the other user as it appeared on his/her last communication with the user.” (Eck, 12:16-19.) In the address book in the Pelkey-Eck combination, “device captured data” from first and second mobile devices (e.g., photos) is integrated into a web-based shared information channel (PagerWorld) through, e.g., customization of a user’s persona, and such images made accessible to users in an address book.

231. Thus, the combination of Randall and Forsyth discloses “*integrating the first and second device-captured data into a web-based shared information channel controllably accessible to first and second users of the respective first and*

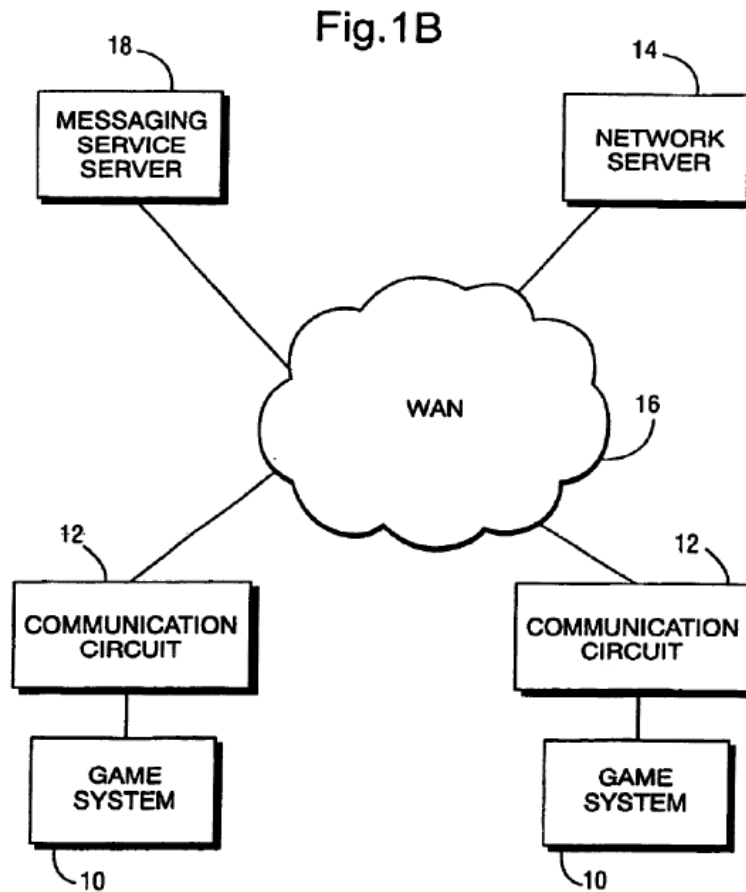
second mobile devices via respective personalized content applications of the first and second mobile devices.”

C. Independent Claim 12

12. A network-based communication system comprising a plurality of servers configured to communicate over said at least one network, a given one of the servers comprising the apparatus of claim 1.
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232. The combination of Eck and Pelkey discloses “[a] *network-based communication system comprising a plurality of servers configured to communicate over said at least one network, a given one of the servers comprising the apparatus of claim 9.*”

233. For example, Figure 1B in Pelkey discloses an embodiment that includes a “Messaging Service Server” 18 and a “Network Server” 14 that communicate over the internet (depicted as “WAN” 16). The “Message Service Server” and “Network Server” together comprise a “*plurality of servers.*”



Pelkey, Figure 1B

234. According to Pelkey, in the embodiment in Figure 1B, the “network server” “stores games that may be played by users of the network. These games may be one player games or multi-player games. The multi-player games may involve competition between two or more users or may involve competition between a user and a server-generated opponent.” (Pelkey, 3:4-9.) In such an embodiment, the processing steps set forth in claim 9 are each performed by the “messaging service server.”

D. Claim 2 – “device captured data”

2. The apparatus of claim 1 wherein at least one of the first device-captured data and the second device-captured data comprises image data.

