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, INC.,

Patent Owner

IPR2025-00541

U.S. Patent No. 9,922,348 B2

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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EXHIBIT LIST

Exhibit	Reference
1001	U.S. Patent No. 9,922,348 B2 to David Walker Harper et al. ("'348" or "'348 patent")
1003	Excerpts from Alan Neibauer, *How to Do Everything With Yahoo!* (2000) ("Neibauer")
1004	RESERVED
1005	U.S. Patent No. 7,574,486 B1 to Yin Cheng et al. ("Cheng")
1006	U.S. Patent No. 6,434,403 B1 to Michiel R. Ausems et al. ("Ausems")
1007-1009	RESERVED
1010	U.S. Patent No. 6,487,583 B1 to Jamey Harvey et al. ("Harvey")
1011	U.S. Patent Application Publication No. 2001/0015759 A1 to Robert Francis Squibbs ("Squibbs")
1012	Excerpts from Uwe Hansmann et al., *Pervasive Computing Handbook* (2001) ("Hansmann")
1013	RESERVED
1014	U.S. Patent No. 6,907,566 B1 to Charles McElfresh et al. ("McElfresh")
1015-1017	RESERVED
1018	Excerpts from Sean Wagstaff, *Animation on the Web* (1999) ("Wagstaff")
1019	U.S. Patent No. 6,874,146 B1 to Sridhar Iyengar ("Iyengar")
1020	U.S. Patent No. 6,311,185 B1 to Robert E. Markowitz ("Markowitz")
1021	Excerpts from *Microsoft Computer Dictionary* (5th ed 2002)

Exhibit	Reference
1022	File history of U.S. Patent No. 9,922,348 B2
1023	RESERVED
1024	Excerpts of file history of *Inter Partes* Reexamination of U.S. Patent No. 8,135,801 B2
1025	Joint Claim Construction Statement, Dkt. 51, *Mobile Data Technologies LLC v. Meta Platforms, Inc.*, Case No. 7:22-cv-00244- ADA-DTG (W.D. Tex. filed September 13, 2023)
1026	Declaration of Sylvia D. Hall-Ellis, Ph.D. ("Hall-Ellis") from IPR2024-00250
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1028	U.S. Patent 8,135,801 to Harper et al.
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1030	*Meta Platforms, Inc. v Mobile Data Techs. LLC,* IPR2024-00250, Paper 26 (PTAB Oct. 1, 2024).
1031	Declaration of June Munford
1032	Excerpt from Webster's Dictionary of Computer Terms (page 98)
1033	*Meta Platforms, Inc. v Mobile Data Techs. LLC,* IPR2024-00250, Paper 33 (PTAB Jan. 10, 2025).
1034-1037	RESERVED

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

1. I have been retained 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 U.S. Patent 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 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., has challenged the '348 patent in *inter partes* review proceedings at Case No. IPR2024-00250 ("the 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 attached to my Declaration at Appendix A.

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.

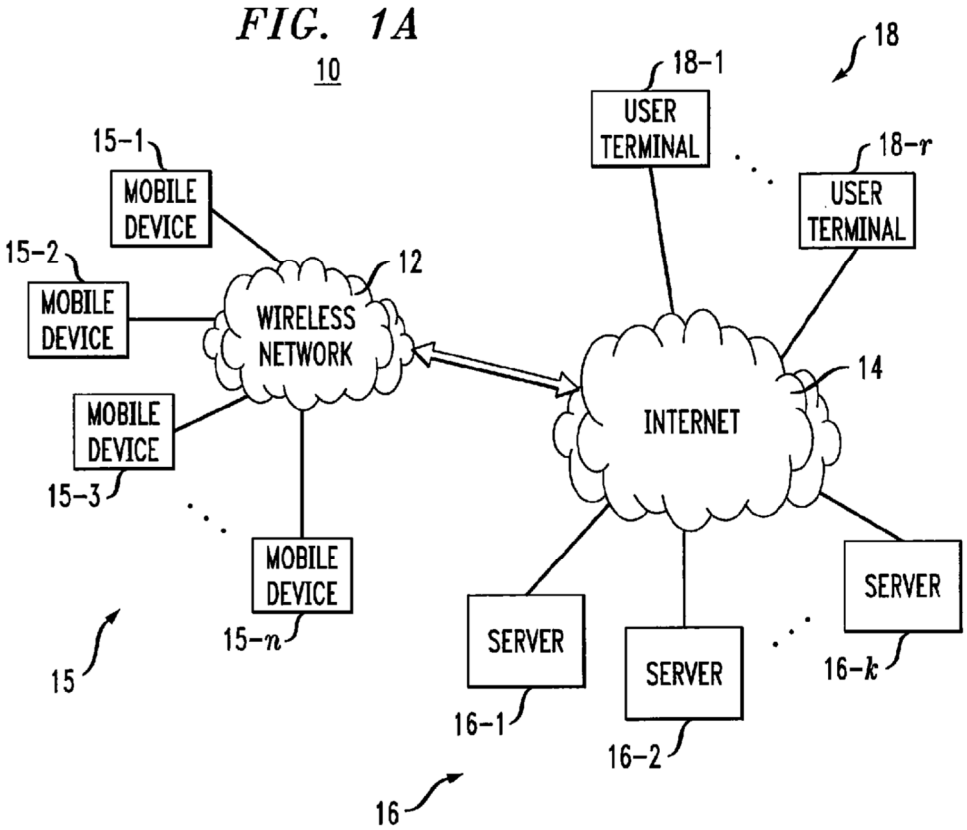
III. The ’348 Patent

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 App. 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 pertains 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

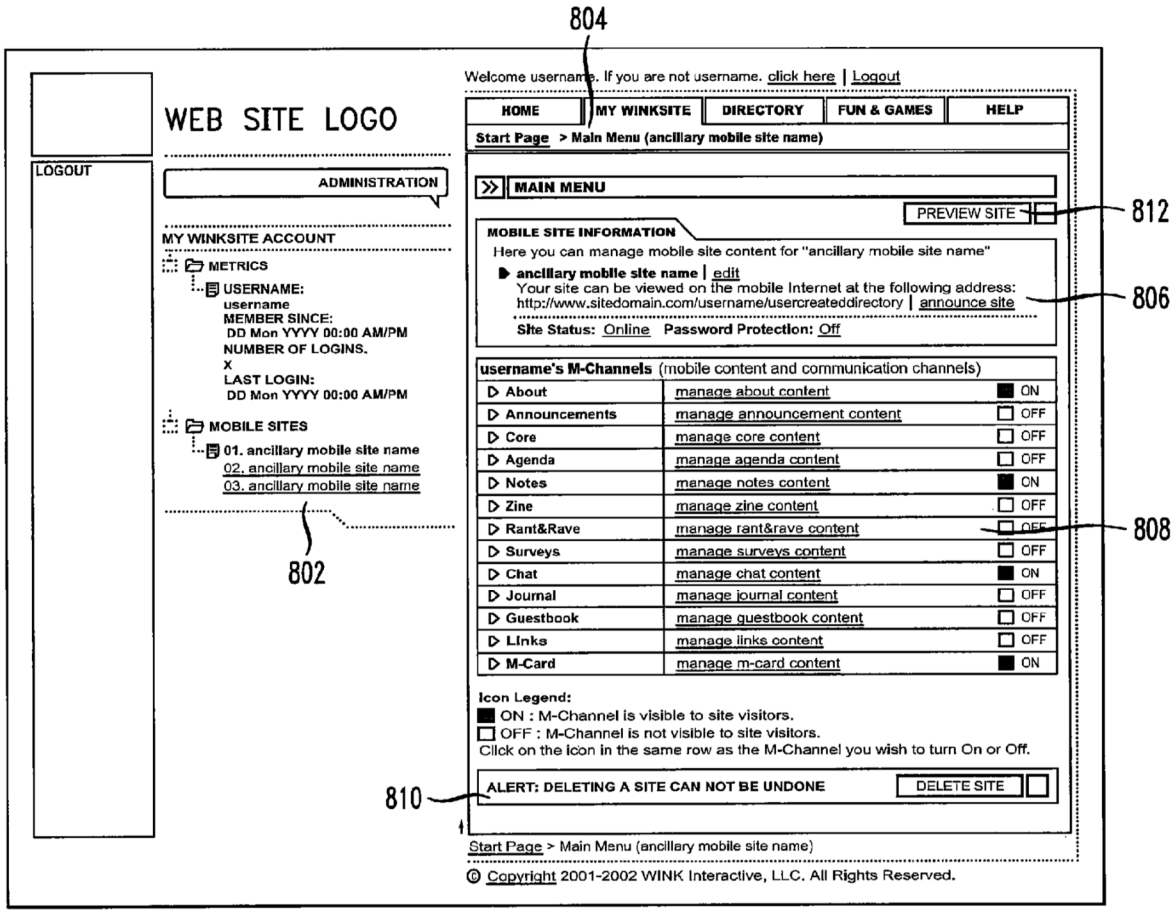
27. The Background purports to address the challenge of “facilitating the process of creating, publishing, distributing or otherwise managing information content so as to provide optimal presentation consistent with the limited display space and navigational capabilities of typical mobile devices.” (EX-1001, 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, 5:38-39, 8:30-36.) 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 of ordinary skill in the art.

- 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 had 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. Pat. No. 9,619,578. (EX-1022, 156-58.) In response, the applicant canceled all pending claims and filed new claims 21-40, arguing that this overcame the double patenting rejection. (EX-1022, 220-25.) The Examiner then allowed the claims. (EX-1022, 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

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

the patent applicant gave a term a special meaning in the specification or during prosecution, then the special meaning should be used.

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 constructions positions reproduced below. (*See* EX-1025, 2-3; EX-1030, 9-16; EX-1033, 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 any of 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-1025, 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-1025, 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-1030, 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-1033, 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 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-1032, 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-1032, 4.) The agreed upon construction uses the term in a manner consistent these exemplary meanings.

IV. Application of the Prior Art to Challenged Claims

39. In my opinion, the challenged claims of the challenged patent would have been obvious to a person of ordinary skill in the art based on the following combinations of the prior art.

Ground	Claims	Prior Art
1	1-3, 6-9, 12-14, 17-18	Neibauer (**EX-1003**), Cheng (**EX-1005**), Ausems (**EX-1006**)
2	4-5	Ground 1 Prior Art + Squibbs (**EX-1011**)
3	10-11, 15-16, 19-20	Ground 1 Prior Art + McElfresh (**EX-1014**)
4	1-3, 6-9, 12-14, 17-18	Ground 1 Prior Art + Harvey (**EX-1010**)
5	4-5	Ground 2 Prior Art + Harvey
6	10-11, 15-16, 19-20	Ground 3 Prior Art + Harvey

40. Grounds 4-6 are substantially similar to Grounds 1-3, except that they add Harvey (**EX-1010**) to account for Meta's narrower construction of "*web-based shared information channel*" in the pending litigation, to the extent that

construction were adopted here. I am informed by counsel that each of the references listed above qualifies as prior art to the challenged claims because each reference was filed and/or published before the earliest priority date for the challenged claims (June 18, 2002).`

41. I am informed by counsel that each of the references listed above qualifies as prior art to the challenged claims because each reference was filed and/or published before the earliest priority date for the challenged claims (June 18, 2002).

A. Ground 1: Claims 1-3, 6-9, 12-14, and 17-18 Are Obvious Over Neibauer In View Of Ausems, and Cheng.

1. Neibauer (EX-1003)

42. Neibauer is a book entitled *How to Do Everything With Yahoo!* by Alan Neibauer. I am informed that Neibauer qualifies as prior art because it was published before the earliest priority date applicable to the challenged claims.

43. Neibauer describes various features of Yahoo!, a popular and well-known online during the 1990s and early 2000s. Neibauer explains that "Yahoo! is your portal to the best of everything that the Internet has to offer." (Neibauer, p.4.) Yahoo! was widely known in the 1990s for providing one of the first online search engines, but by 2000 had expanded its offerings to provide additional features including email, shopping, news, weather, and sports, among other services. (Neibauer, pp.9-15, 17-18.)

44. One of the features of Yahoo! described in Neibauer was called Yahoo! Clubs. Yahoo! Clubs provided users the ability to create online communities through which users could share information. As Neibauer explains: "[a] *club* is a group of Yahoo! members who share a common interest. Each club has its own message board, chat room, as well as places to share photographs, news, addresses, and links." (Neibauer, p.473 (italics in original).)

45. Clubs were accessible from a webpage on the Yahoo! website at http://clubs.yahoo.com. The Yahoo! website allowed users to search existing clubs relating to specific topics of interest. (Neibauer, p.473.)

46. For example, Figure 21-7 of Neibauer is a screenshot showing a list of Yahoo! clubs relating to the James Bond series:

Clubs for *James Bond Series* *(83)* **Most Popular** A-Z Index New Clubs

Rank	Club Name	Description	Members
1.	Dr No	"No, Mr Bond, I expect you to die!"	180
2.	The Official James Bond 007 Club	James Bond IS official!	117
3.	The James Bond Movie Series	The James Bond place to talk about the movies.	114
4.	The Club of James Bond	The Ultimate Top Secret Dossier of James Bond Fans	94
5.	Bond Girls	A site with over 120 Bond Girl pictures ! NOT PORN!	74
6.	The James Bond 007 Club		70
7.	James Bond Heaven	A great place to hangout for Bond nuts!	37
8.	World Of Bond	Discuss James Bond Movies, Games & Music!	34
9.	British Intelligence HQ	Where international espionage is a daily event	26
10.	The World Of James Bond	Absolutely James Bond	25
11.	James bond 007 2	if you like James bond your like this.	24
11.	James Bond's Secret Service	Shaken, Not Stirred	24

FIGURE 21-7 Club listings

(Neibauer, p.474, Fig. 21-7.)

47. Neibauer explains that, to visit a club of interest, the user simply clicks the hyperlink for the club. (Neibauer, p.473.) For example, clicking on the third link shown in Figure 21-7 above ("The James Bond Movie Series") shows the club page shown in Neibauer Figure 21-8:

YAHOO! CLUBS
Clubs Top – Yahoo!
Our Pages
Home
Messages
Photos
Chat
News
Links
Contacts
Calendar
Sponsored by:
Get It Here!
Member Tools
Invite

The James Bond Movie Series
The James Bond place to talk about the movies.
Category: James Bond Serie
Club Type: Liste

You are a **guest**.
Join this club

Founder's Message

JAMES BOND is probably one of the best movie series I know of other than Star Wars. Here there are pictures, info, and links to other James Bond sites. If you know any please put add them.

Founder's Personal Home Page

Last edited by: shaner303

Chat Room enter

Overview

Online Now (4 members) view all online
Click on name to talk now: davidlaw_1975, paintballboy12, bond_freak2000, Cantana_Ma

Recent Messages post | view all

Mar 19 **GOLDENEYE SITE! -scottdaman2000**
Scott's Goldeneye Fiesta. Either for help or to celebrate your victory!

Mar 8 **BOND GIRLS ADDRESS NEEDED FOR AUTOGRAPHS -nick_jb007**
DOES ANYONE KNOW ANY BOND GIRLS ADDRESS FOR A AUTOGRAPH I REALLY NEED TO K

Mar 3 **TWINE on video and DVD! -_Lawrence_3**
Check this out folks..

Feb 12 **The best of Bond -davidlaw_1975**
Hi, I am a new member of the club and I would like to express my comments

Feb 12 **The best of Bond -davidlaw_1975**
Hi, I am a new member of the club and I would like to express my comments

FIGURE 21-8 Club page

(Neibauer, p.475, Fig. 21-8.)

48. The user can join this club by clicking "Join this club," as seen on the top-right in Figure 21-8. (Neibauer, p.475.) Neibauer discloses that after joining, "other members will see your name on the top of the page with the list of members who are online." (*Id.*)

49. Each club offers a number of features, accessible from the links shown under "Our Pages" as seen on the left side of Figure 21-8 above. For example, each club has its own private message board ("Messages"), allows users to share photographs and make photo albums ("Photos"), engage in private chat with club members ("Chat"), view news headlines ("News"), share website links

with other club members ("Links"), obtain contact information about club members ("Contacts"), and post and view events of interest to club members ("Calendar"). (Neibauer, pp.477-480.)

50. Yahoo! members could also create their own clubs. (Neibauer, pp.480-82.) For example, a member can select a category and then click "Create Club." This would cause a form to appear asking for information about the new club. (Neibauer, p.481.) Neibauer's Figure 21-12, below, shows an exemplary web form for creating a new Yahoo! Club:

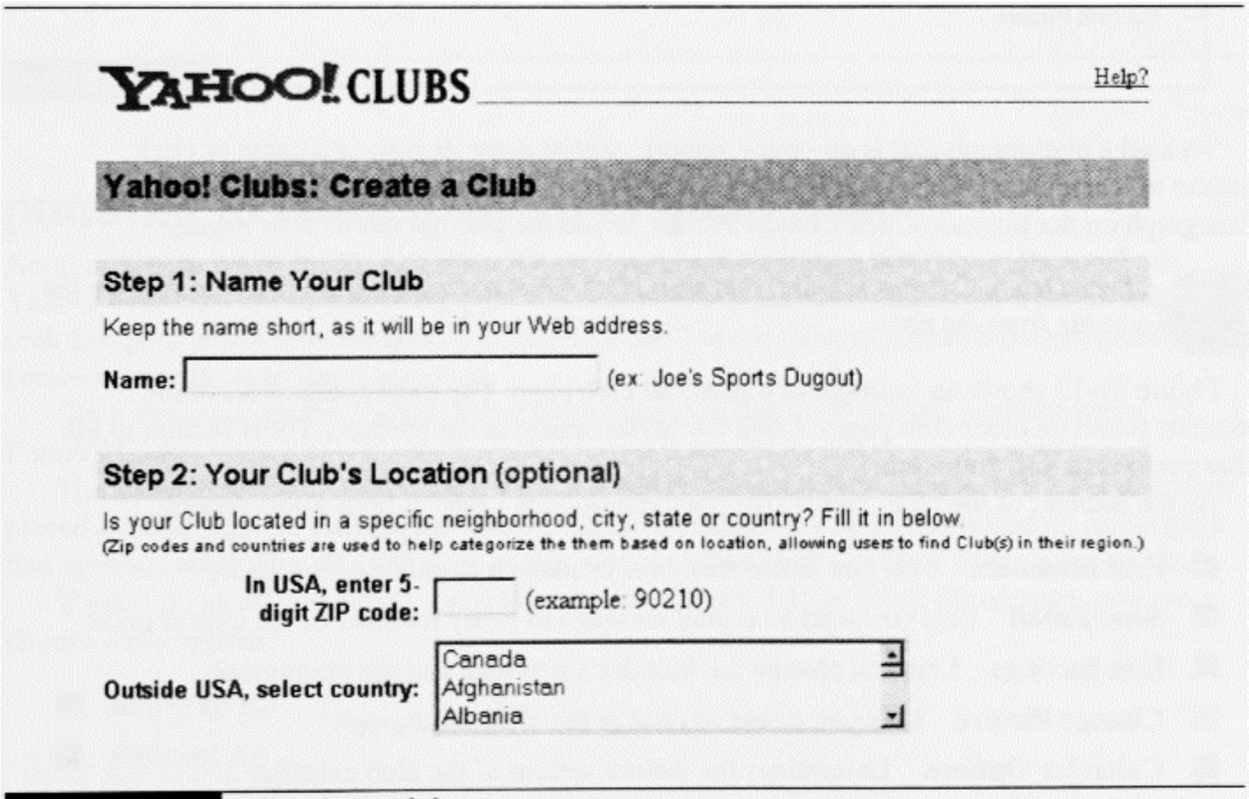


FIGURE 21-12 Creating a club

(Neibauer, p.481, Fig. 21-12.)

51. As shown in Figure 21-12 above, a club founder could specify a name for the new club, and optional zip code or country information. (Neibauer, p.481, ¶¶3-5.) The founder could also select whether the new club will be either "listed" or "unlisted." (Neibauer, p.481, ¶6; *see also* Neibauer, p.473.) "A listed club is one that is open to all Yahoo! members." (Neibauer, p.473.) The exemplary James Bond Series club, shown in Figure 21-8 above, is a listed club. (Neibauer, p.475, Fig. 21-8 (top right: "Club type: Liste[d]").) An unlisted club, on the other hand, "is private. Only Yahoo! members who were invited to join may join the club and be able to access it." (Neibauer, p.473; *see also id.*, p.475 ("You must be invited to join an unlisted club.").) "An unlisted club is ideal for sharing private information with family members or business associates." (Neibauer, p.473.)