235. As I discussed in §V.B.3.a for limitations [1C] and [1D], the combination of Pelkey and Eck describes “*first device-captured data*” and “*second device-captured data*” including capturing a photo.

236. Eck discloses that the “*device captured data source*” comprises a source of at least “*device-captured image data.*” For example, as discussed above in connection with claim 1[A], Eck discloses “[s]imilarly, in the case in which a digital camera cartridge is ‘piggy-backed’ to game machine 10 via pager cartridge 100, digital images may be captured by the camera and used by game machine 10 and/or transmitted as a message using pager cartridge 100. If the digital camera cartridge is configured to capture sounds, these captured sounds may be used by game machine 10 and/or transmitted as a message using pager cartridge 100.” (Eck, 9:16-25.)

E. Claim 6 – “mobile device”

6. The apparatus of claim 1 wherein a given one of the first and second mobile devices comprises one of a mobile telephone, a tablet computer, a GPS-based navigational device, a watch and a portable game player.

237. The combination of Pelkey and Eck also discloses that the “*first and second mobile devices comprises a global positioning system (GPS)-based navigational device.*” Eck discloses that “a global positioning system (GPS)

cartridge is also selectively insertable into the slot of game machine 10 or into the slot of pager cartridge 100.” (Eck, 22:28-30, 5:39-43.) Eck explains that “GPS is a satellite-based radio navigation system developed and operated by the U.S. Department of Defense (DOD) and permits users to determine their three-dimensional position velocity, and time.” (Eck, 22:30-34.) The GPS cartridge “is provided for use with a game machine having a game program executing processing system including a microprocessor to execute a video game program and player controls operable by a player to generate video game control signals.” (Eck, 2:3-8.)

238. Eck discloses that GPS capability, the ability to send and receive messages (pages), and the ability to send and receive photos and audio files can be integrated into the portable gaming system without the need for cartridges. (Eck, 25:35-40 (“In addition, while the pager cartridge, GPS cartridge, and digital camera cartridge are shown as add-on devices to an existing game machine, it is possible to incorporate some or all of the circuitry needed to implement the above-described operations in the game machine itself (portable or otherwise).”).)

239. The combination of Pelkey and Eck also discloses that the “*first and second mobile devices comprises a portable game player.*” In both Pelkey and Eck, the first and second mobile devices are “portable game machines,” such as the Nintendo GameBoy® device which is a portable game player. (Pelkey, 4:55-57.) (Eck, 1:48-51.)