52. The club founder could also specify additional content that will appear on the club page, such as a brief textual description that will appear under the club name, a short founder's message, a web address for the founder's personal home page, and a club picture. (Neibauer, p.482, ¶¶1-3.) For the club picture, the founder could either select a photo from their own computer, or include a link to a location of a photograph on the web. (Neibauer, p.482.) An exemplary "unlisted" club created using these techniques is shown in Neibauer's Figure 21-13 below:

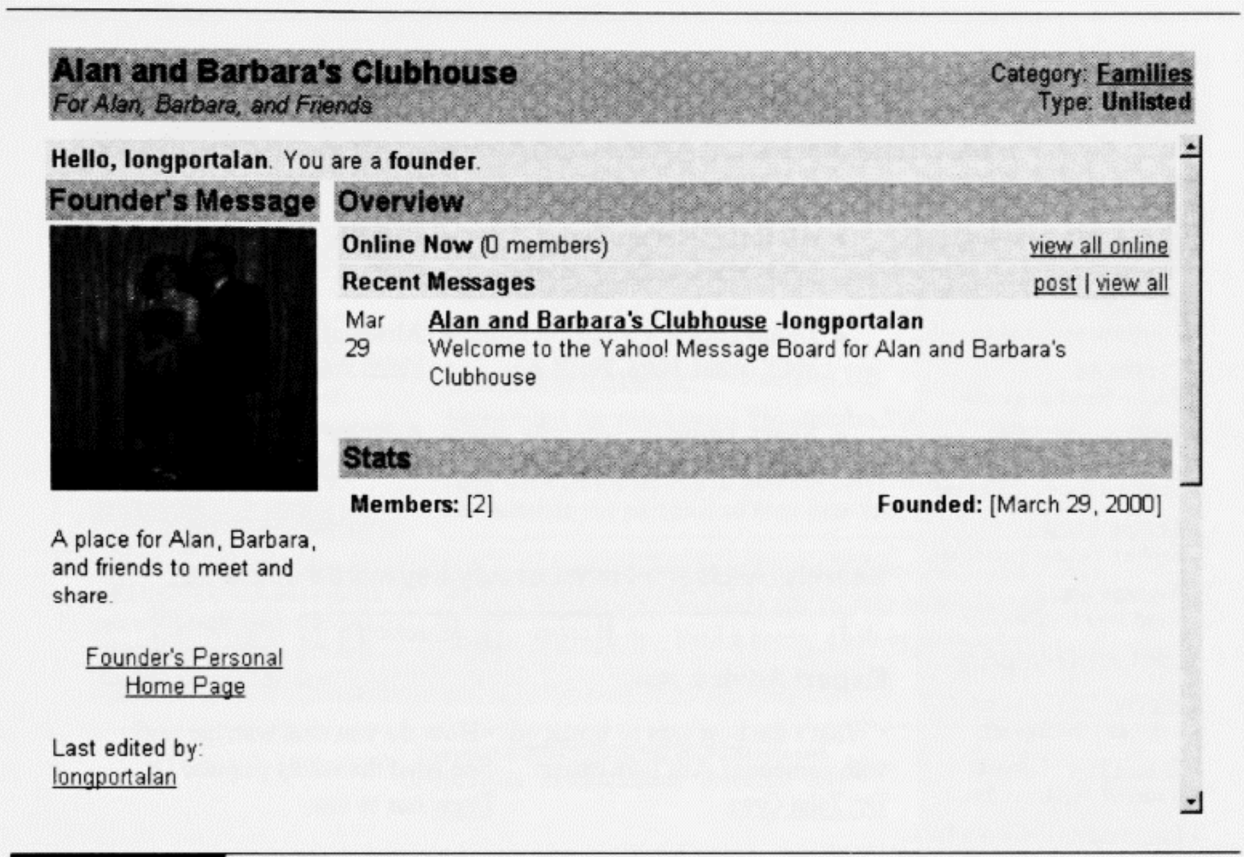


FIGURE 21-13 A Personal club

(Neibauer, p.483, Fig. 21-13.)

53. Neibauer explains that "Figure 21-13 shows an example of a personal club page. The page contains all of the elements found on other club pages. Click the Invite option in the Member Tools section to ask other persons to join your club." (Neibauer, p.482.)

54. Neibauer discloses several ways in which a club founder can manage the content of the club. Neibauer describes that "[a]s the club founder, you can invite others to join, delete members, control the contents of photo albums, and customize the photo and messages on the club's home page." (Neibauer, p.480.)

55. Neibauer also discusses Yahoo! Mobile and Yahoo! To Go, which enabled content from Yahoo! services to be provided to mobile devices such as pagers, cell phones, web phones, and personal digital assistants (PDAs). (Neibauer, pp.166-174.) "Yahoo! To Go lets you receive Yahoo! information on your mobile device." (Neibauer, p.167.) "The Yahoo! To Go option lets you set up your mobile device and Yahoo! so that they work together, as well as specify the content that will be sent to your device." (*Id.*) For example, one option referred to as "Yahoo! On Your PDA" allowed users of browser-enabled PDAs, such as Palm, Windows CE and smartphone devices, to select particular types of Yahoo! content accessible from their PDA. (Neibauer, pp.171-174.)[2]

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[2] The term PDA, an acronym for **p**ersonal **d**igital **a**ssistant, was commonly used in the 1990s and early 2000s to refer to a handheld mobile device such as handheld personal computer, tablet, or smartphone that typically provided a touchscreen display or input device, and offered communications capabilities either through a wired telephone connection or a wireless modem. By the late 1990s, popular examples of PDAs included the "Palm Pilot" line of handheld devices sold by Palm Computing, Inc., and handheld computing devices designed to run Microsoft Windows CE, a version of the popular Windows operating system optimized for smaller mobile devices. By the mid-2000s, with the widespread

56. In the clubs setting, Neibauer describes a basic client-server infrastructure. Each club has its own message board and chat room, which would be hosted at the server. (Neibauer, p.473.) The server allows different client devices to communicate therewith so that users within given clubs can engage in various types of communication with each other including exchanging messages, chats, and photographs. (Neibauer, pp. 477.)

57. One example that Neibauer walks through is sharing photographs within a club. (Neibauer, p. 477.) A member of a club can upload a photo to the shared server space, which allows for 5 MB of photo storage across the club. (Neibauer, p. 477). While 5 MB of photographs is relatively small in today's market where substantially higher resolution photographs are taken by our smartphones, twenty-plus years ago meaningfully more photographs would be stored. As Neibauer shows, graphic images at that time were only a couple hundred KB – 5 MB = 5000 KB. (Neibauer, p. 477.)

58. To effectuate this exchange, a client device would have to have access to the club server and bi-directional communication would be required. A client

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adoption and use of modern smartphones with touchscreen displays that incorporated many of the characteristics of earlier PDAs (as exemplified by the Apple iPhone introduced in 2007).

device could send files to the server – i.e., upload files – likewise the client device could receive files from the server – i.e., download files. Neibauer discusses several other features of the overall Yahoo! infrastructure that emphasize uploading and downloading between client devices and servers in ordinarily known architectures was well known. (*E.g.*, Neibauer, p. 116 (describing uploading a professionally designed Web site); p. 156 (describing the Briefcase where users can download from the internet shared documents up to 5 MB).)

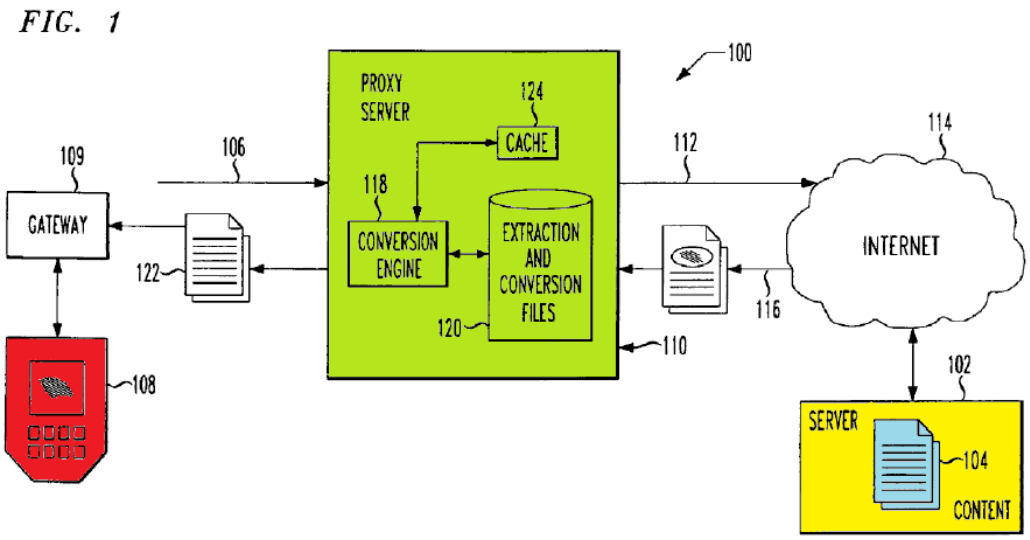
59. Neibauer does not describe using a proxy server in its client-server infrastructure. As explained below with respect to Cheng, a possible configuration for Neibauer, especially in implementing Yahoo! To Go for PDAs, would have been using a proxy server to assure that the information displayed on PDAs would be formatted correctly for the device if, for instance, the server information was stored in a fashion to best facilitate communications with PCs (personal computers), which typically had and have different display capabilities than PDAs.

2. Cheng (EX-1005)

60. Cheng, U.S. Patent No. 7,574,486 B1, is entitled "Web Page Content Translator." I am informed that Cheng qualifies as prior art because it is a United States patent that issued from an application filed on November 8, 2000, which is before the earliest priority date of the challenged claims.

61. Cheng discloses a technique for translating the pages of existing websites into a format suitable for display on a mobile device. (Cheng, Abstract ("A system, method, and computer readable medium for reformatting web content into a format readable on one or more mobile devices is provided.").) Cheng explains that "[b]ecause of the explosion of mobile enterprise solutions, users of wireless devices now demand that businesses deliver web content for viewing on desktop, or mobile/portable (e.g., handheld) devices." (Cheng, 1:19-22.) Cheng explains that this "generally required organizations to develop and maintain multiple sets of content, one for viewing in a desktop environment, and others for viewing on each individual type of mobile device." (Cheng, 1:28-32.)

62. To address this issue, Cheng discloses a system and method for dynamically reformatting or converting existing web content into a format suitable for a mobile device. (Cheng, *e.g.*, 2:19-32, 3:21-26.) Cheng's Figure 1 illustrates an architecture **100** of one embodiment of the system and method of Cheng:



(Cheng, Fig. 1 (color annotation added).)

63. The right side of Cheng's Figure 1 above shows an origin web server **102** that contains original web page **104**. (Cheng, 3:36-37 ("In this context, an origin web server **102** is a web server that contains the original web page **104**.").) Web page **104** "is typically an HTML file with references to any component .wav, .mov, and/or Joint Photographic Experts Group (JPEG) files, which together comprise the web page **104**." (Cheng, 4:10-13.) "It is envisioned that each instance of web content **104** each have associated therewith a URL." (Cheng, 3:56-57.) A POSITA would have recognized that Cheng's web page **104** could have been represented by any web page in HTML format reachable via the Internet.

64. Figure 1 shows mobile device **108** connected to proxy server **110**, optionally through gateway **109**. (Cheng, 3:33-36.) "Mobile devices **108** generally come in a variety of different sizes and have a variety of different screen

interfaces… [T]he present invention provides the ability to uniquely tailor web page **104** content for specific mobile devices **108**." (Cheng, 5:11-15.) Cheng explains that, in one example, mobile device **108** could be a mobile device with a Palm operating system that includes a web browser. (Cheng, 5:17-23, 2:8-15.)

65. The middle of Figure 1 shows proxy server **110**. The term "proxy server" refers to a well-established and common technique for facilitating communication and/or interoperability between devices. The use of this technique was widespread long before Cheng. Proxy servers typically sit between one or more client and one or more server computers, and intercept and filter communications between them for a variety of purposes. For example, proxy servers were commonly used for security purposes to intercept and prevent unauthorized communications from or to client devices, and for format or content conversion purposes (commonly referred to as "transcoding"). (*See* Uwe Hansmann et al., *Pervasive Computing Handbook* (2001) (**EX-1012**), p.35 ("A proxy server at AvantGo.com modifies the Web pages in a way that they can be displayed on Palm devices."), p.320, §14.3 ("Transcoding is a content adaptation technology, which tailors information for a specific device by transforming its format and representation."), p.321 ("Transcoding is typically done by a gateway or proxy, which intercepts the data exchange between the content server providing multimedia data and the client rendering the received information.").)

66. Cheng discloses a format conversion proxy server that translates web pages and requests between mobile device **108** and proxy server **110**. As Cheng explains, proxy server **110** "'sits' between the clients (e.g., the mobile device(s) **108**) and the origin web server(s) **102** that provide Web content **104**." (Cheng, 3:31-33.) Proxy server **110** "obtains the code (e.g., HTML) of the user requested web page **104**, and modifies it at the proxy server **110** (once obtained)," which can include "reformatting and/or converting an entire web site or request specific Web content that is needed from the origin web server **102**." (Cheng, 3:41-48.) Proxy server **110** can store a device profile for mobile device **108** based on the type of mobile device and its web browser. (Cheng, 5:20-23 ("To create a device profile, both the specific version of a mobile device **108** and its web browser (e.g., a Palm V with browser A, etc.) are needed.").) This is consistent with known proxy server techniques.

67. The operation of proxy server **110** is generally straightforward. As shown in Figure 1, mobile device **108** issues a request **106** for an original web page **104** using standard HyperText Transport Protocol (HTTP), as was well-known in the art, with the request **106** being received by proxy server **110**. (Cheng, Fig. 1, 2:19-21, 3:58-67, 7:65-8:2.) Cheng describes that "[u]pon determining that the requested page **104** resides at the server **102**, the proxy server **110** makes a request **112** for the page. As shown, the proxy server **110** and the server **102** are connected

via a network **114** such as the Internet." (Cheng, 3:65-4:2; *see also id.*, 2:21-24.) Proxy server **110** then converts and/or reformats original web page **104** into reformatted web page **122** (shown in Figure 1), which is transmitted to mobile device **108**. (Cheng, *e.g.*, 2:24-29, 5:46-49, 4:56-60.) As Cheng describes: "[t]he designated HTML content of the retrieved web page **104** is extracted, subsequently and/or converted, and transmitted as a reformatted web page **122** to the mobile device **108**." (Cheng, 5:46-49; *see also id.*, 3:22-26 ("Referring now to FIG. 1, it is envisioned that a proxy server **110** reformats/converts web content **104** on an origin web server **102** into a format **122** readable on any mobile device **108** (which can be any number of different mobile device types).").)

68. Cheng explains that, by using the disclosed proxy server conversion method:

> Embodiments of the present invention contemplate that web-based content can be created one time, whereafter at least a portion thereof is extracted, reformatted, and transmitted to, for example, one or more handheld device browsers (e.g., the Palm Web Clipping Browser from Palm, Inc., Santa Clara, Calif., Pocket Internet Explorer from Microsoft Corp, Redmond, Wash., and Wireless Access Protocol (WAP) on smart phones, etc.). This create-once, deliver-everywhere approach eliminates the need to build and maintain separate web pages for different devices and browsers, as well as the need to install proprietary browser software on the handheld device(s).

(Cheng, 2:8-19.)

3. Ausems (EX-1006)

69. Ausems, U.S. Patent No. 6,434,403 B1, is entitled "Personal Digital Assistant with Wireless Telephone." I am informed that Ausems qualifies as prior art because it is a United States patent that issued from an application filed on February 19, 1999, before the earliest priority date of the challenged claims.

70. The Background of Ausems explains that "[t]he popularity and use of Personal Digital Assistants (PDAs) and wireless telephones has increased in recent years. A PDA or hand-held computer is primarily a lightweight, compact productivity and communications tool that can typically be held in one hand, leaving the other free to input data with a pen type stylus or a reduced size keyboard. A PDA provides computing and information storage and retrieval capabilities for personal or business use." (Ausems, 1:12-19.) Ausems further explains that "[i]ncreasingly, wireless telephones are being combined with PDAs in order to perform more advanced functions, such as transmitting, receiving and displaying text messages." (Ausems, 1:27-30.) This was well known in the art.

71. Ausems discloses a portable mobile device that combines the functionality of a PDA with a wireless telephone. (Ausems, 3:5-8.) This PDA telephone device **100** includes, among other things, a touchscreen display. (Ausems, *e.g.*, 1:57-58, 4:30-39, 6:9-14.) Ausems' device also includes a camera for recording and storing images, which can be transmitted. (Ausems, *e.g.*, 2:5-6,

5:17-18 ("Camera **190** records video images and stores them within. Additionally, video images recorded by camera **190** may also be transmitted from PDA telephone **100** in real time during a telephone call (thus allowing for video conferencing).").)

4. Motivation to Combine

72. **Motivation to Combine Neibauer and Cheng:** It would have been obvious to combine Neibauer with Cheng, predictably resulting in the club photo sharing feature described in Neibauer being accessible to club members via such devices as smartphones.

73. Under the proposed combination, client-side users would interface with the server via Cheng's proxy server. In this way, a user desiring to upload a photo from a smartphone, would send the photo via the proxy server to the server where it would be stored in the reserved photo storage space. That same user or another user could then interact with the server via Cheng's proxy server to download the photo from the server and assure that it would be displayed on the smartphone with appropriate sizing and formatting. Not only would the photo be viewable in proper formatting, but the Yahoo! Club interface would be tailored to the smartphone by the proxy server – as Cheng describes.

74. The implementation of the proposed combination would have been straightforward as Cheng provides "bolt-on" functionality, with the proxy server

capable of converting and reformatting any existing HTML-based web page into a format suitable for display on a mobile device. (Cheng, *e.g.*, 2:30-32 ("The [reformatting] may be done for at least one of groups of devices, individual devices, web site-specific conversions, <u>or for all web sites</u>.").) It would have been obvious that the proxy server, in the proposed combination, could have been operated by the same or a different entity from the operator of the origin web server.

75. In any case, all of the web-based club features in Neibauer, including the club photo sharing features described above to which I have mapped the claimed "*web-based shared information channel*," would have been available to users of mobile devices based on the proxy server techniques under the combination with Cheng. As Cheng discloses the ability to adapt any existing webpage for display on a mobile device, the proposed combination could have been implemented as a simple addition to the client-server infrastructure that would ordinarily be expected in Neibauer. Implementing a proxy server between a client and a server to efficiently assure the two sides are effectively communicating with each other would have been well-known in the art, but is also described in detail within Cheng.

76. This simple add-on – inserting a proxy server between the client and the server – would effectuate the same functionality that Neibauer describes.

(Cheng, 2:8-19.) Not only would the functionality remain unchanged, it would be meaningfully improved considering that different classes of devices could better communicate (in both directions) with the server. This improvement provides one of the motivations to combine Cheng with Neibauer.

77. Neibauer and Cheng are both analogous references. The ’348 patent describes its “Field of the Invention” as relating generally to “network-based communication systems, and more particularly to techniques for information content management in such systems.” (EX-1001, 1:29-31.) Neibauer is an analogous reference in the same field as the ’348 patent that discloses similar functionality for managing information content accessible through the Internet, through a series of web-based information channels that provide the ability to exchange messages and collaborate among multiple users, and would have been reasonably pertinent to problems facing the inventors including how to implement a web-based system for managing information content and making that content available to users over the Internet. Cheng is also an analogous reference in the field of network-based communications systems, including the ability to make web-based information content available on mobile devices. Cheng would also have been reasonably pertinent to problems facing the inventors, including how to implement a web-based system for making information content available to mobile device users, further including how to properly format and deliver web content to

mobile devices given their limited display space and navigational capabilities, an issue that the ’348 patent specifically identifies as an “important challenge.” (EX-1001, 1:45-50.)

78. A POSITA would have been motivated to combine Neibauer with Cheng. Neibauer itself suggests the proposed combination by disclosing services such as “Yahoo! Mobile” and “Yahoo! To Go” that enable content from Yahoo! services to be provided to mobile devices such as pagers, cell phones, web phones, and personal digital assistants (PDAs). (Neibauer, pp.166-174.) “Yahoo! To Go lets you receive Yahoo! information on your mobile device.” (Neibauer, p.167.) “The Yahoo! To Go option lets you set up your mobile device and Yahoo! so that they work together, as well as specify the content that will be sent to your device.” (*Id.*) For example, one option referred to as “Yahoo! On Your PDA” allowed users of browser-enabled PDAs, such as Palm, Windows CE and smartphone devices, to select particular types of Yahoo! content accessible from their PDA. (Neibauer, pp.171-174.)

79. Although Neibauer does not expressly disclose that the Yahoo! Clubs feature was available for use with mobile devices, it would have been obvious to extend mobile device functionality to cover that feature, in order to allow user-created clubs to be accessed by users via mobile devices. This would have been viewed as a logical (and obvious) extension of the existing mobile features and

capabilities described in Neibauer. Providing the clubs feature for use on a mobile device, in fact, would have been obvious based on Neibauer alone without having to even refer to Cheng because, as discussed above, Neibauer urges readers to access the Yahoo! Servers via classes of devices that include PDAs and other handheld devices that were gaining popularity at that time.

80. Neibauer's emphasis on handheld devices in other sections additionally motivates a POSITA to look to references like Cheng to make the Yahoo! Clubs features described above, including the club message board, chat, and photo sharing information channels, best available to users of mobile devices.

81. A POSITA would also have been motivated to take advantage of the growing popularity of mobile computing and the increased availability of mobile and wireless computing devices. Cheng explains that as of November 2000, "users of wireless devices now demand that businesses deliver web content for viewing on desktop, or mobile/portable (e.g., handheld) devices." (Cheng, 1:19-22.) The Background of the '348 patent itself admits that "[o]ne of the most rapidly expanding aspects of wireless networking involves the accessing of information content over wireless networks via web-enabled mobile devices," such as "mobile telephones, personal digital assistants (PDAs), palmtop computers, etc." (EX-1001, 1:35-39.) The Background of the '348 patent also admits that it was "well-known" that mobile devices "not only provide access to the Internet, but can also be used to

support other types of wireless networking functionality, such as messaging, distributed collaboration, and location-based services." (EX-1001, 1:39-44.)

82. These market forces would have motivated a POSITA to combine Neibauer with Cheng to assure that clubs would be more easily accessible, viewable, and useable across different classes of devices, especially the handheld devices that were gaining popularity.

83. This would have advantageously expanded the potential audience for those features beyond traditional desktop computers, and would have improved user experience by allowing the club founder and club members to utilize club features from multiple devices and, of course, various physical/geographic locations that become important when a user-side device is handheld and can be taken anywhere.

84. The convenience of traveling with handheld devices would have been an additional motivation for looking to Cheng. Patent Owner argues that Neibauer does not sufficiently describe non-PCs. (EX-1020, at 29-31.) If that argument is accepted, Cheng emphasizes that handheld devices were becoming increasingly popular at the time. A POSITA would have been additionally motivated to implement Cheng's teachings related to handheld devices, which would have provided portability benefits when compared to devices requiring communications over physical wires or cable – as Patent Owner claims Neibauer is so limited.

85. Cheng provides a further express motivation to combine by explaining that, using its proxy server conversion method:

> [W]eb-based content can be created one time, whereafter at least a portion thereof is extracted, reformatted, and transmitted to, for example, one or more handheld device browsers (e.g., the Palm Web Clipping Browser from Palm, Inc., Santa Clara, Calif., Pocket Internet Explorer from Microsoft Corp, Redmond, Wash., and Wireless Access Protocol (WAP) on smart phones, etc.). <u>This create-once, deliver-everywhere approach eliminates the need to build and maintain separate web pages for different devices and browsers, as well as the need to install proprietary browser software on the handheld device(s)</u>.

(Cheng, 2:8-19.) The techniques of Cheng would have provided a distinct technological advantage by allowing the club system described in Neibauer to be delivered to mobile devices by converting web pages provided via Neibauer, thus obviating the need for the Yahoo! server to generate multiple different versions of those web pages (including potentially multiple mobile versions based on different mobile device and browser types), thus making it considerably simpler to provide club functionality to the web browsers of mobile devices. This would also have eased implementation of the proposed combination by minimizing or eliminating the need to modify the functionality of the base Neibauer system, as the adaptations needed to convert Neibauer's web pages for mobile devices would have been handled by the proxy server techniques in Cheng.