F. Claim 7 – “server”

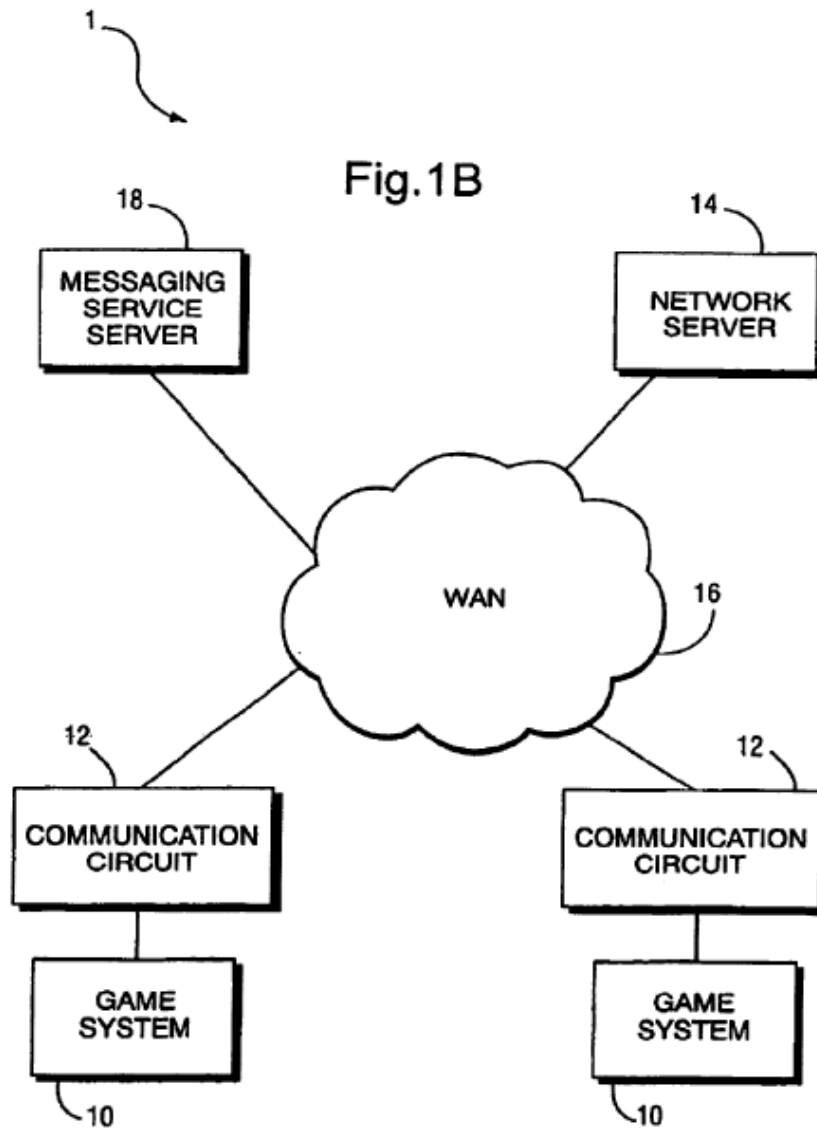
7. The apparatus of claim 1 further comprising a web server that includes the network interface and the processing element and wherein the web server is accessible to the first and second mobile devices over the Internet via the network interface.

240. The combination of Pelkey and Eck discloses “*a web server that includes the network interface and the processing element and wherein the web server is accessible to the first and second mobile devices over the Internet via the network interface.*” According to Pelkey:

A messaging system includes a **web server** computer and at least two video game systems. Each game system is configured to connect to the **web server** computer **via the Internet** and to communicate status data indicative of an activity engaged in by a user thereof. The **web server** computer generates a session file indicative of user status and the status of each of two or persons on a buddy list of the user.

(Pelkey, Abstract.)

241. Pelkey discloses in Figure 1B (below) an exemplary embodiment showing a plurality of servers accessible over the internet (depicted as WAN 16).



Pelkey, Figure 1B

242. Figure 1B of Pelkey illustrates a network “in which the messaging service described herein may be implemented.” (Pelkey, 2:58-60.) The network “includes game systems 10 connected via communications circuits (e.g., modems, network interfaces, etc.) to a wide area network.” (Pelkey, 2:60-62.)

243. Pelkey explains that the communication circuits 12 “may be provided internally to the game system or embodied as cartridges ... removably attachable to a port or bay of the game systems.” (Pelkey, 2:65-3:2.) Eck discloses the embodiment of a network interface in a cartridge. As shown in Eck’s Figure 5A, the pager cartridge includes “an antenna 130 connected to a conventional radio section 132 for receiving and sending messages.” (Eck, 6:34-36; *see also* Eck, 7:36-53 (describing a pager cartridge includes a codec/DSP section, bandpass filter, RF mixer and dual PLL section, crystal, transmitter, receiver and antenna).) The radio section and/or antenna is a “*network interface*.”

G. Claims 8, 14, and 18

244. Claims 8, 14, and 18 recite substantially overlapping subject matter so I address these claims together.

1. Limitation [8A]

[8A] the web-based shared information channel is configured to allow a given one of the first and second users to enter a message via the personalized content application of its corresponding mobile device and

245. The combination of Pelkey and Eck discloses “the web-based shared information channel is configured to allow a given one of the first and second users to enter a message via the personalized content application of its corresponding mobile device” for the reasons discussed above in §V.B.3.a.

2. “Receiving and Delivering” Limitations [14A]-[14B]/[18A]-[18B]

Claim 14	Claim 18
[14A] receiving in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device; and	[18A] to receive in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device; and
[14B] delivering the message over said at least one network to another one of the first and second users via the personalized content application of its corresponding mobile device;	[18B] to deliver the message over said at least one network to another one of the first and second users via the personalized content application of its corresponding mobile device;

246. The combination of Pelkey and Eck discloses “*receiving in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device*” [14A] and “*to receive in the web-based shared information channel a message from one of the first and second users via the personalized content application of its corresponding mobile device*” [18A] for the reasons discussed above in §V.B.3.a.

247. The combination of Pelkey and Eck likewise discloses “*delivering the message over said at least one network to another one of the first and second users via the personalized content application of its corresponding mobile device*” [14B] and “*to deliver the message over said at least one network to another one of the first*

and second users via the personalized content application of its corresponding mobile device” [18B] for the reasons discussed above in § V.B.3.b.

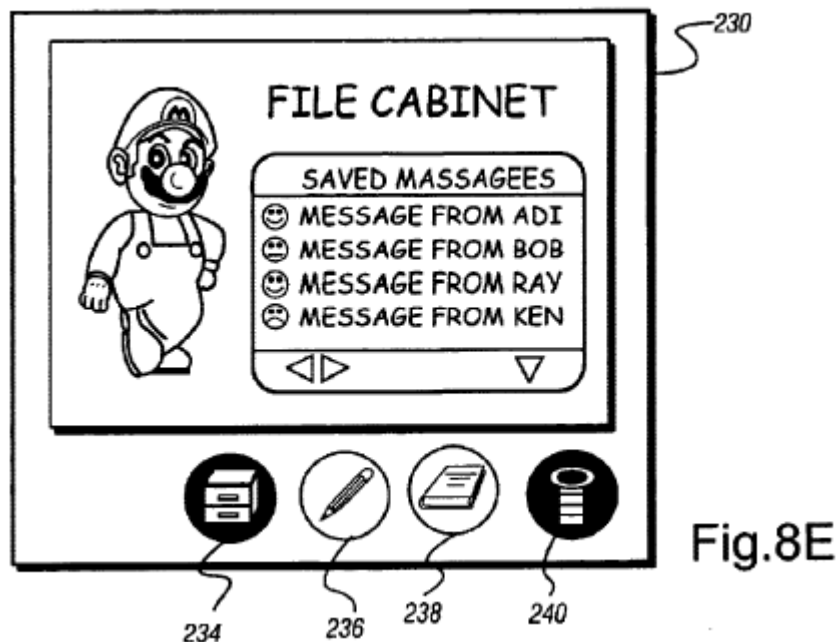
3. “Integrated ... Into a Persistent Version” [8B]/[14C]/[18C]

[8B]/[14C]/[18C] wherein the message is integrated with the first and second device-captured data into a persistent version of a given set of shared information content of the web-based shared information channel so as to be accessible with the first and second device-captured data to the first and second users of the respective first and second mobile devices via the respective personalized content applications of the first and second mobile devices.

248. The combination of Pelkey and Eck discloses “*wherein the message is integrated with the first and second device-captured data into a persistent version of a given set of shared information content of the web-based shared information channel so as to be accessible with the first and second device-captured data to the first and second users of the respective first and second mobile devices via the respective personalized content applications of the first and second mobile devices*” [8B]/[14C]/[18C].