86. As a further motivation to combine, a POSITA would also have recognized Cheng as an example of proxy server transcoding techniques that were already well-known. As noted above (§ **IV.A.2**, *supra*), proxy server techniques had already been commercially deployed for the very purpose of converting web page content into a format suitable for other types of devices, including mobile handheld devices. The benefits of this approach were well-known and succinctly explained in Uwe Hansmann et al., *Pervasive Computing Handbook* (2001) (**EX-1012**), p.320. In explaining the purpose of content adaptation technologies, Hansmann explains:

> The purpose is obvious: When providers deliver content to various pervasive clients, they need to accommodate device specific constraints such as limited memory, slow data transmission, and small screens. Transcoding automatically translates content into different representations for each class of receiving client systems. This simplifies authoring, deployment, and maintenance dramatically! An arbitrary multimedia web page can be provided to Internet TVs, handhelds, and WAP phones without change.

(*Id.*, § 14.3, p.320; *see also id.*, at p.321 ("Transcoding is typically done by a gateway or proxy, which intercepts the data exchange between the content server providing multimedia data and the client rendering the received information….").)

87. A POSITA would have recognized the proxy server techniques as described in Cheng as one of a finite number of existing techniques for seamlessly

converting Neibauer's club content, which was web-based, into a format more suitable and optimized for handheld devices, otherwise accessing club content on handheld devices would have been at best frustrating and impractical.

88. A POSITA would also have had a reasonable expectation of success with respect to Yahoo! Clubs.[3] Yahoo! Clubs' features involve little or nothing more than straightforward web programming techniques relying on standard technologies such as HTTP, HTML, and could have been implemented using off-the-shelf web browser and web server software. This limited scope of information and capabilities would have been easy to modify at the relevant time.

89. With respect to Cheng, it discloses known techniques for converting HTML documents into formats suitable for wireless mobile devices. Wireless web browsing was well-known as evidenced by the existence of industry-standard technologies such as Wireless Application Protocol (WAP) and the Wireless Markup Language (WML), an XML-based markup language for describing pages for viewing on mobile devices. Proxy server techniques, as explained previously,

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[3] I am not suggesting and have not analyzed whether a POSITA could have replicated the entire Yahoo! service based on the description in Neibauer, as the Yahoo! website has features and functionalities (such as the ability to scale to many millions of users) that go beyond the limitations of the challenged claims.

were also well-known and commercially available. A POSITA would have found the disclosures of Neibauer and Cheng sufficiently detailed to implement the techniques on which I rely, without undue experimentation.

90. **Motivation to Combine Neibauer, Cheng, and Ausems:** An aspect of the challenged claim includes that the "*processing element*" must be configured to "*receive first device-captured data from a first one of the mobile devices via the network interface*" and "*receive second device-captured data from a second one of the mobile devices via the network interface*." Neibauer, as described above, discusses exchanging photographs with the server and sharing photographs on the club page. Neibauer is silent, however, as to how those photographs were "*captured*." In most expected examples, a club user would have pulled a photograph from an external digital camera. This would be "*captured*" under its plain meaning because the computer is capturing the image from the camera. To the extent, however, that the actual device that accesses the club needs to likewise take the photograph, that would have been obvious in view of Ausems, which explains that handheld devices of the time, including those described in Cheng, could capture photographs, and would have been obvious to use with Yahoo! Clubs. (*See* § **IV.A.3** *supra*.)

91. Neibauer, for example, describes a club for James Bond enthusiasts. If a club member had been fortunate enough to come across Sean Connery, it would

have been advantageous for that user to photograph Mr. Connery and upload the picture from the device to the club.

92. In this way, it would have been obvious to combine Neibauer and Cheng with Ausems, predictably resulting in the system under the proposed combination, further adapted such that the photo uploaded by the club member to the club photo sharing feature would have comprised "*first device-captured data*" or "*second device-captured data*," i.e., a photo captured by a digital camera incorporated into the mobile device. For example, under the proposed combination with Ausems, the club member would have obtained image data using a digital camera of its mobile device, which would have been transmitted for upload to the club for sharing with other club members using the photo sharing features described in Neibauer. (Neibauer, pp.477-478.)

93. Ausems is an analogous reference in the same field of the '348 patent of wireless and mobile communications, and would have been reasonably pertinent to problems facing the inventor. For example, Ausems would have been reasonably pertinent to the problem of how to capture media data using a mobile device, and the problem of how to share that data with other users, as well as to inform the inventor about the technological features and capabilities of conventional mobile communication devices. Ausems would also have been reasonably pertinent as it discloses a wireless telephone that also incorporates wireless communications and

digital camera functionalities, thus addressing the problem of how to obtain and share image data captured using a mobile device.

94. A POSITA would have been motivated to combine Ausems with the disclosures of Neibauer and Cheng described above. The ability to share media data captured by the mobile device would have dramatically expanded the universe of image data that the club member could have shared with other members. Based on Ausems, the club founder would not be restricted to sharing preexisting images that the founder obtained from third parties or external devices. Instead, the founder could capture any number and variety of their own images (via the digital camera) and share them with other club members. This would not only have expanded the variety of shared content, but would have made the club experience more compelling to other club members because such images would have been more unique as compared to preexisting images from third parties with which club members may already have been familiar.

95. A POSITA would also have had a reasonable expectation of success. Ausems confirms that, as of its February 1999 filing date, digital cameras and the ability to transmit images captured by digital cameras were known. (*See* § **IV.A.3** *supra*.) These functionalities were already becoming commonplace on commercially available wireless devices by June 2002. A POSITA would have found the disclosures of Neibauer, Cheng, and Ausems sufficiently detailed to

implement the techniques on which I rely, using conventional programming techniques, without undue experimentation.

5. Independent Claim 1

a. Preamble [1P]

[1P] An apparatus comprising:

96. Assuming the preamble of claim 1 is limiting, it is my opinion that it is disclosed and rendered obvious by the prior art.

97. As I described above (§ **IV.A.1**, *supra*), Neibauer discloses features of the Yahoo! online service. (Neibauer, pp.473-483.) The Yahoo! online service included a feature known as Yahoo! Clubs. (*Id.*) As Neibauer explains, "[a] *club* is a group of Yahoo! members who share a common interest. Each club has its own message board, chat room, as well as places to share photographs, news, addresses, and links." (Neibauer, p.473 (italics in original).) Clubs were accessible from a webpage on the Yahoo! website (http://clubs.yahoo.com), that allowed users to search existing clubs relating to particular topics of interest. (Neibauer, p.473.) Figure 21-8, for example, shows a club page for the club entitled "The James Bond Movie Series":

YAHOO! CLUBS
Clubs Top – Yahoo!
Our Pages
Home
Messages
Photos
Chat
News
Links
Contacts
Calendar
Sponsored by:
Get It Here!
Member Tools
Invite

The James Bond Movie Series
The James Bond place to talk about the movies.
Category: James Bond Serie
Club Type: Liste

You are a **guest**.
Join this club

Founder's Message

JAMES BOND is probably one of the best movie series I know of other than Star Wars. Here there are pictures, info, and links to other James Bond sites. If you know any please put add them.

Founder's Personal Home Page

Last edited by: shaner303

Chat Room enter

Overview

Online Now (4 members) view all online
Click on name to talk now: davidlaw_1975, paintballboy12, bond_freak2000, Cantana_Ma

Recent Messages post | view all

Mar 19 **GOLDENEYE SITE! -scottdaman2000**
Scott's Goldeneye Fiesta. Either for help or to celebrate your victory!

Mar 8 **BOND GIRLS ADDRESS NEEDED FOR AUTOGRAPHS -nick_jb007**
DOES ANYONE KNOW ANY BOND GIRLS ADDRESS FOR A AUTOGRAPH I REALLY NEED TO K

Mar 3 **TWINE on video and DVD! -_Lawrence_3**
Check this out folks..

Feb 12 **The best of Bond -davidlaw_1975**
Hi, I am a new member of the club and I would like to express my comments

Feb 12 **The best of Bond -davidlaw_1975**
Hi, I am a new member of the club and I would like to express my comments

FIGURE 21-8 Club page

(Neibauer, p.475, Fig. 21-8.)

98. The user can join this club by clicking "Join this club," shown on the top-right above. (Neibauer, p.475.) After joining, "other members will see your name on the top of the page with the list of members who are online." (*Id.*) A club offers a number of features, accessible from the links shown under "Our Pages" on the left side of Figure 21-8 above. For example, each club has its own private message board ("Messages"), allows users to share photographs and make photo albums ("Photos"), engage in private chat with club members ("Chat"), view news headlines ("News"), share website links with other club members ("Links"), obtain contact information about club members ("Contacts"), and post and view events of

interest to club members ("Calendar"). (Neibauer, pp.477-480.) For purposes of claim 1, I will focus on the club photo sharing feature described in Neibauer.

99. With respect to the claimed "*apparatus*," as explained further below, it would have been obvious based on Neibauer alone, or in combination with Cheng, to make the clubs features of Neibauer available to club members via mobile devices. The claimed "*apparatus*," as explained below, comprises one or more servers that operate to make the clubs feature available to mobile device users, including by performing the functions recited in claim 1.

100. With respect to Cheng, it provides mobile functionality by disclosing a system and method for dynamically reformatting or converting existing web content into a format suitable for mobile devices. (*See* § **IV.A.2**, *supra*),

b. Limitation [1A]

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

101. It would have been obvious that the claimed apparatus includes at least one "*processing element*," such as at least one server that includes a processor and "*a memory*." (Cheng, *e.g.*, 23:16-20 ("Although computer system **1100** is illustrated having a single processor, a single hard disk drive or a single local memory, the system **1100** is optionally suitably equipped with any multitude or combination of processors or storage devices.").) The claimed processor and

memory are basic components that any server or other computing device needs in order to function.

102. It would have apparent and obvious that origin web server **102** in Cheng (which would take the form of the web server providing the Yahoo! features disclosed in Neibauer), and proxy server **110**, under the proposed combination, would have comprised "*a processing element comprising a processor coupled to a memory*." The functions in Neibauer and Cheng could not function without these servers, which in turn could not function without memory for storing software instructions for carrying out their respective operations. My mapping of the claimed "*processing element*" as including origin web server **102** <u>and</u> proxy server **110** is entirely consistent with the '348 patent, which makes clear that a processing element or server can itself comprise multiple servers. (EX-1001, 9:21-24 ("Each of the servers **33**, **35**, **37** and **39** [of processing elements **30**] may comprise one or more of the servers **16** or other elements shown in FIG. 1A, or suitable portions or combinations thereof.").)

103. Even if the claim required that the "*processing element*" be contained within a single physical server, it would have been obvious to combine proxy server **110** and origin server **102** into a single server. This implementation is disclosed by Cheng itself, which explains that the computer system implementing the proxy server can "be replaced by, <u>or combined with</u>, any suitable processing

system operative in accordance with the principles of the present invention…." (Cheng, 23:20-25.) It therefore would have been obvious that the functionality of origin web server **102** could have been combined with proxy server **110**, to provide a combined server that performs the functions of claim 1. This would have been obvious and trivial in view of Cheng, as a POSITA would have been familiar with known techniques for assigning tasks among servers, including dividing tasks into multiple servers or consolidating tasks within a single server, as needed. For example, a POSITA would have been motivated to combine origin web server **102** with proxy server **110** to improve the performance of Cheng's proxy server techniques, as this would have eliminated the step (and network overhead associated with) origin server **102** having to send the original web page to the proxy server over the Internet.

c. Limitation [1B]

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

104. The servers described in limitation [1A] are both accessible over the Internet. (Cheng, 3:67-4:2 ("As shown [in Figure 1], the proxy server **110** and the server **102** are connected via a network **114** such as the Internet."); Neibauer, p.4 (explaining that Yahoo! members need access to an Internet connection), p.473 ("Access Yahoo! clubs by clicking Clubs on the Yahoo! home page or by going directly to http://clubs.yahoo.com to open the page shown in Figure 21-6."), p.64

("**http://** This is the prefix for the standard type of Internet Web site. The letters stand for Hypertext Transfer Protocol.") (bold in original).) The ability to communicate with a plurality of "*mobile devices*" would also have been obvious.[4] The '348 patent itself expressly defines a "mobile device" as including, among other things, a laptop computer. (EX-1001, 4:45-55.) It was well-known that conventional laptop computers provided the same functionality as desktop computers and were able to run web browser software and visit web pages on the Internet. It therefore would have been obvious that the Yahoo! website, including the club photo sharing feature discussed above, would have been accessible to a user of a mobile device such as a laptop computer.

105. **Addressing Proposed Constructions in Co-Pending Proceedings:** As noted above, I understand that Patent Owner has argued in the Meta-MDT-IPR that a "*mobile device*" should mean "a portable device with limited display space

[4] In the Meta-MDT IPR, Patent Owner relies on its proposed construction of "*mobile device*" to argue that limitations [1D] and [1E] are not satisfied by the prior art. Because limitation [1B] recites "*mobile devices*," I will address Patent Owner's arguments here. My analysis as related to Patent Owner's construction of "*mobile device*" applies equally to limitations [1D] and [1E].

and limited navigational capabilities that connects to a mobile site and/or mobile information channel via a wireless network." (EX-1030, 9.)

106. I further understand that Patent Owner, based on this proposed construction, has argued that Neibauer, alone or in combination Cheng, does not teach or suggest limitations [1D] and [1E]. In particular, Patent Owner argued:

> The current claim limitation requires that the device-captured data is received "from a first one of the mobile devices" and "from a second one of the mobile devices," respectively, which, as established, does not include a full-capability computer, such as a full-capability laptop. *Id*. Accordingly, photo uploads from Neibauer's Yahoo! Clubs functionality by a PC does not disclose or render obvious the current limitations. Medvidovic, ¶¶96-99, 356-357, 380-381. Further, the mere mention of the set of Yahoo! Mobile services implementable by a mobile device does not teach or suggest these features. Indeed, as established above, none of the Yahoo! Mobile features provides device-captured data to be integrated into a web-based shared information channel amongst mobile devices. Instead, all of the mobile functionality provided is merely functionality that results in data being *received* by the mobile device for presentation on the mobile device. *Id.* As established, mobile devices use mobile sites for web-based communication. POR§III.A There is no teaching, suggestion, or enablement of device-captured data that is provided by (and thus received from) a mobile device, let alone photos uploaded from such a mobile device and posted in the Yahoo! Clubs website.

> Further, Cheng combined with Neibauer's Yahoo Clubs! functionality does not teach or suggest these limitations. As established, Cheng does not contemplate uploads from mobile devices, even when "bolted-on" to the Yahoo! Clubs functionality described in Neibauer. POR§V.B. As established, Cheng does not provide any teaching or suggestion of mobile-device provided data other than a web page request 106 provided to the proxy server 110. Medvidovic, ¶¶124-128, 358. Cheng does not teach or suggest mobile-device supplied data that is integrated back into the web page 104. *Id.*; POR§V.A.3. In fact, Cheng does not disclose *any* mobile device-supplied data being provided to the web page 104. Therefore, even if Neibauer's Yahoo! Clubs site were the web page 104, there would still be no device-captured data received from the mobile device 108 at the Yahoo! Clubs web page 104. Instead, at best, Cheng would allow a view of the Yahoo! Clubs web page 104 to be *received and presented by* the mobile device 108, which is simply not analogous to the recited claim limitations. Medvidovic, ¶¶127-128, 358.

(EX-1030, 43-45.)

107. I disagree with Patent Owner's arguments here. Initially, I disagree with Patent Owner's proposed construction of "*mobile device*," as it is inconsistent with the plain and ordinary meaning of the term. Indeed, as I noted above, the '348 patent specification defines "*mobile device*" broadly to include a wide variety of devices, including laptop computers, without regard to such devices having

"limited display space and limited navigational capabilities." Specifically, the specification states:

> 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. Examples of mobile devices 15 utilizable in system 10 of FIG. 1A include 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, a portable game player, etc.

(EX-1001, 4:45-55.) Patent Owner's proposed construction is inconsistent with the disclosures in the specification, which would include such things as conventional laptops.

108. Further, even under Patent Owner's proposed construction of "*mobile device*," it would have been obvious, based on Neibauer and in further view of Cheng, that Neibauer's webpages could have been used on other forms of mobile devices, including handheld devices such as smartphones and PDAs. As discussed in the summary of Cheng above, Cheng discloses a technique for translating the pages of existing websites into a format suitable for display on a mobile device. (Cheng, *e.g.*, 2:19-32, 3:21-26; § **IV.A.3**, *supra*.)

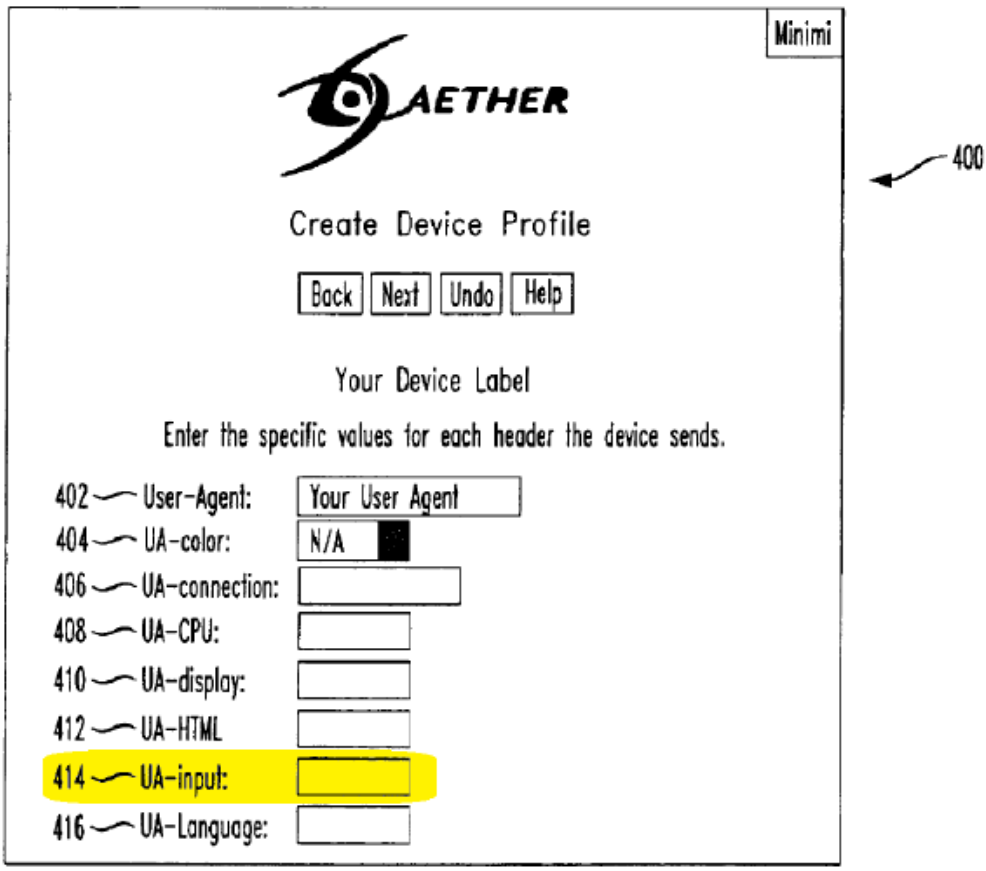
109. Additionally, contrary to Patent Owner's argument, Neibauer's disclosures also extend beyond merely allowing for access to Yahoo! Clubs through a "conventional laptop." For example, Neibauer discusses Yahoo! Mobile, which lets a user "get many Yahoo! services on mobile devices," that fit within Patent Owner's narrow interpretation including "Pagers," "Cell phones," "Web phones," and "Personal digital assistants (PDAs)." (Neibauer, p.166.) Neibauer further discloses a variety of PDAs that may be used to access Yahoo!: "Select the device the device type: Palm III, Palm IV, Palm VII, Visor, pdQ Smartphone, Windows CE, Apple Newton, or Other." (Neibauer, p.171.)

110. In the Meta-MDT-IPR, Patent Owner also argues that Cheng does not teach or suggest this limitation because, according to Patent Owner, Cheng only discloses a "one-way" transmission of data to a mobile device in response to a request from that device. (EX-1030, 31-33.)

111. While it would be unnecessary for Cheng to need to disclose two-way transmission of data as part of the combination, I disagree with Patent Owner's interpretation of Cheng because Cheng does disclose the ability to receive content from a mobile device, which would make sense in an environment where a device needs to communicate bi-directionally over a network in order to function properly.

112. For example, Cheng discloses the ability to specify, as part of the device profile of a mobile device, that the mobile device is capable of text, image, and file input. (*See, e.g.*, Cheng, 8:36-39 ("In step 314, [t]he UA-input field 414 is used to specify the types of input fields (e.g., password field, text box, image, file, etc.) of the mobile device 108 screen display.").)

FIG. 4



Create Device Profile Page

(Cheng, Fig. 4 (highlighting added).)

113. In the above example, Cheng discloses that a mobile device user can input text, image, and file data into the mobile device and that information is then transmitted from the device to a website. Thereafter, the device profile

information, received **from** the mobile device, enables proxy server 110 to identify the mobile device 108, and to determine which webpage conversions to perform for that device. (*See* Cheng, 8:54-62, 7:59-65.) This functionality of Cheng contradicts Patent Owner's description of Cheng.

114. In communicating between the server and a mobile device (whether a handheld or not), it would have been obvious that the processing unit (whether as the combination of proxy server 110 and origin server 102 or as a single server) would also have included "*a network interface*," a basic and well-known component that allows a computer to communicate with other devices over a network such as the Internet. (EX-1001, 5:17-19 ("The network interface 25 provides an interface for the processing element 20 to the wireless network 12 or the Internet 14.").) For example, Cheng discloses that the processing element is coupled to a communication port that facilitates communication with mobile devices, such as through a wireless network. (Cheng, 23:44-51 ("Communications with external devices, for example, the other components of the system described herein, occur utilizing communication port 1516. For example, optical fibers and/or electrical cables and/or conductors and/or optical communication (e.g., infrared, and the like) and/or wireless communication (e.g., radio frequency (RF), and the like) can be used as the transport medium between the external devices and communication port 1516.").)