249. PagerWorld includes client software in the portable game machine (client program) and corresponding software in the server (server program). (See Eck, 4:61-5:7, 9:40-59.) As such, PagerWorld is “*persistent*”—it remains in existence after individual users exit the world. In addition, as noted above, PagerWorld users have access to a File Cabinet which “displays a list of saved messages. In some implementations, the saved messages may be organized by topic”

(Eck, 11:66-12:3) as shown in Figure 8E. The sent and received message and sender persona (e.g., when customized using a photo) are examples of and comprise a “given set of shared information content” that is available in the file cabinet to “first and second users of the respective first and second mobile devices.”



Eck, Figure 8E

H. Claim 9

9. The apparatus of claim 8 wherein the message is delivered to one or more of the mobile devices over a wireless network.

250. The combination of Pelkey and Eck discloses “*wherein the message is delivered to one or more of the mobile devices over a wireless network.*”

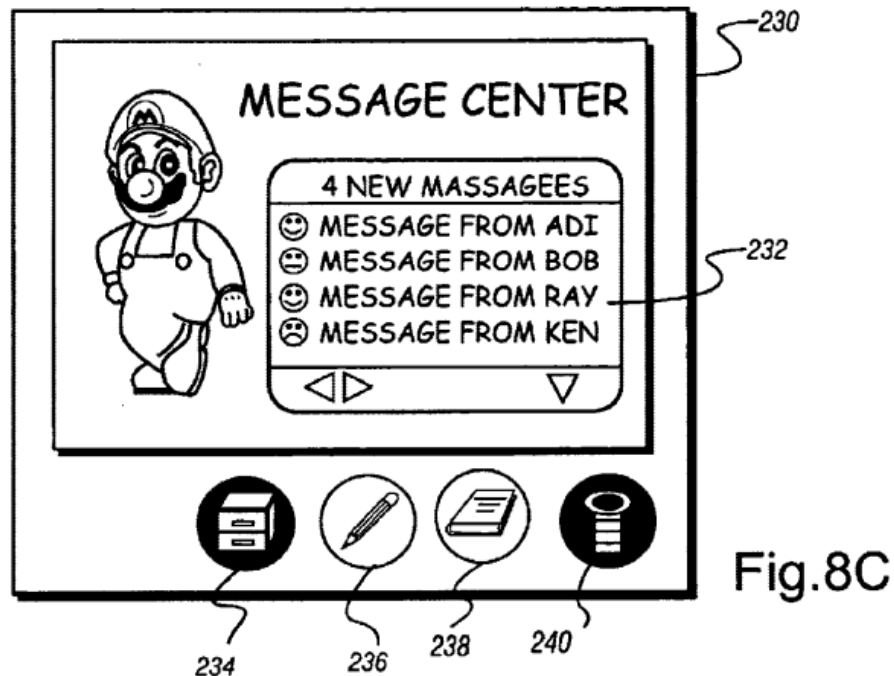
251. As noted above, Pelkey does not disclose details of the wireless network used to provide wireless messaging from the game system to the server. While Eck mentions use of a paging network for this functionality, Eck also

explicitly discloses that its “present invention” may be “applied to other wireless technologies such a GSM (Global System for Mobile Communications) and WAP (Wireless Application Protocol).” (Eck, 25:17-20.) A POSITA would have been motivated to use either GSM or WAP for the messaging service, rather than paging, to obtain the enhanced features of those protocols. Based on Eck’s disclosure, a POSITA would have understood that the portable game machine communicates with the server via messaging available via the GSM network (e.g., SMS) or messaging available via WAP.

252. GSM-SMS is implementable over a “*wireless network*” and as shown in my modified Figure 1 of Pelkey, the GSM network is separate from the Internet connecting the N64 game system to the server. As I discussed in §IV.A.1.c.ii, the WAP protocol stack transports data over GSM’s SMS. I provided an overview of a mobile originated message in SMS in a GSM network in my analysis of this limitation in Ground 1. As discussed in that section, the SMS message includes a header with data fields indicating control and content details for the message.

253. Thus, to send a message, the portable game machine determines this information to construct the GSM-SMS message. Figure 8C from Eck confirms that this information is determined. Specifically, this figure depicts the Message Center user interface screen presented to the player which shows a list of unread received

messages with each message including the sending user's name and associated persona image.



Eck, Figure 8C

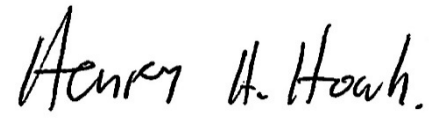
VI. Conclusion

254. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in this proceeding. If required, I will appear for cross-examination at the appropriate time. I reserve the right to offer opinions relevant to the invalidity of the challenged claims at issue and/or offer testimony in support of this Declaration.

255. I hereby declare that all statements made herein of my own knowledge are true and that all statements are 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 18 U.S.C. § 1001.

Dated: February 6, 2025

Respectfully submitted,

A handwritten signature in black ink, reading "Henry H. Houh." The signature is written in a cursive style with a period at the end.

Henry Houh, Ph.D.

APPENDIX

Exh.	Reference
1001	U.S. Patent 9,922,348 to Harper (“the ’348 patent”)
1002	File History of U.S. Patent 9,922,348
1005	WO 02/17652 to Randall, et al. (“Randall”)
1006	U.S. Patent 7,047,030 to Forsyth (“Forsyth”)
1007	U.S. Patent 7,056,217 to Pelkey, et al. (“Pelkey”)
1008	U.S. Patent 6,716,103 to Eck, et al. (“Eck”)
1009	Joint Claim Construction Statement from <i>Mobile Data Techs. LLC v. Meta Platforms, Inc.</i> , No. 7:22-cv-00244-ADA-DTG (E.D. Tex.)
1010	Patent Owner’s Response to Petition (Paper 26) from <i>Mobile Data Techs. LLC v. Meta Platforms, Inc.</i> , IPR2024-00250
1011	Petitioner’s Reply (Paper 33) from <i>Mobile Data Techs. LLC v. Meta Platforms, Inc.</i> , IPR2024-00250
1012	“Wireless Java for Symbian Devices” by Allin (September 2001) (“Allin”)
1013	WAP Architecture (Version 12): “Wireless Application Protocol Architecture Specification, WAP-210-WAPArch-20010712” (July 12, 2001) (“WAP Architecture”)
1014	Wireless Datagram Protocol (Version 14): “Open Mobile Alliance, WAP-259-WDP-20010614-a” (June 14, 2001) (“WDP”)
1015	ETSI TS 123 040—Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS) (3GPP TS 23.040 version 3.6.0) (September 2001) (“GSM SMS Standard”)
1016	“Symbian OS Communications Programming” by Michael J. Jipping (June 2002) (“Jipping”)

Exh.	Reference
1017	“Symbian Home Page,” (January 24, 2002), https://web.archive.org/web/20020124070457/http://www.symbian.com:80/
1018	“Symbian: OS Technology,” (February 2, 2002), https://web.archive.org/web/20020202090443/http://www.symbian.com/technology/technology.html
1019	“Symbian: OS Technology – Symbian OS phones and PDAs,” (February 2, 2002) https://web.archive.org/web/20020202133445/http://www.symbian.com/technology/symbos-phones.html
1020	U.S. Patent 6,947,396 to Salmi (“Salmi”)
1021	RESERVED
1022	RESERVED
1023	U.S. Patent 6,788,949 to Bansal (“Bansal”)
1024	U.S. Patent 7,802,207 to Agboatwalla, et al. (“Agboatwalla”)
1025	U.S. Patent 7,574,486 to Cheng, et al. (“Cheng”)
1026	“Operating System Concepts” (Fourth Edition) by Silberschatz et al. (January 1994) (“Silberschatz”)
1027	U.S. Patent 6,937,588 to Park (“Park”)
1028	Excerpt from Webster’s Dictionary of Computer Terms (page 98)