115. Alternatively, the "*network interface*" can also correspond to gateway **109**, which in this scenario, would have been part of the claimed "*processing element*" and would have provided an interface between mobile devices and proxy server **110**. (Cheng, 3:33-36 ("If necessary, a gateway **109** may optionally be provided that interfaces between, for example, the mobile device **108** and the proxy server **110**.").)

116. Under either theory, the combination of Neibauer and Cheng discloses "*a network interface coupled to the processing element and configured to communicate with a plurality of mobile devices over at least one network*," i.e., that connects mobile devices to the processing unit over the Internet.

d. Limitation [1C]

[1C] the processing element being configured:

117. As explained below, each of the recited functions is performed by the "*processing element*" recited in limitation [1A].

e. Limitation [1D]

[1D] to receive first device-captured data from a first one of the mobile devices via the network interface;

118. Neibauer discloses a photo sharing feature that allows a club member to select a photo to upload and share with club members. As explained in Neibauer:

Sharing Photographs

The Photos option in the Our Pages section lets members share photographs and other graphics. Each club is given 5 MB of space to store photographs. The photos are organized into up to 30 albums, each with no more than 24 photos.

There are two types of albums: group and personal. Any member can place a photo in a group album and delete photos that he or she added as well. Only the creator of a personal album can add or delete photographs.

(Neibauer, p.477 (bold in original).) In order to add a photograph to an album, the user identifies the location of the photo and enters a name and description of the photo that will be uploaded. (Neibauer, p.478, ¶¶2-3.)

119. As further explained in Neibauer:

Adding a Photograph to an Album. You can add a photo to an album starting from the list of albums or the list of photos in an album. Just follow these steps:

1. If you are viewing the Photo Albums page, click Add Photo on the right side of the name of the album where you want to insert the photo. If you are looking at the list of photos already in an album, click the Add Photo button on the top of the page.

2. In the page that appears, enter either the path and name of the photo on your disk or click Browse to locate the file. You can also click the On The Web link to designate a photograph located on a Web page.

3. Enter a name and description of the photo.

4. Select an option from the Resize Photo section. Resizing allows Yahoo! to adjust the size of the photograph to make better use of the club's Web space and to make the photos easier to view. You can select Don't Resize, Large, Medium, or Small.

5. Click Preview to see how your photo will appear, or click Upload to move a copy of the photo into the club's Web space.

(Neibauer, pp.477-478; *see also* pp.477-478 (showing clickable "Add Photo" option available on album pages).)

120. The combination of Neibauer and Cheng thus renders obvious that the processing element is configured "*to receive first device-captured data from a first one of the mobile devices via the network interface*," by allowing the user to upload a photo ("*first device-captured data*"). Under the combination, the photo would have been received by the proxy server 110 and origin web server 102 in Cheng ("*processing element*") via a mobile device used by a club member. The photo would also have been received "*via the network interface*," as explained in limitation [1B], because that interface would have facilitated communications between the mobile device and the processing element over the Internet. It would have been obvious that the photo would have been "*first device-captured data*," such as a digital photograph. (Neibauer, p.478, Fig. 21-10 (showing exemplary club photo album listing photos of Denise Richards and Famke Janssen).)

121. Claim 1 merely requires that device-captured data be received "*from a first one of the mobile devices*," which does not appear to expressly require that the data actually have been captured using the mobile device itself (such as using a built-in camera). Nevertheless, to the extent the claim were interpreted to impose such a requirement, it would have been obvious that the photo uploaded by a club member, under the combination of Neibauer and Cheng, could have included device-captured data that was captured by the mobile device, as portable communications devices prior to June 2002 included digital cameras that allowed devices to capture, store, and transmit digital images. In the event Patent Owner argues that incorporation of digital cameras into mobile devices was not well-known as of June 2002, Ausems is an example of a mobile communications device that, among other things, incorporated a digital camera for recording, storing, and transmitting digital images, as discussed above (§ **IV.A.3**, *supra*).

f. Limitation [1E]

[1E] to receive second device-captured data from a second one of the mobile devices via the network interface; and;

122. This limitation merely repeats the same step as limitation [1D] for a "*second one of the mobile devices*." Under the combination of Neibauer, Cheng, and Ausems, limitation [1E] takes place when a second club member uses her own mobile device to upload a different photo to a group album (using the same technique described in limitation [1D]). (Neibauer, *e.g.*, p.477 ("Any member can

place a photo in a group album….”).) As also noted previously, Cheng discloses that multiple mobile devices can be used with the proxy server conversion techniques. (Cheng, *e.g.*, 5:11-12, 5:26-29.) This would have allowed both the first and second mobile devices to use and add photos to the club photo sharing feature described in Neibauer.

g. Limitation [1F]

[1F] 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.

123. Under the combination of Neibauer, Cheng, and Ausems, photos uploaded by club members would have been integrated into a photo album using the club photo sharing feature (“*a web-based shared information channel*”).

124. Neibauer discloses a user interface for allowing club members to select a photo albums and view the photos within the selected album. First, with respect to selection of an album:

Photo Albums

Showing 1 - 2 of 2 albums (1024 KB total) **Add Album**

Album Name	Pictures	Creator	Type	Add Photo	Edit	Delete
Blueraja's BOND GIRL Album	12 (278 KB)	blueraja3	Group	Add Photo		
James Bond	21 (287 KB)	shaner303	Group	Add Photo		

(Neubauer, p.477.)

125. The user interface shown above lists a number of available photo albums. This user interface, as noted above, has an "Add Photo" link to allow a member to add a new photo to the album: "Click an album name to see a list of the photographs stored there, as shown in Figure 21-10." (Neibauer, p.477.)

The James Bond Movie Series Category: James Bond Serie
The James Bond place to talk about the movies. Club Type: Liste

Blueraja's BOND GIRL Album Back To: Album List

Created by blueraja3 on 22-Nov-1999

Showing 1 - 12 of 12 photos | View Thumbnails Add Photo

Photo Name and Caption	Contributor	Size	Posted	Edit	Delete
Denise Richards - Stunning Blue Bikini	blueraja3	21 KB	22-Nov-1999		
Denise Richards - Seductive Stare	blueraja3	22 KB	22-Nov-1999		
Denise Richards - Sexiest Denise Pic	blueraja3	48 KB	22-Nov-1999		
Denise Richards - Too Sexy! Too Sexy!	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Modeling Lingerie	blueraja3	53 KB	22-Nov-1999		
Famke Janssen - Sexiest Bond Girl Ever	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Sexy Black Leather	blueraja3	10 KB	22-Nov-1999		

FIGURE 21-10 Club photo album

(Neibauer, p.478, Fig. 21-10.)

126. Figure 21-10 as noted above shows a partial list of photographs stored in an album. This user interface also has an "Add Photo" button to allow a member to add a new photo to the album. "For each photo you will see the title, contributor's name, the photo's size, and the date it was posted. Click a photo to see the photo on your screen." (Neibauer, p.477.) Although the example in Figure

21-10 shows provided received from one contributor (blueraja3), any member of a group can post a photo that will be accessible through a photo album. (Neibauer, p.477 ("Any member can place a photo in a group album….").)

127. It therefore would have been obvious that when two club members upload photos to a particular club photo album, pursuant to limitations [1D]-[1E], that photo album would have included and listed the photos provided by both members. The combination of Neibauer, Cheng, and Ausems therefore renders obvious "*integrat[ing] the first and second device-captured data into a web-based shared information channel*," because the photos provided by the first and second users to a particular photo album would have been incorporated into the club photo sharing feature when added to the album.

128. Neibauer's photo sharing feature is also "*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*," because the two club members would have accessed the club photo sharing feature over the Internet via their mobile devices. The web browsers on the mobile devices also comprise "*personalized content applications*." This is consistent with the plain and ordinary meaning of "application," which simply refers to a software program for carrying out a particular task. (*See* Microsoft Computer Dictionary (5th ed. 2002) (**EX-1021**), p.31 ("**application** n. A program

designed to assist in the performance of a specific task, such as word processing, accounting, or inventory management.") (bold and italics in original).)

129. Under the combination of Neibauer, Cheng, and Ausems, each club member would have used the web browsers on their mobile device to post personalized content using the club photo album feature. (Neibauer, p.477-479.) For example, each club member can create their own "personal photo album," where the member can add photos to share with other members. (Neibauer, p.477.) Neibauer discloses numerous other club features that enable a member to create and view personalized content, including personalized messages using the private message board. (Neibauer, p.483, Fig. 21-13 (showing personalized "Welcome" message posted by club founder).) A club member can also engage in online chat with other club members. (Neibauer, p.479.)

130. These features are "*controllably accessible*" to the first and second users through the club home page, as shown below:

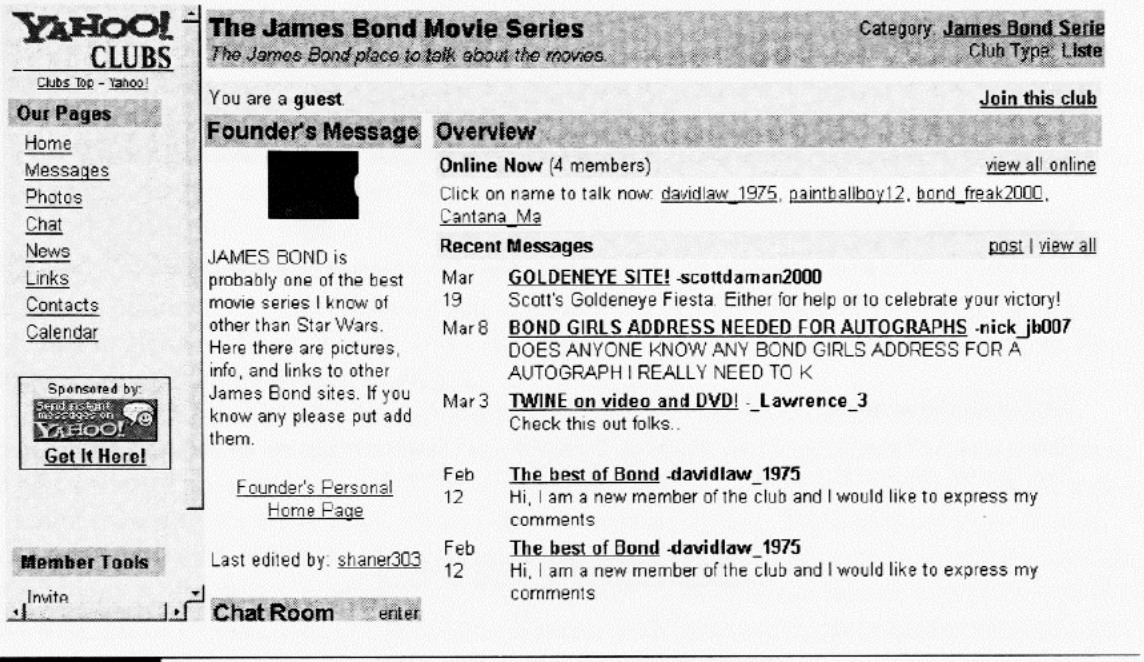


FIGURE 21-8 Club page

(Neibauer, p.475, Fig. 21-8.)

131. The features of the club can be controllably accessed by users from the links shown under "**Our Pages**" on the left side of Figure 21-8 above. For example, each club has its own private message board ("**Messages**"), allows users to share photographs and make photo albums ("**Photos**"), engage in private chat with club members ("**Chat**"), among other features. (Neibauer, pp.477-480.) By allowing the user to access personalized content, the web browser application on each mobile device "*comprises a personalized content application*." This is consistent with the '348 patent, which discloses use of a browser on the mobile device to access the mobile website. (EX-1001, 13:21-24 ("The mobile site home

page **400** may be accessed, for example, by entering a corresponding URL of the mobile site into a browser at one of the mobile devices **15**.”).)

132. As a separate and independent theory for the “*personalized content application*,” Neibauer discloses the ability of a user to customize her own Yahoo! home page using Yahoo! Companion, a toolbar added to the web browser window. (Neibauer, pp.56.) This feature allows the user, among other things, to personalize and customize aspects the content of the user’s My Yahoo! home page as viewed by the browser. (Neibauer, pp.66-74.) This provides another way in which the web browser, under the proposed combination, would have comprised a “*personalized content application*.” In either case, the web browser applications on the mobile devices would have been applications that allowed club members to access personalized content through the features described above.

133. **Addressing Proposed Constructions in Co-Pending Proceedings:** As noted above, I understand that, in the MDT-Meta-Litigation, Patent Owner contends that “*web-based shared information channel*” means “a medium for transferring information accessible to more than one user via the Internet.” (EX-1025, 2.) In the Meta-MDT-IPR, Patent Owner provides a substantively similar construction: “a medium for transferring information accessible to more than one user via the web.” (EX-1030, 16.) Under Patent Owner’s constructions, the club photo sharing feature plainly discloses a “*web-based shared information channel*,”

as it provides a medium that allows club members to upload and later view photos via the Internet.

134. I further understand that Meta has argued in its litigation that "*web-based shared information channel*" should be construed as "a virtual location at the content management site at which user-authored content may be added for transmission to the mobile web site." (EX-1025, 2.) Meta has taken the position that "content management site" within this construction means "a web site that allows a user without programming to create and manage content on a mobile web site, or a portion thereof." (EX-1025, 3.)

135. If Meta's construction is controlling, the "*web-based shared information channel*" would be obvious in view of Neibauer because it discloses a web-based user interface for creating a club that provides a virtual location at a content management website that allow a club founder to create and manage content for the club. (Neibauer, pp.480-82.) It would have been obvious that the content management site in Neibauer would have further allowed the club founder to add user-authored content to the club. (Neibauer, pp.480-482 (describing how to create clubs and add content such as club name and photo)) This content would also have been made available on a "mobile web site, or a portion thereof," i.e., the club webpages delivered to mobile devices, under Neibauer alone or in view of Cheng.

6. Claim 2

[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.

136. As explained for claim 1, both the first and second device-captured data comprises photo (image) data.

7. Claim 3

[3] The apparatus of claim 1 wherein at least one of the first device-captured data and the second device-captured data comprises video data.

137. It would have been obvious to a POSITA that the first or second device-captured data could have comprised "*video data*," under at least two different theories. *First*, it would have been obvious for a club user to upload an image file in "GIF" format, which is commonly understood as standing for Graphics Interchange Format. GIF was (and remains to this day) a well-known format for encoding image data and was the *de facto* image standard for images during the early days of the Web. It was well-known that GIF graphic files were not limited to a single image – a GIF file could contain a number of image frames to displayed sequentially in order to videos or animations. (*See* Sean Wagstaff, *Animation on the Web* (1999) (**EX-1018**), pp.235-236 ("[N]o format has come close to gaining the popularity and widespread acceptance of GIFs. This acceptance is due to the ease of creating GIFs… and to the fact that animated GIFs are supported in most browsers without the hassle of installing extra plug-ins.").)

Under this theory, the first or second "*device-captured data*" of claim 1 would have comprised "video data," as video data is nothing more than a collection of individual (still) images played in sequence. A GIF file, under the proposed combination, would have included a series of individual device-captured photo images stored in a GIF file and displayed in sequence to create a moving picture.

138. This feature would have trivial to implement as Cheng already discloses the ability to provide, to mobile devices, GIF images on web pages. (Cheng, 4:10- 16 ("The web page **104** is typically an HTML file with references to any component .wav, .mov, and/or Joint Photographic Experts Group (JPEG) files, which together comprise the web page **104**. It should also be understood that other file formats (e.g., .gif (graphics interchange format)) and web page components (e.g., Java applets) can also be accessed and returned to the proxy server **110**.").) I note that the '348 patent itself does not place any limits on the type, format, or length of "*video data*" that can be provided. The specification contains only a single reference to "video," merely listing it along a long list of exemplary media types that can be selected or uploaded. (EX-1001, 17:35-37 ("Selectable or uploadable media may include, for example, an XML/RSS feed, a database entry, a syndication item, a document, a video, a photo, a graphic, a music file, etc.").)

139. *Second*, Ausems discloses a mobile device that includes video capture capabilities. (Ausems, 3:15-22 ("PDA telephone **100** may be equipped with

optional enhanced feature sets, including… video conferencing/video capture capabilities….”), 5:17-22 (“Camera **190** records video images and stores them within. PDA telephone **100**. Additionally, video images recorded by camera **190** may also be transmitted from PDA telephone **100** in real time during a telephone call (thus allowing for video conferencing).”).)

140. It therefore would have been obvious, under either theory, to implement the proposed combination such that the first or second “*device-captured data*” of claim 1 would have comprised “*video data*.” This would have predictably resulted in the club photo sharing feature of Neibauer further providing the ability to upload and share video data. A POSITA would have been motivated to implement this capability because video data may be more compelling and interesting to some users when compared to single (still) image data.

8. Claim 6

[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.

141. Cheng and Ausems both confirm that the mobile devices under the proposed combination would have comprised at least “*a mobile telephone*.” (Cheng, 5:30-35 (“[F]or example, an organization’s mobile device **108** users will often be visiting graphic-intensive web sites… [and] will be viewing these sites on, say, smart phones (i.e., a cellular telephone that provides voice, limited Internet

access, email, pager and/or facsimile service, and typically has a small screen and little memory"); Ausems, *e.g.*, 3:5-8 ("FIGS 1*a*-1*d* illustrate PDA telephone **100** that provides the combined functionality of a Personal Digital Assistant (PDA) and a wireless telephone….").) Ausems further confirms that each mobile device could have been "*a GPS-based navigational device*." (Ausems, 5:38-47 ("… PDA telephone **100** includes a Global Position System (GPS) receiver/engine having an associated antenna **195** for receiving signals from GPS satellites… The use of such GPS technology may allow for the inclusion of mapping and other features associated with conventional GPS devices.").)

9. Claim 7

[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.

142. The "*web server*" for claim 7 corresponds to the combination of origin server **102** (which provides the functions of Neibauer) and proxy server **110** (which makes those functions available to mobile devices), as discussed for limitations [1A]-[1B] above. These two servers collectively provide a "*web server*" that makes the web pages available to club members who access the photo sharing feature using mobile devices. As noted, the '348 patent teaches that a "server" can comprise more than one server. (EX-1001, 9:21-24 ("Each of the servers **33**, **35**, **37** and **39** [of processing elements **30**] may comprise one or more of the servers **16** or

other elements shown in FIG. 1A, or suitable portions or combinations thereof.”).) As explained for limitation [1A], it would also have been obvious to combine origin server **102** and proxy server **110**, to the extent the claim requires a single server. Under the proposed combination and under this alternative theory, therefore, the “*web server*” would have included the claimed network interface, processing element and would have been accessible to the first and second mobile devices over the Internet via the network interface, as fully explained for claim 1**.**

10. Claim 8

[8] The apparatus of claim 1 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 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.

143. As explained for claim 1, the club photo sharing feature (“*web-based shared information channel*”) allows club members who upload photos to also enter a message via their web browsers, such as a name and textual description of their photos. (Neibauer, p. 478, ¶3 (“Enter a name and description of the photo.”).) This message would have been entered using the mobile web browser (“*the personalized content application of its corresponding mobile device*”), as described

for limitation [1F]. This message is then integrated with the photo data as shown in the photo album view:

The James Bond Movie Series Category: James Bond Serie
The James Bond place to talk about the movies. Club Type: Liste

Blueraja's BOND GIRL Album Back To: Album List

Created by blueraja3 on 22-Nov-1999

Showing 1 - 12 of 12 photos | View Thumbnails Add Photo

Photo Name and Caption	Contributor	Size	Posted	Edit	Delete
Denise Richards - Stunning Blue Bikini	blueraja3	21 KB	22-Nov-1999		
Denise Richards - Seductive Stare	blueraja3	22 KB	22-Nov-1999		
Denise Richards - Sexiest Denise Pic	blueraja3	48 KB	22-Nov-1999		
Denise Richards - Too Sexy! Too Sexy!	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Modeling Lingerie	blueraja3	53 KB	22-Nov-1999		
Famke Janssen - Sexiest Bond Girl Ever	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Sexy Black Leather	blueraja3	10 KB	22-Nov-1999		

FIGURE 21-10 Club photo album

(Neibauer, p.478, Fig. 21-10.)

144. Figure 21-10 as noted above shows a partial list of photographs stored in an album. For each photo ("*device-captured data*"), the textual name and description ("*message*") entered by the uploading club member is displayed along with a link to the photo itself. (Neibauer, p.477.) For example, the first photo posted above is named "Denise Richards" and described as "Stunning Blue Bikini." As a result, each photo in an album integrates the device-captured data and textual message data into a "*persistent version of a given set of shared information*

content of the web-based shared information channel," because both the photo and textual name and description are accessible to users via the club photo sharing feature. A POSITA would have appreciated that the integration of the message and photo is "*persistent*" because the two pieces of information are stored in association with each other and viewable together by both the first and second users through the user interface as described in Neibauer. The "persistent version" is thus also accessible to the first and second users via their respective mobile devices and personalized content applications.

11. 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.

145. It would also have been obvious that the message is delivered to one or mobile devices "*over a wireless network*." For example, Neibauer discloses in connection with the Yahoo! Mobile service that a mobile PDA could have included a "GSM Phone" modem. (Neibauer, p.171, ¶5.) GSM, which stands for **G**lobal **S**ystem for **M**obile Communication, was a dominant wireless (cellular) mobile network in widespread use in the United States the early 2000s. Cheng similarly discloses wireless network device connectivity. (Cheng, *e.g.*, 2:4-7 ("[T]he present invention provides a system, method, and medium that extracts a portion of web page content and reformats the extracted content for delivery to one or more wireless devices."); *see also id.*, 5:33 (mobile device **108** can include "a cellular

telephone”).) Cheng explains that the computer system that carries out the conversion and reformatting of web pages can include a communication port **1516**, which is used for “[c]ommunications with external devices, for example, the other components of the system described herein,” which can use transport media such as “wireless communication (e.g., radio frequency (RF), and the like)” (Cheng, 23:44-51.) It therefore would have been obvious that the messaging communication provided under the proposed combination would have been provided “*over a wireless network*,” such as a known cellular communications network such as GSM commonly used to communicate information to and from wireless mobile devices. A POSITA would have been motivated to allow for messaging communications over a wireless network in order to take advantage of the growing popularity and availability of mobile device communication, which would have provided portability benefits when compared to communications requiring physical wires or cable.

12. 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.

146. Independent claim 12 similar to claim 1 but requires that “*a given*” server comprise the “*apparatus*” of claim 1. This claim would have been obvious for the same reasons as claim 1. To start, the proposed combination renders

obvious "[*a*] *network-based communication system comprising a plurality of servers configured to communicate over said at least one network*," which includes multiple origin servers **102** on the Internet that contain web page content, along with at least proxy server **100**. (Cheng, 3:49-53 ("In general, embodiments of the present invention contemplate that architecture **100** comprises one or more servers **102** having web content (in the form of at least one web page **104**), a proxy server **110**, at least one mobile device **108**, and at least one network **114**.").) I note that there appears to be no antecedent basis for "*said at least one network*," so I have interpreted this language in claim 1 to simply require at least one network.

147. Claim 12 further states that "*a given one of the servers compris[es] the apparatus of claim 1*." For purposes of claim 12 and as explained for claim 1, it would have been obvious that "*a given one of the servers*" would have corresponded to the combination of proxy server **100** and origin server **102**, as the '348 patent itself makes clear that a server can itself comprise multiple servers. (EX-1001, 9:21-24 ("Each of the servers **33**, **35**, **37** and **39** [of processing elements **30**] may comprise one or more of the servers **16** or other elements shown in FIG. 1A, or suitable portions or combinations thereof.").) Alternatively, "a given one of the servers" would have corresponded to proxy server **100** in Cheng, which as explained for limitation [1A] above, would have been combined with origin server **102** providing the functionality of Neibauer, to form a combined server for

performing the functions of claim 1. This implementation is directly supported by Cheng itself, which provides details about computer system **1100** for use in implementing Cheng and its proxy server techniques. (Cheng, 22:46-54.) Cheng explains that the computer system can optionally be equipped with "any multitude or combination of processors or storage devices." (Cheng, 23:16-20.) Cheng further explains that the computer system, "in point of fact, [is] able to be replaced by, <u>or combined with</u>, any suitable processing system operative in accordance with the principles of the present invention…." (Cheng, 23:20-25.) It therefore would have been obvious that the functionality of origin web server **102** could have been combined with proxy server **100**, to provide a combined server that performs the functions of claim 1. This would have been plainly obvious and trivial in view of Cheng, as a POSITA would have been familiar with known techniques for dividing tasks among servers, including dividing tasks into multiple servers or consolidating tasks within a single server, as needed.

13. Independent Claim 13

a. Preamble [13P]

[13P] A method comprising:

148. Independent claim 13 recites "[*a*] *method comprising*," and recites steps substantially similar to the functions recited in apparatus claim 1.

b. Limitations [13A]-[13B]

[13A] receiving first device-captured data from a first mobile device over at least one network; [13B] receiving second device-captured data from a second mobile device over said at least one network; and

149. These limitations are substantially similar to limitations [1D]-[1E] except that unlike claim 1, these limitations do not require receipt via a "network interface." They are obvious for the same reasons as stated for claim 1. The "*at least one network*," as explained for claim 1, comprises the Internet. (Cheng, 3:67-4:2 ("As shown [in Figure 1], the proxy server **110** and the server **102** are connected via a network **114** such as the Internet."); Neibauer, p.4 (explaining that Yahoo! members need access to an Internet connection), p.473 ("Access Yahoo! clubs by clicking Clubs on the Yahoo! home page or by going directly to http://clubs.yahoo.com to open the page shown in Figure 21-6."), p.64 ("**http://** This is the prefix for the standard type of Internet Web site. The letters stand for Hypertext Transfer Protocol.") (bold in original).)

c. Limitation [13C]

[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.

150. This step is identical to the function recited in limitation [1F], and is rendered obvious for the same reasons.

14. Claim 14

[14] The method of claim 13 further comprising: [a] 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 [b] 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; [c] 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.

151. Claim 14 is substantially similar to claim 8. As explained for claim 8, the club photo sharing feature described in Neibauer allows the first and second users to enter "*a message*" using their web browsers in their mobile devices, which would have been delivered to other users (for example, by viewing the photo album with accompanying textual messages as shown in Neibauer Figure 21-10) via their mobile devices. Each message is thus integrated with its respective photo, as recited in the claim and described for claim 8.

15. Independent Claim 17

a. Limitation [17P]

[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

152. Independent claim 17 is substantially similar to claim 1 except that it recites "[*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 perform the same functions as claim 1. As explained for limitation [1A], the proposed combination discloses and renders obvious "*a processing element*" and "*non-transitory computer-readable storage medium*," i.e., one or more server computers having access to a memory.

153. It would have been obvious that the functionalities from Neibauer, Cheng, and Ausems relied upon for claim 1 would have been carried out and implemented by software comprising code that is executed by the processing element and stored in the at least one "*non-transitory computer-readable storage medium*," such as a hard disk drive. (Cheng, *e.g.*, 23:64-24:4 (explaining that instructions may be stored in random access memory or hard disk storage until required by the computer system).) It would have been obvious that all of the steps of claim 1 would have been carried out by program code stored in a non-transitory computer-readable storage medium and executed by the processing element (such as hard disk drives on the web server and proxy server described in Cheng), to carry out a method of managing information content.

b. Limitations [17A]-[17C]

[17A] to receive first device-captured data from a first mobile device over at least one network;

[17B] to receive second device-captured data from a second mobile device over said at least one network; and

[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.

154. These limitations are substantially similar to limitations [1D]-[1F] except that unlike claim 1, these limitations do not require receipt via a "*network interface*." They are obvious for the same reasons as stated for claim 1. The "*at least one network*," as explained for claim 1, comprises the Internet. (Cheng, 3:67-4:2 ("As shown [in Figure 1], the proxy server **110** and the server **102** are connected via a network **114** such as the Internet."); Neibauer, p.4 (explaining that Yahoo! members need access to an Internet connection), p.473 ("Access Yahoo! clubs by clicking Clubs on the Yahoo! home page or by going directly to http://clubs.yahoo.com to open the page shown in Figure 21-6."), p.64 ("**http://** This is the prefix for the standard type of Internet Web site. The letters stand for Hypertext Transfer Protocol.") (bold in original).)

16. Claim 18

[18] The non-transitory computer-readable storage medium of claim 17 wherein said executable program code when executed by said processing element further causes said processing element: 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 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; 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."

155. Claim 18 is substantially similar to claim 8, and is also substantially identical claim 14 except for differences in claim dependencies. Claim 18 is obvious for the reasons previously presented.

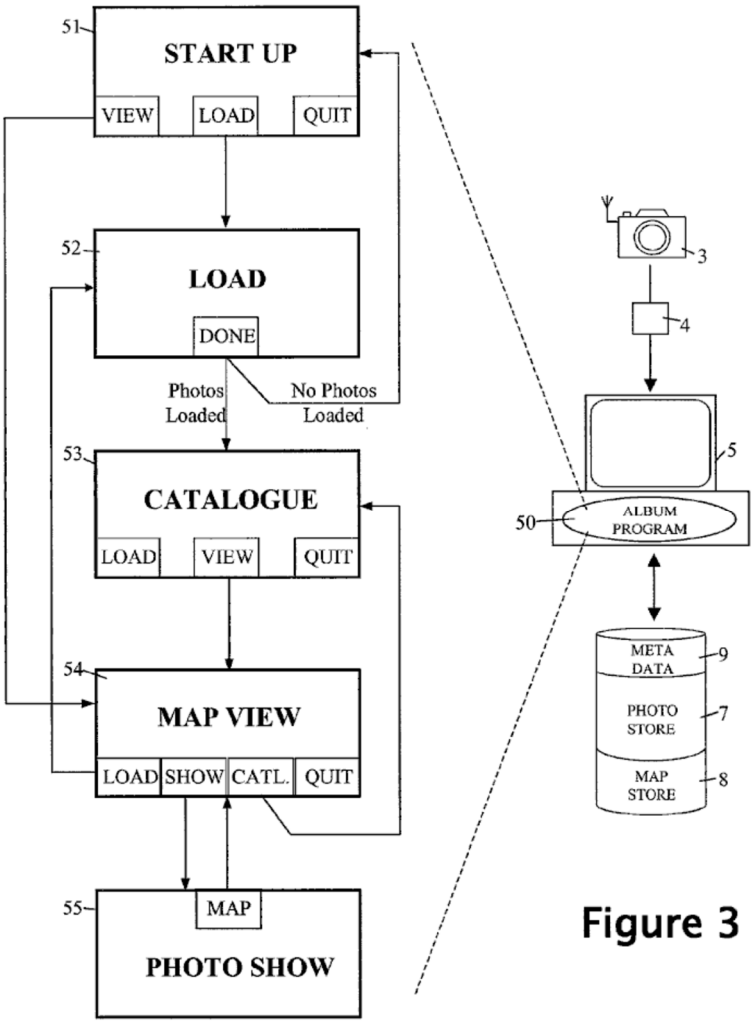
B. Ground 2: Claims 4-5 Are Obvious Over Ground 1 Prior Art + Squibbs

1. Squibbs (EX-1011)

156. Squibbs, U.S. Patent Application Publication No. 2001/0015759 A1, is entitled "Location-Informed Camera." I am informed that Squibbs qualifies as prior art because it is a United States patent application filed on February 21, 2001 and published on August 23, 2001, both dates being before the earliest priority date of the challenged claims.

157. Squibbs describes a technique of recording and displaying data (such as photos) along with the location where the photo was taken. (Squibbs, Abstract.) Squibbs explains that digital cameras that included Global Positioning System (GPS) receivers were known in the art, as were systems that could display the location where the photo was taken on an electronic map. (Squibbs, ¶¶0003-0004.)

158. Squibbs discloses a photo album system that allows a user to record digital images, which can be associated with the geographic location where they were taken. An overview of the system is shown in Figure 3:



(Squibbs, Fig. 3.)

159. As further explained in Squibbs, with reference to Figure 3:

> FIG. 3 depicts a photo system in which a digital camera **3** provided with location determining means (such as a GPS receiver) is used to generate digital photos **4**, each photo (also referred to as 'image data') **4** being stamped with location data indicating where the photo was taken. Other

> data may also be associated with each photo, such as a timestamp, a camera ID, and a user ID; such associated data (including the location data) is herein referred to as photo meta data. The photos and their meta data are downloaded by any suitable means (USB connection, removable storage device, etc) into a PC **5** where an album program **50** serves to store the photos in a photo store **7** and the photo meta data in a meta-data database **9** (each photo and its meta data being linked by a suitable key associated with both). The album program also has access to a map store **8**. The stores **7** and **8** and the meta-data database can be on the PC or external.

(Squibbs, ¶0031.)

160. Squibbs also discloses an album program **50** as shown in Figure 3 that allows the user to "catalogue, manage, and view their photos through a map-based interface, the photos being represented on a displayed may by a marked indicating the location where they were taken." (Squibbs, ¶0032.) The album program as shown in Figure 3 comprises "five main operating modes **51** to **55**," as shown. (Squibbs, ¶0033.) For example, Load Mode **52** allows the user to download data from camera **3**, and Catalog Mode **53** allows the user to manage newly loaded photos using a map based display, and Map View Mode **54** allows the use to browse the photo album and select photos for viewing. (Squibbs, ¶¶0033, 0035-0036.)

161. Figure 6 shows a display generated by the album program in Catalog Mode **53** (Squibbs, ¶0064.):

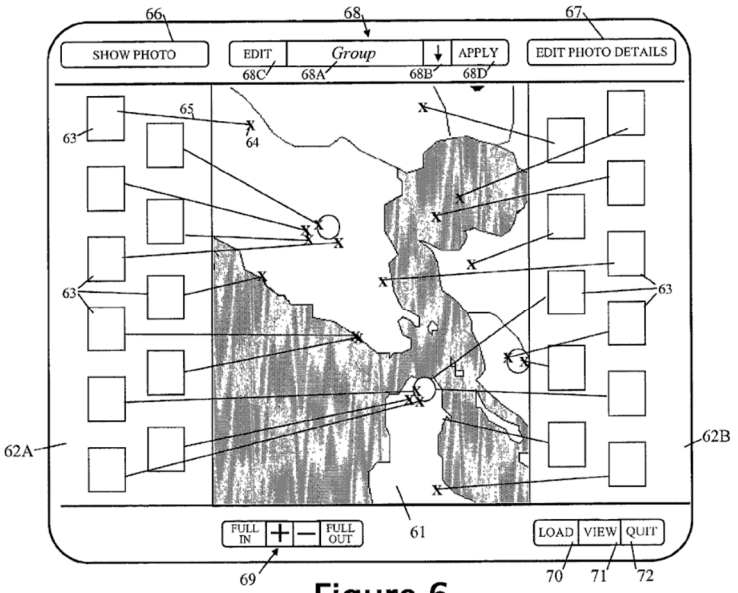


Figure 6

(Squibbs, Fig. 6.)

162. Figure 6 shows a central map area 61 which "is sufficient to encompass the locations registered for the newly loaded batch of photos." (Squibbs, ¶0064.) "A thumbnail **63** of each new photo is shown in one or other of the margin areas **62**A, B and a lead line **65** connects each thumbnail **63** to a corresponding marker 64 showing on the map the location where the photo was taken." (Squibbs, ¶0064.) Figure 6 also shows an upper control bar with, from left-to-right, Show Photo Control **66** for displaying the photo corresponding to a selected thumbnail **63**, Group Control **68** for creating groups and assigning a photo to one or more groups, and Edit Photo Details Control **67** for displaying and

editing the details of a selected thumbnail. (Squibbs, ¶¶0065-0068.) Figure 6 also "includes a zoom control **69** that enables a user to zoom in or out around a particular point on the displayed map." (Squibbs, ¶0071.)

163. Figure 7 shows a display generated by the album program in Map View **54** (Squibbs, ¶0074):

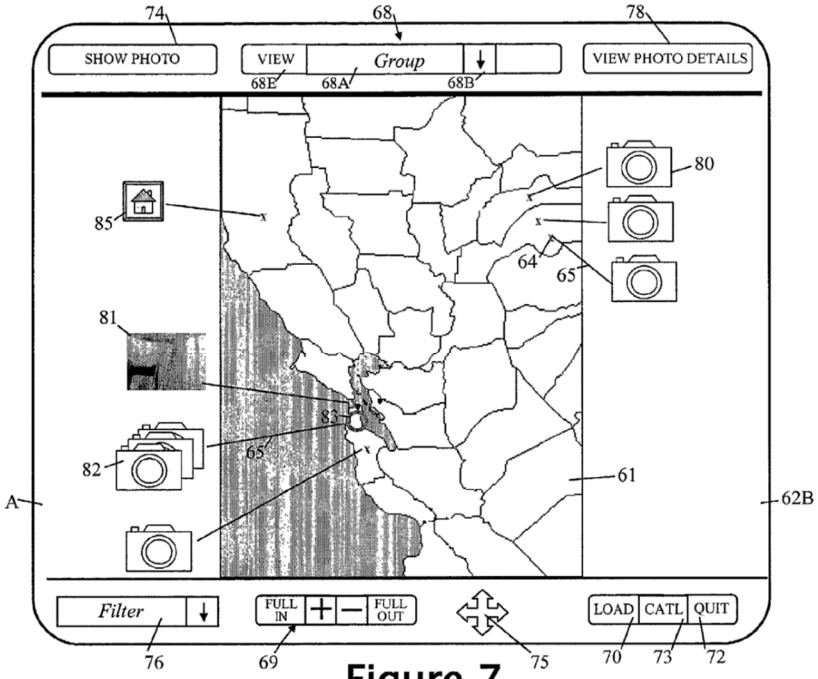


Figure 7

(Squibbs, Fig. 7.)

164. The Map View mode shown in Figure 7 allows a user to browse the album after it has finished editing the photo metadata and assigning the photos to groups. (Squibbs, ¶0074.) Squibbs explains that "[t]he starting map displayed in the Map View Mode is, for example, a world map or a map encompassing the locations of all the photos recorded in the album; alternatively, the map displayed

could be the same map as being used in the Catalogue Mode before transiting to the Map View Mode." (Squibbs, ¶0075.) Figure 7 shows photos represented "either as thumbnails **81**, individual photo icons **80**, group icons (see current-abode group icon **85**), or concentration icons (see icon **82**)." (Squibbs, ¶0075.) Squibbs also discloses (in Figure 8) the ability to display a full-size image of a photo selected from the Map View Mode. (Squibbs, ¶0091, Fig. 8.)

165. Squibbs discloses a number of ways in which a photo can be associated with location data. In the example above shown in Figure 3, the digital camera itself has a built-in GPS receiver. In another embodiment shown in Figure 11, a digital camera **90** transmits the photo image data to a cell phone **20**, which in turn uploads the image data over a cellular connection to service system **40** for storage on network store **43**. (Squibbs, ¶0101, Fig. 11 (showing transfer **105**); *see also id.*, ¶0031 (noting that the photo store can be "external").) The cell phone, concurrently with the upload of photo image data, also transmits location information associated with the photo image data. (Squibbs, ¶0101.) Squibbs explains that the cell phone can determine location information in a number of ways, including from "a location server of the mobile radio infrastructure," or using "a GPS system built into the cell phone." (Squibbs, ¶0098; *see also id.*, ¶0101.)

2. Motivation to Combine

166. **Motivation to Combine Neibauer, Cheng, Ausems, and Squibbs:** Another aspect of the challenged claims requires the use of "*device-captured location coordinates*," "*location-identifying information of the corresponding mobile device*," and "*a capture location identified by the location-identifying information*," i.e., geographic location related to a shared picture. Squibbs, as explained, teaches associating geographic data with captured pictures. In this way, the club member who photographed Mr. Connery could upload the photograph confirming that Mr. Connery was in Beverly Hills, or whatever the case may be.

167. It would have been obvious to combine with Squibbs, predictably resulting in the system and method described in Neibauer for viewing clubs and uploading a new photo using the club photo sharing feature, further adapted to receive "*device-captured location coordinates*," "*location-identifying information of the corresponding mobile device*," and/or "*a capture location identified by the location-identifying information*," i.e., the location information associated with a photo taken and uploaded by the club member. For example, under the proposed combination, when a club member uploads a photo to a club using the photo sharing feature in Neibauer, the mobile device would not only upload the photo

image data but also would have transmitted geographic location associated with the photo.[5]

168. Under the proposed combination, the photo sharing feature described in Neibauer would have been further adapted to display location information associated with photos uploaded by club members, for example, via a map-based user interface similar to the one described in Figures 6-7 of Squibbs discussed above. Under the proposed combination, therefore, the club photo sharing feature as described in Neibauer would have been further adapted to display location information (for example on an electronic map), in association with the photo uploaded by the club member. This would have been seen as a natural extension of

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[5] Squibbs discloses a digital camera that is separate from a cellular phone used to upload photo image data. (Squibbs, Fig. 11, ¶0101.) I note that the ability to incorporate digital cameras into mobile devices with GPS capabilities was already known in the art. (*See* EX-1006 (Ausems), 5:11-23 ("… PDA telephone **100** may include… a camera **190**… Camera **190** records video images and stores them within."), 5:37-44 ("… PDA telephone **100** includes a Global Positioning System (GPS) receiver/engine….").) It therefore would have been obvious to incorporate the digital camera functionality described in Squibbs into the mobile device used to upload the image data as described in Ausems.

the features already disclosed in Neibauer. For example, Neibauer expressly discloses Yahoo! Maps, a service for providing users with electronic maps based on a user-specified location, and for obtaining driving directions. (Neibauer, pp.222-224, 229-232.)

169. Squibbs is an analogous reference in the same field as the ’348 patent that discloses similar functionality for managing information with wireless networking capabilities, such as location information. Squibbs would also have been reasonably pertinent to problems facing the inventors, including how to obtain location information and incorporate that information into a mobile information channel – a feature of the alleged invention. (EX-1001, 6:12-17.)

170. A POSITA would have been motivated to combine in order to improve the experience club members who use the club photo sharing feature described in Neibauer. The ability to associate a location with a digital photo would have provided a clear benefit to the club photo sharing feature of Neibauer by improving the classification and enjoyment of uploaded photos.

171. Squibbs itself explains that classification of photos “has long been a problem due to the effort involved in maintaining any organisation of the photos.” (Squibbs, ¶0002.) Geographic location information would not only have provided a clear way to classify digital photos, but the location would have allowed club members to better understand the context behind the photo. The location

information would also have provided a valuable tool for identification of objects in the photo; for example, a club member might mistakenly believe a particular photo of the Statue of Liberty was taken in New York when it was actually taken from one of the versions of that statute in Paris, France, and location-information provided with the photo could have clarified that point for the user.

172. Neibauer provides a further express motivation to combine with Squibbs by disclosing a Yahoo! Maps feature that allows users to request and obtain electronic maps. (Neibauer, pp.222-224.) Neibauer further describes how a user can annotate a map to identify objects of interest on the map, such as the user's house and the location of an upcoming picnic. (Neibauer, pp.226-228, Fig. 10-5 (showing "My House" and "The picnic is here").) The annotation described in Neibauer is similar to the thumbnail view in Squibbs, as discussed above. In any case, the fact that Neibauer already discloses the ability to display electronic maps, and suggests annotating those maps to show the location of events, confirms that Neibauer and Squibbs are naturally combinable, and that a POSITA would have been motivated to do so. A POSITA would have found the disclosures of Neibauer, Cheng, Ausems, and Squibbs sufficiently detailed to implement the techniques on which I rely, using conventional programming techniques, without undue experimentation.

3. Claims 4 and 5

[4] The apparatus of claim 1 wherein at least one of the first device-captured data and the second device-captured data comprises device-captured location coordinates. [5] The apparatus of claim 1 wherein at least one of the first device-captured data and the second device-captured data comprises: location-identifying information of the corresponding mobile device; and at least one of device-captured image data and device-captured video data associated with a capture location identified by the location-identifying information.

173. Claims 4 and 5, which pertain to location-related information, would have been obvious over Neibauer, Cheng, and Ausems in further view of Squibbs, which, as discussed in the summary above, describes a technique of recording and displaying data (such as photos) along with the location where the photo was taken. (Squibbs, Abstract.) As also discussed above, a POSITA would have been motivated to combine Neibauer, Cheng, Ausems, and Squibbs.

174. With respect to claim 4, the device-captured data of claim 1 of the combination would also have included "*device-captured location coordinates*" of the photo. (Squibbs, Fig. 4 (showing "LOCATION COORD" field for photo), ¶0049 (referring to "the coordinates provided by the location data").)

175. For claim 5, the device-captured data would for the same reasons have included "*at least one of device-captured image data… associated with a capture location-identifying information*."

176. Although not required by claims 4-5, it would also have been obvious to adapt the club photo sharing feature to display location information associated with photos uploaded by club members, for example, via a map-based user interface similar to the one described in Figures 6-7 of Squibbs discussed above. Under the proposed combination, therefore, the club photo sharing feature would have been further adapted to display location information (for example on an electronic map), in association with the photos. This would also have been seen as a natural extension of map features already disclosed in Neibauer.

C. Ground 3: Claims 10-11, 15-16, 19-20 Are Obvious Over Ground 1 Prior Art + McElfresh

1. McElfresh (EX-1014)

177. McElfresh, U.S. Patent No. 6,907,566 B1, is entitled "Method and System for Optimum Placement of Advertisements on a Webpage." I am informed that McElfresh qualifies as prior art because it is an issued U.S. patent that issued from a patent application filed on April 2, 1999, which is before the priority date of the challenged claims.

178. McElfresh describes a technique for integrating advertisements into a webpage. Figure 1 shows a prior art technique for arranging a number of ads on a particular webpage:

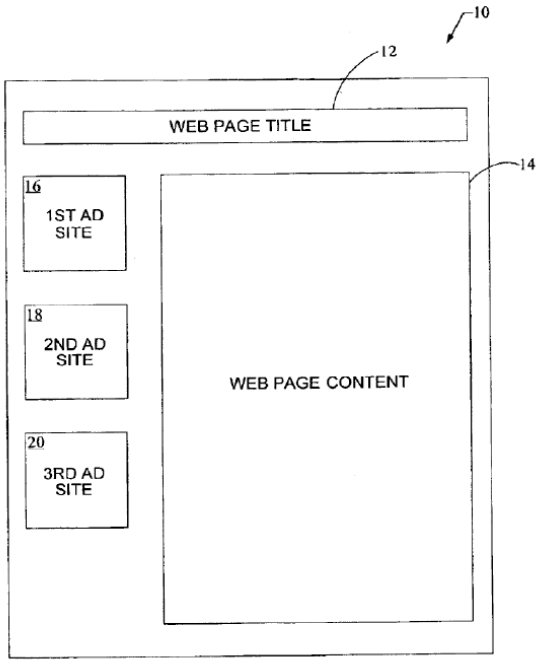


Fig. 1
(Prior Art)

(McElfresh, Fig. 1.)

179. Figure 1 shows "a generalized block diagram layout of a prior art webpage **10**. This page contains a web page title block **12**, and a web page content block **14**. A sequence of ad sites **16-20** are shown which receive and display ads configured to fit in these spots." (McElfresh, 5:29-33.) McElfresh explains that ads were typically placed on the page based on advertisers' preferred page location, or randomly. (McElfresh, 5:33-38.)

180. McElfresh purports to disclose an improved technique in which a website can issue a request for ads for inclusion on a webpage, and the ads provided will be selected and ranked in a way that increases the likelihood of click-

throughs and maximizes advertising revenue. (McElfresh, 5:20-28.) Figure 3A shows a block diagram of the system or network **100** for optimizing ad placement:

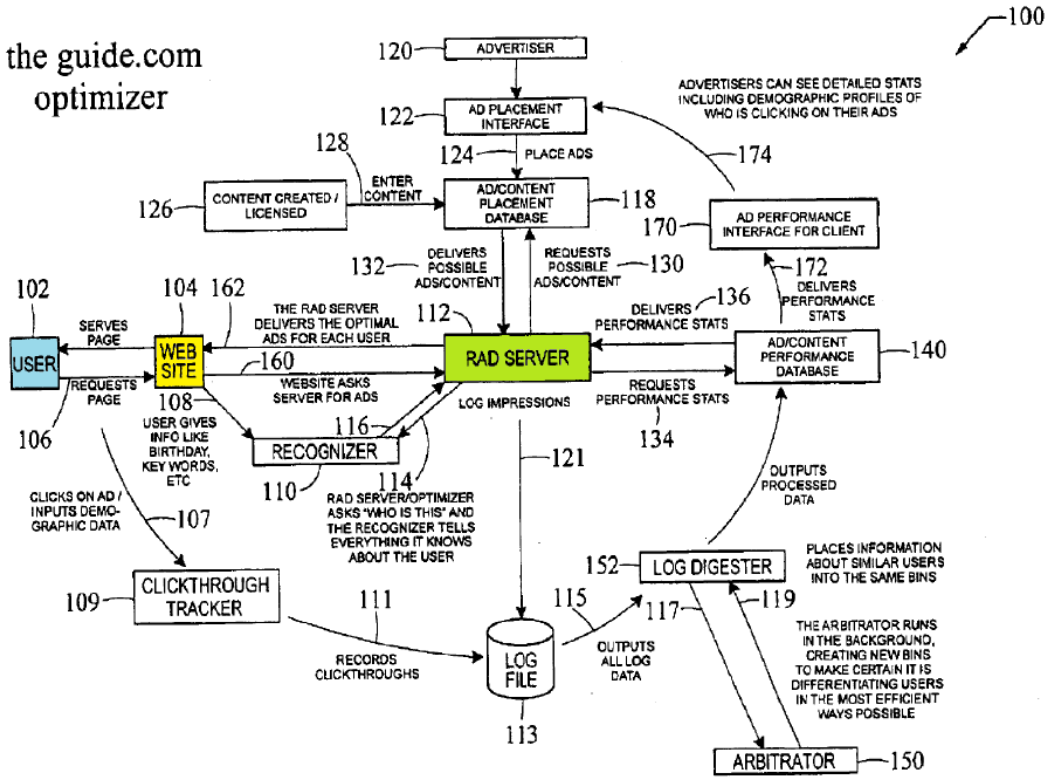


Fig. 3A

(McElfresh, Fig. 3A (highlighting added), 6:15-18.)

181. Although Figure 3A shows a number of components, the key elements are Rad Server **112**, website **104**, and user **102**. Figure 3A also discloses "an ad/content placement database **118**… for storing a plurality of ads, which might be used for possible display." (McElfresh, 6:57-60.)

182. McElfresh explains that, "when a site wants to show a page, it contacts an ad server component **112**, shown at the center of the network **100** in

FIG.3(a). This device might also be referred to as a relational server component, and is hence referred to as the Rad Server." (McElfresh, 6:36-40.) The ad server or Rad Server **112** "performs the overall function of gathering the necessary information regarding a particular ad (or set of ads) and the particular user and generating a set of ads which have been optimized for placement on a webpage," based on (among other things) calculated click-through-percentage rates. (McElfresh, 6:42-48.) In another embodiment, the optimization features can be overridden such that "[i]f an advertiser wishes to purchase the right to an entire section of the website or webpage, the ads can simply be placed there without having to compete their way into that position on the page." (McElfresh, 12:50-54.)

2. Motivation to Combine

183. **Motivation to Combine Neibauer, Cheng, Ausems, and McElfresh:** It would have been obvious to combine the prior art for Ground 1 with McElfresh, predictably resulting in the proposed combination with the further ability to integrate a number of ads onto the webpage of the photo sharing feature.

184. For example, claims 10, 15 and 19 recite the steps or functions of identifying "*at least one data feed*," and periodically obtaining data "*from a given such identified data feed*." Under the proposed combination, the "*data feed*" would have corresponded to a feed containing a plurality of advertisements available for

placement and display on the webpages of the club photo sharing feature, the advertisements obtained by the website in Neibauer from Rad Server **112** as described in McElfresh. More specifically, the web server providing the club photo sharing feature described in Neibauer ("*web-based shared information channel*") would have periodically obtained ad data from this feed, for example, when webpages of the club photo sharing feature are being prepared for delivery to a user. (McElfresh, 6:36-48, 8:9-10 ("Referring again to FIG. 3(a), the website **104** requests ads from the Rad Server **112** as shown by dataflow **160**.").)

185. The '348 patent does not define "*data feed*," and the term does not appear in the written description. The term "*feed*" appears only in one sentence along with a list of exemplary types of data sources. (EX-1001, 9:52-55 ("The data integration suite **36** includes <u>extensible markup language (XML) and/or rich site summary (RSS) feeds</u> **60**, database and/or file **61**, syndication services 62, device-captured data **63**, web services **64**, and other data sources **65**.").) I understand that Patent Owner has cited this sentence to argue that "*data feed*" is not limited to XML or RSS feeds and simply means a "*provision of information*," to the extent a construction is required. (EX-1025, 3.) McElfresh clearly satisfies this definition as it discloses a technique for providing advertising information to a website.

186. I understand Meta has argued that "*data feed*" is limited to the two examples in the written description, *i.e.*, an XML or RSS feed. (EX-1025, 3.) The

claimed data feed would be obvious even if it were limited in this fashion, because it would have been obvious to provide the advertisements from Rad Server **112** of McElfresh to the website in XML format. XML, which stands for eXtensible Markup Language, was a well-known industry standard. As explained in U.S. Patent No. 6,874,146 to Sridhar Iyengar (EX-1019 ("Iyengar")), filed in June 1999 and cited to support the general knowledge of a POSITA and to support a motivation to combine, "XML, the Extensible Markup Language, is a new format designed to bring structured information to the Web. It is a Web-based language for electronic data interchange. XML is an open technology standard of the World Wide Web Consortium (W3C), which is the standards group responsible for maintaining and advancing HTML and other Web-related standards." (Iyengar, 2:11-17.) "XML is widely believed to be the next step in the evolution of the Web," and as of Iyengar's filing (which was three years before the earliest priority date of the '348 patent), "[e]xample application domains include Web commerce, publishing, repositories, modeling, databases and data warehouses, services, financial, health care, semiconductors, inventory access, and more." (Iyengar, 2:39-40, 2:45-49.) "XML is gaining widespread acceptance as the de facto standard for representing structured information in the context of the Worldwide Web and beyond." (Iyengar, 2:50-51.)

187. It therefore would have been obvious that the advertising data from the data feed in McElfresh could have been provided to the website under the proposed combination in XML format, thus rendering obvious an XML data feed that provides advertising information. A POSITA would have been motivated to do this to take advantage of a growing and popular XML industry standard which was specifically designed for electronic data interchange between various systems. In fact, U.S. Patent No. 6,311,185 B1 to Robert E. Markowitz, filed on October 30, 1997 (EX-1020 ("Markowitz")), specifically discloses sending advertising information between systems using XML. (Markowitz, 4:49-50 ("These 'candidate' advertisements could be sent using extended Markup Language (XML) defined tags.").)

188. Claims 10, 15, and 19 further state that the information obtained from the data feed 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*." This would have occurred, under the proposed combination, by integrating the received advertisements into the webpages for the club photo sharing feature, for example, by showing the ads on the photo album

webpages in Neibauer, which would have been accessible to club members via their mobile devices.

189. For example, as explained for claim 1, the first and second device-captured data is integrated into a photo album as shown in the photo album view shown in Figure 21-10 of Neibauer:

The James Bond Movie Series Category: James Bond Serie
The James Bond place to talk about the movies. Club Type: Liste

Blueraja's BOND GIRL Album Back To: Album List

Created by blueraja3 on 22-Nov-1999

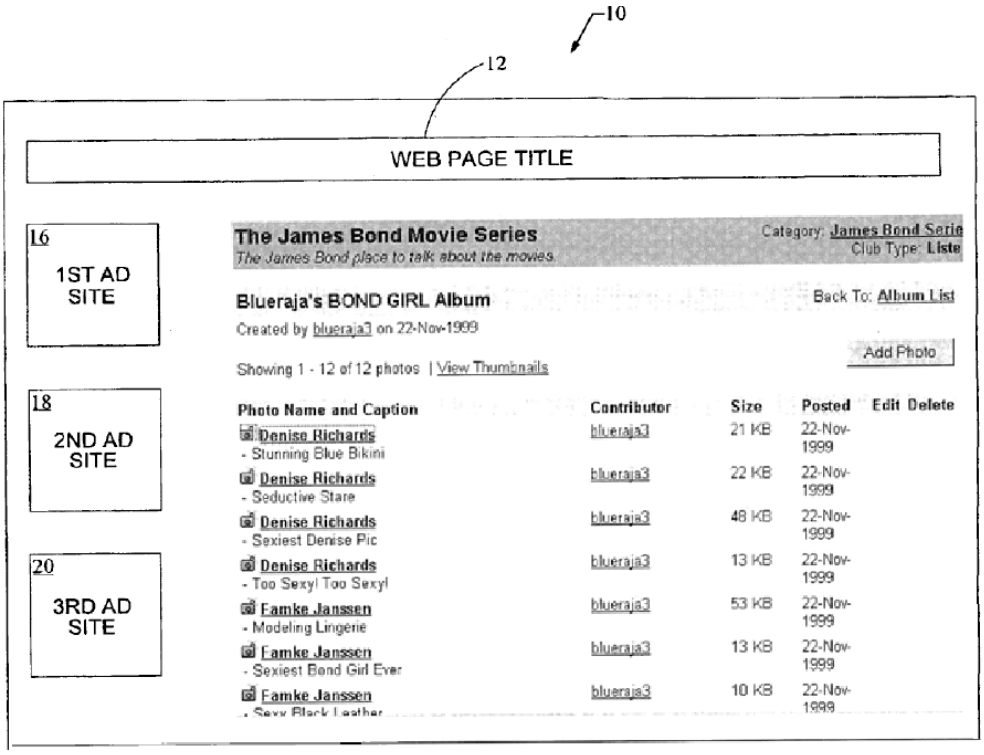
Showing 1 - 12 of 12 photos | View Thumbnails Add Photo

Photo Name and Caption	Contributor	Size	Posted	Edit	Delete
Denise Richards - Stunning Blue Bikini	blueraja3	21 KB	22-Nov-1999		
Denise Richards - Seductive Stare	blueraja3	22 KB	22-Nov-1999		
Denise Richards - Sexiest Denise Pic	blueraja3	48 KB	22-Nov-1999		
Denise Richards - Too Sexy! Too Sexy!	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Modeling Lingerie	blueraja3	53 KB	22-Nov-1999		
Famke Janssen - Sexiest Bond Girl Ever	blueraja3	13 KB	22-Nov-1999		
Famke Janssen - Sexy Black Leather	blueraja3	10 KB	22-Nov-1999		

FIGURE 21-10 Club photo album

(Neibauer, p.478, Fig. 21-10.) Figure 21-10 as noted above shows a partial list of photographs stored in an album. For each photo ("*device-captured data*"), is listed along with a link to the photo itself. (Neibauer, p.477.) Under the proposed combination, the information on this webpage would have been integrated with advertisements obtained from the claimed "*data feed*" under the combination with

McElfresh. Below is a mock-up, based on the combination of Figure 1 of McElfresh and Figure 21-10 of Neibauer to illustrate one obvious user interface in which this combination would have been implemented:



190. I note that my hypothetical above is entirely consistent with Neibauer, which shows an exemplary club page with an advertisement placed on it:

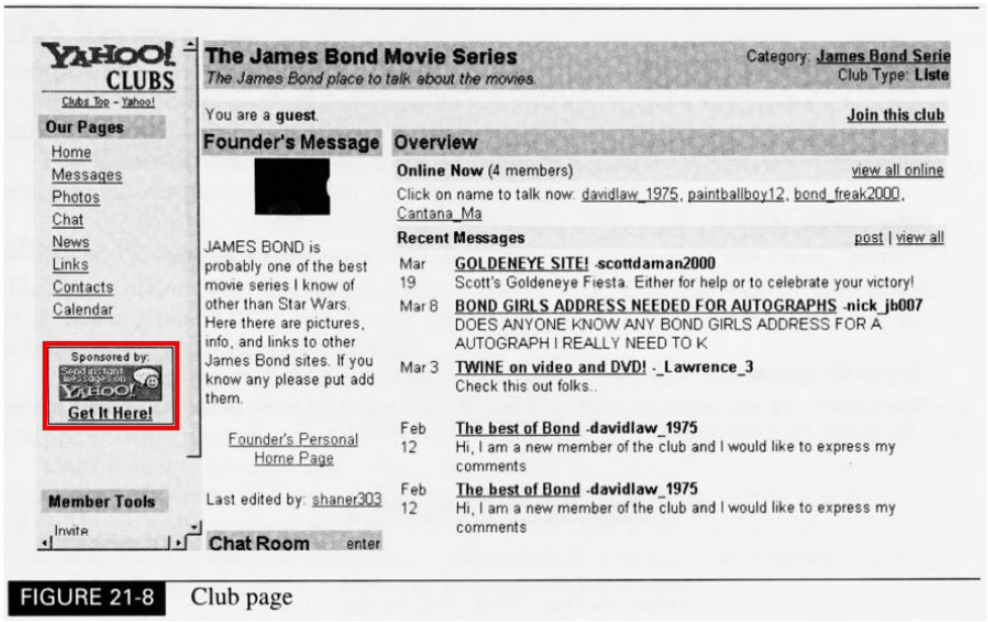


FIGURE 21-8 Club page

(Neibauer, p.475, Fig. 21-8 (red box added).)

191. Under the proposed combination, therefore, advertisement information obtained from the "*data feed*" would have been integrated "*with the first and second device-captured data*," *i.e.*, the photo data provided by the first and second users as explained in claim 1, "*into a persistent version of a given set of shared information content of the web-based shared information channel*," *i.e.*, a persistent set of data that includes the photo data for the photo album provided by the users and the obtained advertisements, which would have been accessible to and shared with club members. It would also have been obvious for this set of information to be "*persistent*," as McElfresh discloses dynamic advertising algorithms can be overridden such that an advertiser can simply "purchase the right to an entire section of the website or webpage," such that "the ads can simply be

placed there without having to compete their way into that position on the page." (McElfresh, 12:50-54.) It therefore would have been obvious that the ads, along with the photo data for the photo album, would have been persistent and accessible to both the first and second users through their respective mobile devices/personalized content applications, under the combination with Cheng. And finally, claims 11, 16, and 20 recite that "*the data obtained from the given identified data feed comprises at least one advertisement*," which would have been the case as described above.

192. McElfresh is an analogous reference. The '348 patent describes its "Field of the Invention" as relating generally to "network-based communication systems, and more particularly to techniques for information content management in such systems." (EX-1001, 1:29-31.) McElfresh is an analogous reference in the same field as the '348 patent that discloses similar functionality for managing information content accessible through the Internet, and would have been reasonably pertinent to problems facing the inventors including how to implement a web-based system that incorporated advertisements.

193. A POSITA would have been amply motivated to combine in order to increase revenue. As noted above, Neibauer discloses the ability to place advertisements on club pages. (Neibauer, p.475, Fig. 21-8.) The techniques of McElfresh would have provided a clear benefit by allowing the photo sharing

webpage to display multiple advertisements on a single page, from multiple third party advertisers, further increasing the potential revenue obtainable by the displaying website. As McElfresh explains, "the generation of revenue from a website is proving to be increasingly important, as there are costs inherent in creating, providing, and maintaining a website." (McElfresh, 1:30-34.) "Moreover, as Internet traffic continues to increase, the opportunities for the generation of revenue in association with those contacted sites tends to increase." (McElfresh, 1:34-36.) Under the combination with McElfresh, the proposed combinate would have beneficially been enabled to deliver more advertisements per page, thus resulting in greater revenue generation for the website operator.

194. A POSITA would also have had a reasonable expectation of success, as the techniques of McElfresh that I have applied would have involved nothing more than basic web and network communications techniques. A POSITA would have found the disclosures of Neibauer and Cheng sufficiently detailed to implement the techniques on which I rely, without undue experimentation.

3. Claims 10-11, 15-16, and 19-20

[10] The apparatus of claim 1 wherein the web-based shared information channel is configured to identify at least one data feed and wherein data is periodically obtained from a given such identified data feed and 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.

[11] The apparatus of claim 10 wherein the data obtained from the given identified data feed comprises at least one advertisement.

[15] The method of claim 13 further comprising: [a] identifying in the web-based shared information channel at least one data feed; [b] periodically obtaining data from a given such identified data feed; and [c] integrating the obtained data 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.

[16] The method of claim 15 wherein the data obtained from the given identified data feed comprises at least one advertisement.

[19] The non-transitory computer-readable storage medium of claim 17 wherein said executable program code when executed by said processing element further causes said processing element: [a] to identify in the web-based shared information channel at least one data feed; [b] to periodically obtain data from a given such identified data feed; and [c] to integrate the obtained data 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.

[20] The non-transitory computer-readable storage medium of claim 19 wherein the data obtained from the given identified data feed comprises at least one advertisement.

195. Dependent claims 10-11, 15-16, and 19-20 are substantially similar, differing primarily in that claims 10-11 depend from claim 1, claims 15-16 depend from claim 13, and claims 19-20 depend from claim 17. These claims all recite the

ability to identify and periodically obtain data from "*at least one data feed*," which is integrated into "*a given set of shared information content of the web-based shared information channel*," accessible to the first sand second users via their respective mobile devices and personalized content applications. Dependent claims 11, 16, and 20 further state that the "*data obtained from the given identified data feed comprises at least one advertisement*." These claims are obvious over the prior art for Ground 1 with McElfresh, based on the teachings of McElfresh and the motivation to combine discussed above. (*See* §§ **IV.C.1-2**, *supra*.)

D. Grounds 4-6: Obviousness in Further View of Harvey

196. Harvey, U.S. Patent No. 6,487,583 B1, is entitled "System and Method for Information and Application Distribution." I am informed that Harvey qualifies as prior art because it is a U.S. patent issuing from an application filed on February 25, 2000, which is before the priority date of the challenged claims.

197. Grounds 4-6 are substantially the same as Grounds 1-3, except that they add Harvey (EX-1010) to account for a narrower construction of "*web-based shared information channel*" that was proposed in the pending litigation. As explained for Ground 1, limitation [1A], Meta has argued in the MDT-Meta-Litigation that "*web-based shared information channel*" should be construed as "a virtual location at the content management site at which user-authored content may be added for transmission to the mobile web site." I understand that Patent Owner

does not agree that this construction is appropriate. In any case, the key feature of this construction, for purposes of Grounds 4-6, is the ability of user-authored content to be added "at a content management site," which Meta has defined in the MDT-Meta-Litigation as "a web site that allows a user without programming to create and manage content on a mobile web site, or a portion thereof." The "*content management site*," for purposes of these grounds, corresponds to the website for creating a new Yahoo! club based on the proposed combination, and the "*mobile website*" to the Yahoo! club made available to club members via mobile devices, under the proposed combination with Cheng. With respect to the requirement that the "content management site" permit the user to add "user-authored content," this would have been obvious in further view of Harvey. With respect to all other claim limitations in the challenged claims, my analysis from Grounds 1-3 applies here.

198. Harvey discloses techniques for allowing users to create on-line communities in which users can communicate and share information. In one exemplary embodiment, Harvey discloses an on-line community that is very similar, in terms of its purpose and features, to the type of web-based clubs disclosed in Neibauer:

> A creator accesses a central controller over a network to create a community using a community creating module. In this example, the title of the community is "The William Henry Harrison Historical

> Preservation Society." The community creating module permits the creator to create a community, and designate applications and content presented. in the community by a user interface. The applications in the present example include a chat application object for users to interact with each other in chat format, a schedule application object for scheduling appointments for the events, a pledge application object for pledging a donation, a photo album application object for viewing photos related to William Henry Harrison, and other application objects. Content in the present example includes information about upcoming fund raising events and meetings for the Society, information about current funds collected, biographical information about William Henry Harrison, and other information. Different applications may provide different levels of interaction between a user, other users, and the central controller module.

(Harvey, 4:24-43.)

199. The key feature of Harvey is its disclosures of a community creator being able to add content to a community <u>before</u> the community is created and launched. As noted, Harvey explains that "[t]he community creating module permits the creator to create a community, and <u>designate applications and content presented</u> in the community by a user interface." (Harvey, 4:28-30.) More specifically, a user can access a creating module **165** in order to create a new community, which may include web-based community creation. (Harvey, 7:49-54, 7:55-56 ("According to another embodiment of the invention, community creation

may comprise a web-based creation.”).) “A creator accesses community creating module **165** through a central controller module **115** at step **200** [of Figure 2].” (Harvey, 8:49-50.) “At step **202**, a creator provides community identification information,” such as a community name. (Harvey, 7:58-61.) “At step **210**,” Harvey explains, “a configuration editor is presented to a creator. A configuration editor may allow a user to build a community, designate content and application objects, subscribe to subscription objects, and add other information associated with the community.” (Harvey, 8:63-67; *see also id.*, 9:41-47 (“Options may include… creating specific content….”).) Later, “[a]t step **230**, a creator may launch a community.” (Harvey, 12:67-13:1.) A user can establish a connection with a community, among other ways, “through browser access to an appropriate website.” (Harvey, 29:59-62.)

200. **Motivation to Combine with Harvey:** It would have been obvious to combine the prior art cited for Grounds 1-3 with Harvey, predictably resulting in the club system under the proposed combination, with the further ability of the club founder being able to add content to one or more web-based shared information channels. For example, in one exemplary and obvious embodiment of the proposed combination, the web-based club creation interface under the Neibauer combination would have further allowed the club founder to add content

to one or more mobile information channels, such as by adding photos to the photo sharing feature or club message board, before the club is created and launched.

201. This would have satisfied Meta's proposed construction of "*web-based shared information channel*" as "a virtual location at the content management site at which user-authored content may be added for transmission to the mobile web site." Under the proposed combination, therefore, the "content management site" would have included the web-based interface for allowing the founder to create a club disclosed in Neibauer, and that interface would have further permitted the club founder to add content for the club, such as initial club messages, initial photos, and so forth. This information would have been made available for transmission to "the mobile website," i.e., the club site as delivered to mobile users, on the club page itself.

202. Harvey is an analogous reference. The '348 patent describes its "Field of the Invention" as relating generally to "network-based communication systems, and more particularly to techniques for information content management in such systems." (EX-1001, 1:29-31.) Harvey, like Neibauer described for Ground 1, is an analogous reference in the same field as the '348 patent as it discloses similar functionality for managing information content accessible through the Internet, through a series of information channels that provide the ability to exchange messages and collaborate among multiple users. Harvey would also have been

reasonably pertinent to problems facing the patent inventors, including how to implement a web-based system for managing information content and making that content available to users over the Internet.

203. A POSITA would have been motivated to combine in order to provide greater customizability to the clubs created under the proposed combination. This is because the club creator, under the proposed combination, would have been able to use the club-creation interface to populate the mobile information channels with initial content, before the club is launched and made available to other members. This would have allowed the club founder to ensure that other members would not experience a "blank" club devoid of content, because under the proposed combination, the club founder could have populated its mobile information channels (such as the club message board) with at least some initial content, thus providing a more engaging club experience for other members, featuring content available from the moment of the club's creation.

204. A POSITA would also have had a reasonable expectation of success. The features that I rely upon in Harvey, namely the ability to allow content to be added to mobile information channels through the club creation interface, involved nothing more than straightforward web programming techniques using standard technologies such as HTTP, HTML, and could have been implemented using off-the-shelf web browser and web server software. A POSITA would have found the

disclosures of Harvey sufficiently detailed to implement the techniques on which I rely, without undue experimentation.

V. Conclusion

205. 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.

206. 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,

Henry H. Houh.

Henry Houh, Ph.D.

APPENDIX A

Henry H. Houh

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Education

Massachusetts Institute of Technology, Cambridge, MA

- PhD in Electrical Engineering and Computer Science, February 1998. "Designing Networks for Tomorrow's Traffic," thesis supervised by Professor David Tennenhouse and Professor John Guttag. GPA 4.7/5.0
- Master of Science in Electrical Engineering and Computer Science, February 1991. "Demonstration of a laser repetition rate multiplier," thesis. GPA 4.5/5.0
- Bachelor of Science in Electrical Engineering and Computer Science, June 1989. "Boundary element analysis of arbitrarily shaped dielectric structures," thesis. GPA 4.7/5.0
- Bachelor of Science in Physics, February 1990. GPA 4.7/5.0

MITx, Cambridge, MA

- September 2020 – present: Enrolled in Statistics and Data Science MicroMasters program, a sequence of five MIT-offered graduate-level courses in statistics and machine learning, culminating in a MicroMasters certificate. Have completed four of five required courses.

Experience

Houh Consulting Inc. / Independent Consultant

- 2009 - present: Technical consultant specializing in Social Networking, Web 2.0, Web Site Development, Data Networking, Optical Networking, Telecommunications, Media Streaming and Voice Over IP. Clients include: Akin Gump Strauss Hauer & Feld LLP, Arnold & Porter Kaye Scholer LLP, BBN, Baker Botts LLP, Barnes & Thornburg LLP, BBN Technologies, Beus Gilbert McGroder PLLC, Bracewell LLP, Christensen O'Connor Johnson Kindness PLLC, Cooley LLP, Covington & Burling LLP, Cozen O'Connor P.C., DLA Piper, Davis Polk & Wardwell LLP, Desmarais LLP, Duane Morris LLP, Erise IP, P.A., Faegre Baker Daniels LLP, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Fish & Richardson P.C., Goldman Ismail Tomaselli Brennan & Baum LLP, Haynes and Boone, LLP, Kaye Scholer, Kellogg Huber Hanson Todd Evans & Figel PLLC, Kirkland & Ellis LLP, Klarquist Sparkman, LLP, McCarthy Tetrault LLP, McGuireWoods LLP, Morgan, Lewis & Bockius LLP, Munger Tolles & Olson LLP, Orrick, Herrington & Sutfliffe LLP, O'Melveny & Myers LLP, Orrick, Herrington & Sutcliffe LLP, Paul Hastings LLP, Paul, Weiss, Rifkind, Wharton & Garrison LLP, Perkins Coie LLP, Quinn Emanuel Urquhart & Sullivan, LLP, Sidley Austin LLP, Smith Baluch LLP, Sterne, Kessler, Goldstein & Fox PLLC, Troutman Sanders LLP, Venable LLP, Weil, Gotshal &

Manges LLP, Wiley Rein LLP, Wilmer Cutler Pickering Hale and Dorr LLP, and Winston & Strawn LLP.

BlocksCAD Inc. (H3XL spin-out)

- 2014 - present: Founder and member of Board of Directors. BlocksCAD is a visual Computer-Aided Design (CAD) program, designed to teach children mathematics and geometric visualization. BlocksCAD is being used in U.S. schools and worldwide in maker spaces, with 350,000+ users. BlocksCAD was selected to be part of the LearnLaunch 2017 Boost Accelerator, the MIT Play Labs 2018 Summer Accelerator, and the MassChallenge 2018 Boston Cohort. Recipient of DARPA DSO grant in 2014, and SBIR grant from the USDA in 2019.

H3XL Inc. d/b/a Einstein's Workshop (formerly Lexington Robotics)

- 2009 - 2022: Founder and President. Started a science, technology, engineering and math enrichment program and creative/maker space, in 7,000 square feet of space. Serve 2,000+ kids and families annually. As of end of 2022, have delivered an estimated 250,000 student-instruction-hours of STEM courses. Principle Investigator for 2-year DARPA grant to improve 3D Computer Aided Design tool developed in-house for the purposes of teaching 8 year olds and up 3D CAD.

Eons

- 2008 - 2009: Chief Technology Officer. Created product that Eons acquired from BBN Technologies. Integrated BBN product with Eons social networking platform and significantly increased the Eons group creation rate. Helped evaluate advertisement platform offerings and rolled out the "Boom Network" advertising network. Eons raised $32 million from General Catalyst Partners, Charles River Ventures, Sequoia Capital, and Intel Capital.

BBN Technologies

- 2007 - 2008: Delta Division, Vice President of Technology. Grew "Boomerang" counter-sniper project engineering team and significantly de-risked $10 million worth of product deliveries. Identified sales team leading to $10 million dollars of new sales within 6 months and $100+ million in additional orders in the following two years. Boomerang was a significant asset leading to the acquisition of BBN by Raytheon in 2009. Created new business plan and grew team; launched new fully-featured social networking web site in 5 months. Served as lead expert witness in patent infringement lawsuit, resulting in $58 million jury award to client; verdict for patents I testified on were upheld on appeal which resulted in a $120 million settlement.
- 2004 - 2007: Delta Division, Director of Technology, responsible for commercializing IP and creating new businesses. Hired and grew division's initial engineering team. Wrote three business plans, two of which were funded. For call center business plan, acted as general manager, hiring and managing engineering team, inside sales team, and identifying and recruiting a new general manager. Identified and recruited other key employees to Delta Division, including senior members of team leading to successful internal sales growth and spin-outs of projects. Contracted by BBN to BBN spin-out PodZinger as VP of Operations and Technology. Additional areas studied include mesh networking, network security, satellite communications, and semantic web.

PodZinger Inc. (BBN spin-out, also known as EveryZing and now RAMP)

- 2006: Vice President of Operations and Technology. Significantly upgraded capability of consumer-facing search site and redeployed web site from company to co-location facility. Identified key portions of infrastructure for upgrading and cost reduction. Helped write business plan, evaluating advertisement models of revenue. Hired in operations replacement and phased back to BBN.

Commonwealth Capital

- 2004: Entrepreneur-in-residence (informally), performed technical due diligence on business plans, brainstormed ideas for new businesses with venture partner. With venture partner, left for portfolio company BBN to form core of commercialization team.

Empirix, Inc./Teradyne, Inc.

- 2001 - 2004: Chief Technologist, Engineering Manager, Web Application Test Group. Researched potential new product areas; developed product plan and prototype. Responsible for three new and existing products. Managed off-shore development team. Chief architect for all web testing products. Re-architected core testing product, helped write javascript interpreter. Provided technical vision for core product.
- 2000 - 2001: Chief Technologist, Communication Infrastructure Test Group. Responsible for incorporating new technology internally, tracking new technologies, technical evaluation of partnerships and potential acquisitions. Helped develop division strategy. Developed plans which formed core capabilities for successful new products introduced in 2004-5.
- 2000 - 2001: Engineering Manager, Communications Infrastructure Test Group. Execution of new product plan developed in prior role. Grew team from four existing engineers to team of over 30 on immediate team and over 40 on project. Delivered new platform in one year. Platform and derivatives accounted for large portion of booked products for the division within 2 years and is currently (2008) a key portion of new product offerings.
- 2000: Empirix was formed as a spin-out of Teradyne in January 2000. Reported to CEO in carve-out of Empirix from Teradyne.
- 1999: (Teradyne) Director of Business Development, Software Test Units. Reported directly to Chairman of the Board/Founder and then to general manager of software test unit (6 divisions of Teradyne). Evaluated and researched acquisition and partnership candidates. Internally assessed technology position in market and gaps in product lines. Worked with senior division staff to develop new product strategies. Attended internal Teradyne divisional board meetings. Chairman served as my mentor.

3Com Corporation/NBX Corporation

- 1999: Software Engineer 5. Continued work after 3Com acquisition of NBX. Built cross-division relationships for new products and research directions. NBX was acquired by 3Com in March 1999.
- 1997 - 1999: (NBX) Senior Scientist and Engineer. Work in IP Telephony. Architected next-generation product. Protocol design and validation for core protocol now used tens of millions of times daily. Led team in integration of IP protocols into current product. Designed audio reconstruction algorithms. Developed applications for bug analysis and diagnosis of system

problems. Implementation of network simulator. Work on collaborative projects with external partners. Worked to identify gaps in product. Representative at numerous trade shows. Innovated novel methods of using product.

MIT Department of Electrical Engineering and Computer Science, Cambridge, MA

- 1991 - 1998: Research assistant, Telemedia Network Systems Group. Design, development, and implementation of Gigabit ATM network for distributed multimedia system. Studied host interface design issues. ATM network simulation.
- Spring 1989, Fall 1990, Spring 1995: Teaching assistant, Computation Structures digital systems course. (Spring 1995 Head TA)
- 1988 - 1989: Head laboratory teaching assistant for Computation Structures. Responsibilities included writing and revising lab assignments, and maintaining the lab.
- 1987: Laboratory teaching assistant for Computation Structures.
- 1987: Design, construction, and programming of 16-bit computer.

Agora Technology Group, Incorporated

- 1994 - 1996: Founder and CEO. Conceived and oversaw development of targeted advertising-supported Web sites. Responsible for company's vision and direction. Attended the first two WWW Conferences, presenting a workshop and paper at the first, and appearing on the "Commercialization and Economics of the Web" panel and chairing the "Where Commercial Services and the Web Are Headed" panel at the second. Sold company intact; is currently an operating stand-alone company.

AT&T Bell Laboratories, Holmdel, NJ

- 1989 - 1990: Implementation of cascadable all-optical fiber logic gate. Modelocking of all-fiber erbium laser. Construction of modelocked laser repetition rate booster. Strong optics laboratory and fiber optic experience.
- Summer 1988, 1987: Research in integrated optics. Analysis of rectangular waveguides using microwave modeling. Fabrication of integrated optical components.

Honors

- MIT Alumni Association Great Dome Award, 2010, Baker 60th Anniversary Reunion Co-Chair (highest group award given by MIT Alumni Association)
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 2008, Member of MIT Chairman's Salon committee
- MIT Alumni Association Bronze Beaver Award, 2007 (highest individual award given by MIT Alumni Association)
- MIT Alumni Association Volunteer Honor Roll, February 2004
- MIT Alumni Association Lobdell Award, 1999
- Boston Museum of Science Gold Pin for 1000 hours of Volunteer Service, April 1999
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 1997, Member of Alumni Online Communications Committee

Patents and Patent Publications

- U.S. Patent #9,697,231, H. Houh, J. Stern, R. Spina, M. Meteer, "Methods and apparatus for providing virtual media channels based on media search," July 4, 2017.
- U.S. Patent #9,697,230, H. Houh, J. Stern, "Methods and apparatus for dynamic presentation of advertising, factual, and informational content using enhanced metadata in search-driven media applications," July 4, 2017. See also WO2007056485.
- U.S. Patent #7,975,296, L. Apfelbaum, H. Houh, T. Mayberry and G. Friedman, "Automated security threat testing of web pages," July 5, 2011. See also US20030159063, WO2003067405.
- U.S. Patent #7,877,736, H. Houh and J. N. Stern, "Computer language interpretation and optimization for server testing," January 25, 2011. See also US20050138104, WO2005043300.
- U.S. Patent #7,801,910, H. Houh and J. N. Stern, "Method and apparatus for timed tagging of media content," September 21, 2010. See also US20070112837, US20090222442, WO2007056535.
- U.S. Patent #7,590,542, D. C. Williams, W. C. Hand, H. Houh, A. R. Seeley, "Method of Generating Test Scripts Using a Voice-Capable Markup Language," September 15, 2009. See also EP1530869, US20030212561, WO2003096663.
- U.S. Patent #6,967,963, H. H. Houh, P. Anderson, C. Gadda, "Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data," November 22, 2005. See also EP1060400, WO2000033092, CA2318774.
- U.S. Patent #5,144,375, M. C. Gabriel, H. H. Houh, N. A. Whitaker, "Sagnac Optical Logic Gate," September 1, 1992. Also issued as European Patent # EP0456422, July 23, 1997, German Patent #DE69126913, August 28, 1997
- U.S. Patent Application Publication No. 20020015387, "Voice Traffic Packet Capture and Analysis Tool for a Data Network" (Abandoned in 2007)
- U.S. Patent Application Publication No. 20020016708, "Method and Apparatus for Utilizing a Network Processor as Part of a Test System" (Abandoned in 2007)
- U.S. Patent Application Publication No. 20020016937, "Method and Apparatus for Utilizing a Network Processor as Part of a Test System." (Abandoned in 2007) See also WO2002011413.
- U.S. Patent Application Publication No. 20070106646, "User-directed navigation of multimedia search results" (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106660, "Method and apparatus for using confidence scores of enhanced metadata in search-driven media applications" (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106685, "Method and apparatus for updating speech recognition databases and reindexing audio and video content using the same" (Abandoned in 2015)
- U.S. Patent Application Publication No. 20070118873, "Methods and apparatus for merging media content" (Abandoned in 2015)
- U.S. Patent Application Publication No. 20090222442, "User-directed navigation of multimedia search results" (Abandoned in 2016)
- U.S. Patent Application 11/395,732, "Search snippet creation for audio and video data" (Abandoned in 2009)
- U.S. Patent Application 11/774,931, "Methods and apparatus for managing a social networking web site"
- U.S. Patent Application 11/774,947, "Methods and apparatus for organizing media files"
- U.S. Patent Application 11/774,956, "Methods and apparatus for managing an online event"

- U.S. Provisional Patent Application 61/086,909, "Measuring and ranking relationship activity"
- U.S. Provisional Patent Application 61/086,914, "Detecting media object commonality"
- U.S. Provisional Patent Application 61/086,904, "Message categorization based on message characteristics"
- U.S. Provisional Patent Application 61/086,905, "Photo tagging to request action"

Trials, Testimony and Depositions

- Case No. 1:06CV682 (CMH/BRP), Verizon vs. Vonage, U.S. District Court for the Eastern District of Virginia, filed expert report, was deposed and testified at trial.
- Case No. 1:08CV157 (CMH/TRJ), Verizon vs. Cox, U.S. District Court for the Eastern District of Virginia, was deposed and testified at trial.
- Case No. 5:09-cv-476, Two-Way Media vs. AT&T, U.S. District Court for the Western District of Texas, filed expert report, testified at trial.
- Case No. 2:10-cv-248 (RAJ/FBS), ActiveVideo Networks vs. Verizon, U.S. District Court for the Eastern District of Virginia, filed expert report and was deposed as an expert witness.
- Case No. 1:11-cv-00880-TSE-JFA, Bear Creek Technologies, Inc. vs. Verizon Services Corp., et al, U.S. District Court for the Easter District of Virginia, was deposed as an expert witness.
- Case No. 3:10-CV-298-BBC, AlmondNet, Inc. vs. Microsoft Corp., U.S. District Court for the Western District of Wisconsin, filed expert report.
- Case No. 6:10-cv-00597, Guardian Media Technologies, Ltd. Vs. AT&T Operations, Inc. et al., U.S. District Court for the Eastern District of Texas, Tyler Division, filed expert report.
- Case No. ESCV2010-02282C, The Octopus Solution LLC v. Gary Brown et al., Essex, MA Superior Court, testified at trial.
- Investigation No. 337-TA-882, In the matter of Certain digital media devices, including televisions, Blu-ray disc players, home theater systems, tablets and mobile phones, components thereof and associated software, U.S. International Trade Commission, filed expert reports, was deposed and testified at hearing.
- Investigation No. 337-TA-995, In the matter of Certain communications or computing devices, and components thereof, U.S. International Trade Commission, filed expert reports, and was deposed.
- Case No. 8:12-cv-122-LES-TDT, Prism Technologies LLC v. AT&T Mobility LLC, U.S. District Court for the District of Nebraska, filed expert report, was deposed and testified at trial.
- Case No. 11-2684 (JWL), Sprint Communications Co., L.P., v. Comcast Cable Communications, LLC, et al., U.S. District Court for the District of Kansas, filed expert report and was deposed.
- Case No. 11-2686 (JWL), Sprint Communications Co., L.P., v. Time Warner Cable, Inc., et al., LLC, et al., U.S. District Court for the District of Kansas, filed expert report, was deposed, and testified at trial.
- Case No. 12-487 (SLR), Cox Communications, Inc., et al., v. Sprint Communications Company L.P., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- Case IPR 2014-00039, Microsoft Corporation v. B.E. Technology LLC, U.S. Patent No. 6,628,314. Submitted declaration and cross-examined in deposition.
- Case IPR 2014-00086, Apple, Inc. v. Evolutionary Intelligence, LLC, U.S. Patent No. 7,010,536. Submitted declaration and cross-examined in deposition.
- Case No. 6:11-CV-421, Stragent, LLC v. Intel Corporation, U.S. District Court for the Eastern District of Texas, Tyler Division, deposed and testified at trial as a fact witness.

- IPR2014-01366, IPR2014-01367, IPR2014-01368, Samsung et al. v. Straight Path, submitted IPR declarations and was deposed.
- IPR2015-1006, IPR2015-1007, Cisco v. Straight Path, submitted IPR declarations.
- IPR2014-01457, IPR2014-01459, Microsoft v. Biscotti, submitted IPR declaration and was deposed.
- IPR2016-00302, Apple v. Nonend, submitted IPR declaration.
- IPR2014-00812, Yelp and Twitter v. Evolutionary Intelligence, submitted IPR declaration.
- IPR2015-00307, Cisco v. AIP, submitted IPR declaration.
- Microsoft v. Acacia, submitted IPR declaration.
- IPR2015-00342, AT&T Mobility LLC and Cellco Partnership d/b/a Verizon Wireless v. Solocron, submitted IPR declaration.
- Mediatube v. Bell Canada, Canadian Federal Court, submitted expert report and testified at trial.
- CBM2016-00036, Google v. At Home Bondholder's Liquidating Trust, submitted CBM declaration.
- IPR2016-01198, IPR2016-01201, Apple, Inc. v. VoIP-Pal.com, Inc., submitted IPR declaration and was deposed.
- Case No. 3:14-cv-2824-VC, Trend Micro Incorporated v. Rpost Holdings, Inc., et al, submitted expert report and was deposed
- Akamai v. Limelight Networks, IPR2016-01631, IPR2016-01711, IPR2017-00249, IPR2017-00349, submitted IPR declarations and was deposed
- Hyperlync Technologies v. Verizon Sourcing, No. 650151/2015 New York Supreme Court, submitted declaration and was deposed
- Cascades Streaming Technologies v. Big Ten Networks, submitted expert reports and was deposed
- Klaustech, Inc. v. Google LLC., Case No. 4:10-CV-05899-JSW (N.D. Cal.), submitted expert report and was deposed
- Cisco v. Uniloc, IPR2017-00198, IPR2017-00058, submitted IPR declarations and was deposed.
- Cisco v. Uniloc, IPR2017-00597, submitted IPR declaration and was deposed
- Twitter v. Youtoo Technologies, LLC, IPR2017-01133, IPR2017-01131, submitted IPR declarations and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00375, submitted IPR declaration and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00376, IPR2017-00515, IPR2017-00775, submitted IPR declarations
- HTC Corporation v. IPA Technologies, IPR2018-00306, IPR2018-00307, submitted IPR declaration
- Hulu v. Soundview, IPR2018-00864, IPR2018-01023, submitted IPR declarations and was deposed
- XpertUniverse v. Cisco, 3:17-cv-3848, U.S. District Court for Northern District of California, submitted declaration in support of claim construction and was deposed
- Improved Search v. Microsoft, C.A. No. 16-cv-650-JFB-SRF (Del.), submitted declaration in support of claim construction
- Apple v. Uniloc, IPR2018-00361, IPR2018-00394, IPR2018-00395, IPR2019-00700, IPR2019-00701, IPR2019-01667, submitted IPR declarations
- LG Electronics v. Uniloc, submitted IPR declaration
- SRC Labs and Saint Regis Mohawk Tribe v. Microsoft, 2:18-cv-00321-JLR, U.S. District Court for Western District of Washington at Seattle, submitted declaration in support of claim construction and was deposed

- Verizon Wireless v. Barkan Wireless IP Holdings LP, submitted IPR declarations
- Verizon Wireless and Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-199, IPR2019-200, IPR2019-234, IPR2019-631, IPR2019-632, submitted IPR declarations
- Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-100, submitted IPR declaration
- Cisco Systems Inc. v. Meetrix IP LLC, IPR2019-539, IPR2019-540, IPR2019-541, IPR2019-542, IPR2019-543, IPR2019-544, submitted IPR declarations
- GMG Products LLC v. Traeger Pellet Grills LLC, PGR2019-24, PGR2019-34, PGR2019-35, PGR2019-36, submitted PGR declaration and was deposed
- Uniloc 2017 LLC v. Google LLC, 2:18-cv-00502-JRG-RSP, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Microsoft Corporation v. Uniloc 2017 LLC, IPR2020-00102, IPR2020-00103, submitted IPR declarations
- Microsoft Corporation and HP Inc. v. Synkloud Technologies, LLC, IPR2020-00316, IPR2020-01031, IPR2020-01032, IPR2020-01269, IPR2020-01270, IPR2020-01271, submitted IPR declarations
- Seven Networks, LLC v. Apple Inc, 2:19-cv-115-JRG, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Unified Patents Inc. v. Ortiz & Associates Consulting, LLC, IPR2019-00743, submitted IPR declaration
- Uniloc 2017 LLC v. Apple Inc., 3:19-cv-01905-JD, U.S. District Court for the Northern District of California, San Francisco Division, submitted declaration in support of claim construction and was deposed
- ClearPlay Inc. v. Dish Network LLC et al.; 2:14-cv-00191, U.S. District Court for the District of Utah, Central Division, submitted expert report and re-examination declarations, was deposed, and testified at trial
- AMC Networks, Inc. et al v. Sound View Innovations, LLC, IPR2020-00482, submitted IPR declaration
- Case No. 1:17-cv-01734-RGA, Sprint Communications Co., L.P., v. Charter Communications, Inc., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- CommScope Technologies LLC et al. v. Barkan Wireless IP Holdings LP et al., IPR2020-00827, IPR2020-00829, IPR2020-00831, IPR2020-00833, IPR2020-00835, IPR2020-00838, submitted IPR declarations
- Cisco Systems Inc. v. Monarch Networking Solutions LLC, IPR2020-01226, submitted IPR declaration
- CoolTV Network.com v. Blackboard, Inc., Facebook, Inc., International Business Machines Corporation, Kaltura, Inc., Limelight Networks, Inc., Microsoft Corporation, Ooyala, Inc., Snap, Inc., and Trapelo Corp., submitted declaration in support of claim construction and was deposed
- Facebook, Inc. v. Onstream Media Corporation, IPR2020-01507, IPR2020-01508, IPR2020-01525, IPR2020-01527, IPR2020-01528, submitted IPR declarations
- Hisense Co LTD. v. Maxell, LTD, IPR2020-01598, IPR2020-01600, submitted IPR declarations
- Microsoft Corp. v. O'Brien, IPR2021-00015, submitted IPR declaration and was deposed
- Sable Networks Inc. v. Cisco Systems, Inc., WA:20-CV-00288-ADA, U.S. District Court for the Western District of Texas, Waco Division, submitted declaration in support of claim construction
- Peloton Interactive, Inc. v. Icon Health and Fitness Inc et al., IPR2021-00342, submitted IPR declaration

- Hulu, LLC v. SITO Mobile R&D IP, LLC et al., CBM2020-00028, IPR2020-00158, IPR2020-00206 , IPR2020-00219 , IPR2020-00265 , IPR2020-00298 , IPR2020-00304 , IPR2020-00308 , submitted CMB and IPR declarations and was deposed
- Twitter, Inc. and Google LLC v. B.E. Technology, LLC, IPR2021-00482, IPR2021-00483, IPR2021-00484, IPR2021-00485, submitted IPR declarations
- MG Freesites LTD v. ScorpCast, LLC, IPR2021-00511, submitted IPR declaration
- Avionte, LLC v. Sandeep Acharya, Samar Basnet, and Aqore LLC, Arbitration, Hon. Jeffrey Keyes (Ret.)
- Microsoft Corporation v. WSOU Investments, LLC d/b/a Brazos Licensing and Development, IPR2021-00751, submitted IPR declaration
- SAP America, Inc. v. Express Mobile, Inc., IPR2021-01144, IPR2021-01145, IPR2021-01146, submitted IPR declarations
- StratosAudio Inc. v. Hyundai Motor America, 6:20-cv-01125-ADA, U.S. District Court for the Western District of Texas, Waco Division, submitted claim construction declaration and was deposedPeloton Interactive, Inc. v. Ifit Health and Fitness Inc, IPR2022-00029, IPR2022-00030, submitted IPR declarations and was deposed
- Investigation No. 337-TA-1263, In the matter of Certain televisions, remote controls, and components thereof, U.S. International Trade Commission, filed expert reports, was deposed, and testified at hearing
- Alexander Stross v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00861-AB(JC), filed expert reports, and was deposed
- Ralph Ledergerber v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00862-AB(JC), filed expert reports and was deposed
- John Walmsley v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-00863-AB(JC), filed expert reports and was deposed
- Bernhard Kuhmstedt v. Netease, Inc., et al., U.S. District Court (Central District of California), Case 2:20-cv-02044-AB(JC), filed expert reports and was deposed
- Netflix, Inc. v. CA, Inc., IPR2021-01319, submitted IPR declaration and was deposed
- F45 Training Pty Ltd. v. Body Fit Training USA Inc., C.A. No. 20-1194 (LPS) (D. Del.), filed expert report
- Apple v. Fintiv, IPR2022-00976, IPR2022-01149, IPR2022-01150, IPR2023-00399, submitted IPR declarations and was deposed
- Estech Systems, Inc. v. Howard Midstream Energy Partners d/b/a Howard Energy Partners, C.A. No. 6:20-cv-777-ADA (Western District of Texas, Waco Division), filed expert reports and was deposed
- Echelon Fitness Multimedia, LLC. v. Peloton Interactive, Inc., IPR2020-01187, submitted IPR declaration and was deposed
- VIZIO. V. Maxell Ltd., IPR2022-01458, submitted IPR declaration
- Maxell, Ltd. et el. v. VIZIO, Inc., Case No. 2-21-cv-06758 (C.D. Cal.). filed declaration and was deposed
- Microsoft Corporation v. SurfCast, Inc., submitted IPR declarations
- The Walt Disney Company et al. v. WAG Acquisition LLC, IPR2022-01227, IPR2022-01228, IPR2022-01346, submitted IPR declarations and was deposed
- Rakuten Rewards et al. v. IBM, submitted IPR declarations and was deposed
- Fubotv Media Inc. v. Sito Mobile R&D IP, LLC et al., submitted IPR declarations
- Unified Patents, LLC v. Noblewood IP LLC, IPR2022-01111, submitted IPR declaration
- Unified Patents, LLC. v. Pedersen, Peter Henrik, IPR2023-00029, submitted IPR declaration
- Ericsson Inc v. Dali Wireless Inc., submitted IPR declarations

- Universal Electronics, Inc. et al. v. Roku, Inc., IPR2022-00818, submitted declarations and was deposed
- Google LLC. v. Wildseed Mobile LLC et al., IPR2023-00244, IPR2023-00245, IPR2023-00246, IPR2023-00247, IPR2023-00248, submitted declarations
- Lululemon Athletica Canada Inc. et al. v. Nike, Inc., IPR2023-00180, IPR2023-00424, submitted declarations
- Zoho Corporation, et al. v. Meetrix IP, LLC, IPR2023-00371, IPR2023-00377, IPR2023-00379, IPR2023-00380, IPR2023-00382, submitted declarations
- WSOU Investments, LLC d/b/a/ Brazos Licensing and Development v. Google LLC, 6:20-cv-572, U.S. District Court for the Western District of Texas, Waco Division, submitted reports and was deposed
- Google LLC v. Safecast Limited LLC, IPR2023-00652, submitted declaration
- Investigation No. 337-TA-1338, In the matter of Certain smart televisions, U.S. International Trade Commission, filed reports and was deposed
- Cisco Systems, Inc. v. Orckit IP LLC, IPR2023-00714, submitted declaration
- SupplyPro, Inc. v. Sandvik Machining Solutions AB, et al., AAA Case No. 01-22-000-7897. submitted declaration
- TrackThings LLC v. NETGEAR, Inc., Case No. 22-00981-RGA-JLH, U.S. District Court for the District of Delaware, submitted declaration
- Walt Disney Parks & Resorts US Inc. v. Agile Journeys LLC; IPR2024-00029, submitted declaration
- Aylo Freesites Ltd v. Dish Technologies LLC; IPR2024-00043, IPR2024-00044, IPR2024-00045, IPR2024-00046, IPR2024-00047, IPR2024-00048, IPR2024-00146, IPR2024-00147; submitted declarations
- Arm Inc. et al. v. Icpillar LLC; IPR2024-00476, IPR2024-00566; Retained by Arm; submitted declarations
- Microsoft Corp et al. v. Litl LLC, IPR2024-00454, IPR2024-00455, IPR2024-00456, IPR2024-00457, IPR2024-00458; submitted declarations
- Cisco Systems Inc et al. v. InfoExpress Inc, IPR2024-00539, IPR2024-00540, IPR2024-00677, IPR2024-00678; submitted declarations
- Vizio Inc v. Multimedia Technologies Pte Ltd; IPR2024-00722, IPR2024-00723; Retained by Vizio; submitted declarations
- Sap America Inc v. Isix IP LLC; IPR2024-00615; Retained by SAP; submitted declarations
- Cisco Systems Inc et al. v. Portsmouth Network Corp; IPR2024-00505, IPR2024-00506; submitted declarations
- Aylo Freesites Ltd v. Dish Technologies LLC; IPR2024-00512, IPR2024-00513, IPR2024-00514, IPR2024-00515, IPR2024-00516, IPR2024-00517, IPR2024-00518, IPR2024-00519, IPR2024-00940, IPR2024-00941; submitted declarations
- Verizon Corporate Service Group et al. v. Headwater Partners I LLC; IPR2024-00809, IPR2024-00945; Retained by Verizon; Technology: Mobile device management; Submitted declarations
- Microchip Technology Inc v. Aptiv Technologies Ltd et al.; IPR2024-00228; Retained by Aptiv; Technology: Universal Serial Bus; Submitted declaration, 2024
- Vusion Group SA v. Hanshow Technology Co Ltd; IPR2024-00963; Retained by VusionGroup; Technology: Video analysis; Submitted declaration
- Maxell, Ltd. v. TCL Electronic Holdings Ltd. et al.; Case No. 5:23-cv-00108-RWS-JBB; U.S. District Court for the Eastern District of Texas, Texarkana Division; Retained by TCL; submitted declaration and was deposed

Publications

- "IP switching: server driven flow classification," H. H. Houh, *Proceedings of the Washington University Workshop on Integration of IP and ATM* , November 1996.
- "Aurora at MIT," D. D. Clark, H. H. Houh, and D. L. Tennenhouse, Editors, *MIT Laboratory for Computer Science Technical Report 673*, December 1995.
- "ViewStation Applications: Implications for Network Traffic," C. J. Lindblad, D. Wetherall, W. Stasior, J. F. Adam, H. H. Houh, M. Ismert, D. Bacher, B. Phillips, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 1995.
- "The VuNet Desk Area Network: Architecture, Implementation, and Experience," H. H. Houh, J. F. Adam, M. Ismert, C. J. Lindblad, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 13 (4), May, 1995.
- "Reducing the Complexity of ATM Host Interfaces," H. H. Houh and D. L. Tennenhouse, Hot Interconnects II Symposium Proceedings, Stanford, August 11-12, 1994.
- "Media-intensive data communications in a `desk-area' network," J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, IEEE Communications, August 1994.
- "ViewStation Applications: Intelligent Video Processing Over A Broadband Local Area Network," C. J. Lindblad, D. J. Wetherall, W. Stasior, B. Phillips, D. Bacher, J. Adam, H. Houh, M. Ismert, and D. L. Tennenhouse, Proceedings of the 1994 USENIX Symposium on High-Speed Networking, Oakland, CA, August 1994.
- "The Media Gateway: Live Video on the World Wide Web," H. H. Houh, C. J. Lindblad, J. Soo, D. L. Tennenhouse, and D. J. Wetherall, Workshop at the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- "Active Pages: Intelligent Nodes on the World Wide Web ," H. H. Houh, C. J. Lindblad, and D. J. Wetherall, Proceedings of the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- "Wavelength Division vs. Code Division Access Methods for Optical Networks," H. H. Houh, Area Exam Paper, May 1993.
- "Experience with the VuNet: A Network Architecture for a Distributed Multimedia System," J. F. Adam, H. H. Houh, D. L. Tennenhouse, Proceedings of the 18th Conference on Local Computer Networks, pp. 70-76, September 1993
- "The VudBoard: A Simple DMA Interface," H. H. Houh, Proceedings of the 4th Gigabit Minijam, January 1994.
- "A Software-Oriented Approach to the Design of Media Processing Environments," D. L. Tennenhouse, J. Adam, D. Carver, H. Houh, M. Ismert, C. Lindblad, W. Stasior, D. Weatherall, D. Bacher, and T. Chang., submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- "A Network Architecture for Distributed Multimedia Systems," J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- "The Viewstation Collected Papers," D. L. Tennenhouse, J. Adam, C. Compton, A. Duda, D. Gifford, H. Houh, M. Ismert, C. Lindblad, W. Stasior, R. Weiss, D. Wetherall, D. Bacher, D. Carver, and T. Chang, MIT Laboratory for Computer Science Technical Report, MIT/LCS/TR-590, November 1993.
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- "Complete Switching in a Three-Terminal Sagnac Switch," H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, T. Morse, IEEE Phot. Tech. Lett. **3** (3), 235
- "Complete Switching in a Three-Terminal Sagnac Switch," H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, IEEE/LEOS Annual Meeting, Paper PDP-13, November 1990
- "All-optical phase-locked oscillator," N. A.Whitaker, Jr., H. H. Houh, H. Avramopoulos, T. F. Morse, IEEE/LEOS Annual Meeting, Paper ELT2.4/MOO3, November 1990
- "Passive modelocking of an all-fiber erbium laser," H. Avramopoulos, H. H. Houh, N. A. Whitaker, M. C. Gabriel, T. F. Morse, IEEE/LEOS Conference on Optical Amplifiers and their Applications, Paper PDP-8, August 1990
- "Transverse modes, waveguide dispersion, and 30ps recovery in submicron GaAs/AlAs microresonators," J. L. Jewell, S. L. McCall, A. Scherer, H. H. Houh, N. A. Whitaker, A. C. Gossard, and J. H. English, Appl. Phys. Lett. **55** (1), July 3, 1989

Leadership, Activities and Interests

- Leadership
  - Reading Symphony Orchestra
    - Board of Directors (Treasurer), 2022 – present
  - Discovery Museum (Acton, MA)
    - Board of Directors, 2023 – present
    - Board of Directors, Development Committee, 2023 – present
    - Science and Technology Advisory Council, 2012 – present
    - The Discover Museum received the 2024 National Medal for Museum and Library Service, the nation's highest honor given to museums and libraries that make significant and exceptional contributions to their communities.
  - Tau Beta Pi National Engineering Honor Society
    - Executive Councilor and Secretary, 2024 – 2026
    - Advisor, MA B Chapter at MIT, 2003 – present
    - District Director (National Officer), Tau Beta Pi, New England Area, 1991 – 2003
    - President, MA B Chapter at MIT, Fall 1988 – Spring 1989
    - Laureate award, 1989
  - MIT Alumni Association Board of Directors
    - MIT Annual Giving Board, 3 year term, 2024 – 2027
    - National Selection Committee, 3 year term, 2020 – 2023
    - K-12 STEM Initiatives Co-chair, 2013 – 2017
    - Awards Committee Chair, 2012 – 2014
    - Awards Committee, 3 year term, 2011 – 2014
    - Vice President, 2 year term, 2004 – 2006
    - Alumni Ad-Hoc Committee, Chair, 2005-2006
    - Board Member, 2 year term, 1997 – 1999
  - MIT Club of Boston
    - Board of Directors, 2006 – 2011
    - K-12 Initiatives Chair, 2009 – 2012

        - VP of Communications, MIT Club of Boston, 2003 – 2006
        - Past-President, MIT Club of Boston, 2002 – 2003
        - President, MIT Club of Boston, 2001 – 2002
        - President-Elect, MIT Club of Boston, 2000 – 2001
        - VP of Programs, MIT Club of Boston, 1999 – 2000
        - Activities Super-Chair, MIT Club of Boston, 1998 – 1999
    - MIT Enterprise Forum of Cambridge, Inc.
        - Past Chair, 2009 – 2011
        - In-NOW-vation Co-chair, 2010
        - Chair, 2007 – 2009
        - Vice Chair, 2005 – 2007
        - Executive Board Member, 2002 – 2011
        - Winter Workshop Co-Chair, February 2007 – conceived idea for conference, which sold-out and produced largest attendance numbers in recent memory
        - Spring Workshop Co-Chair, Spring 2004
        - Membership Committee Chair, Fall 2003 - 2006
        - 25th Anniversary Dinner Chair, Fall 2003
        - As Membership Chair and Board Member, started Special Interest Groups in 2004; a SIG won the MIT Presidential Citation award, the MIT Alumni Association's highest award for organizations, in 2006
    - Estabrook Elementary School PTA
        - Advisory committee to the superintendent on PCB issue, 2010-2011
        - 4th Grade after-school science program co-organizer, 2010-2012
        - 4th and 5th Grade before-school Math Olympiad co-organizer, 2009-2013
        - 5th Grade BBQ and Yearbook Committee, 2011, 2013
        - Family Math Night volunteer, 2008-2012
    - MIT Class of 1989
        - 35-year Reunion Gift Committee, Co-chair, 2024
        - Secretary, five consecutive 5 year terms, 1989 - 2014
        - 30-year Reunion Committee, 2019
        - 25-year Reunion Committee, 2014
        - 20-year Reunion Committee and Gift Committee, 2009
        - 15-year Reunion Committee and Gift Committee, 2004
        - 10-year Reunion Committee and Gift Committee, 1999
        - 5-year Reunion Committee, 1994
        - Interim Treasurer, 1993 - 1994
        - Instituted annual senior class career fair, now raising over $100,000 annually for senior class activities, Fall 1988
    - Strong, consistent record of leadership dating to high school
- Acting
    - '21' (Sony Pictures), credited as "Chinatown Dealer," 2007, Kevin Spacey's movie about the MIT Blackjack Team inspired by "Bringing Down the House" by Ben Mezrich, opened nationwide on March 28, 2008. 21 was the number one movie in US for two weeks and number one globally for one week. 21 also topped the DVD sales, Blu-ray sales and DVD rental charts.
    - Spring Lake Theater Company, first New York-area off-broadway production of "A Chorus Line," played role of Mark, Summer 1990
- Former member of the MIT Blackjack team

- Producer for 10,000 Maniacs' 2013 album "Music from the Motion Picture"
- Executive Producer for 10,000 Maniacs' 2015 album "Twice Told Tales"
- Violist, violist, harpist, guitarist, singer, actor: played in many amateur/semi-professional groups including Firebird Pops Orchestra, Reading Symphony Orchestra, MIT Summer Philharmonic Orchestra, Carlisle Chamber Orchestra, Rivers Symphony Orchestra, Opera51 Orchestra, Freisinger Chamber Orchestra, Merrimack Valley Philharmonic, Longwood Symphony, MIT Symphony, and Somerville Community Chorus
- Violist, "Coming Home" album by Karen Phillips, 2014
- Google Scholar citations: 2224, h-index: 22, i10-index: 27 (since 2019: 539/12/12)
- Erdos-Bacon number of 7
- Erdos-Bacon-Sabbath number of 11