

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZOOM COMMUNICATIONS, INC.,

Petitioner

v.

RICOH COMPANY, LTD.

Patent Owner

IPR2026-00470

U.S. Patent No. 11,516,278

DECLARATION OF DR. KEVIN C. ALMEROOTH

REGARDING U.S. PATENT NO. 11,516,278

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PETITIONER'S EXHIBIT LIST

No.	Reference	Referred To As
1001	U.S. Patent No. 11,516,278	'278 Patent
1002	Prosecution History of U.S. Patent No. 11,516,278	'278 Patent File History
1003	Declaration of Dr. Kevin Almeroth	Almeroth Decl.
1004	U.S. Patent App. Pub. No. 2008/0069011	Sekaran
1005	U.S. Patent App. Pub. No. 2011/0181683	Nam
1006	RESERVED	
1007	U.S. Patent App. Pub. No. 2006/0248210	Kenoyer
1008	U.S. Patent No. 6,346,963	Katsumi
1009	U.S. Patent App. Pub. No. 2007/0291108	Huber
1010	RESERVED	
1011	RESERVED	
1012	RESERVED	
1013	RESERVED	
1014	RESERVED	
1015	RESERVED	
1016	Adobe Connect Enterprise User Guide	Adobe User Guide
1017	LifeSize Multipoint User Guide	LifeSize User Guide
1018	RESERVED	
1019	U.S. Patent App. Pub. No. 2010/0302346	Huang
1020	RESERVED	

1021	U.S. Patent No. 8,700,703	Ueno
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LISTING OF CHALLENGED CLAIMS

[1.pre]	A management system, comprising:
[1.a]	one or more memories to store:
[1.a.1]	identification information to be used upon logging in to the management system,
[1.a.2]	first name information which indicates a name associated with the identification information, and
[1.a.3]	meeting information relating to a scheduled meeting; and
[1.b]	processing circuitry configured to:
[1.c]	transmit the first name information to a transmission terminal that has logged in to the management system based on the identification information;
[1.d]	receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information; and
[1.e]	store, in the one or more memories, the second name information in association with the meeting information.
[2]	The management system as claimed in claim 1, wherein the first name information or the second name information is information based on the transmission terminal or information based on a user of the transmission terminal.
[3]	The management system as claimed in claim 1, wherein the first name information stored in the one or more memories is information based on a request for registering name information from the transmission terminal.
[4]	The management system as claimed in claim 1, wherein the processing circuitry is further configured to: transmit the first name information to the transmission terminal, in order to display a destination list including the first name information on the transmission terminal that has logged in to the management system.
[5]	The management system as claimed in claim 1, wherein the processing circuitry is further configured to: transmit the second name information associated with the meeting information to the transmission terminal,

	in order to display information on participants of a meeting corresponding to the meeting information on the transmission terminal that has logged in to the management system.
[6]	The management system as claimed in claim 5, wherein the second name information transmitted to the transmission terminal is name information associated with another transmission terminal in a state of participating in the meeting corresponding to the meeting information.
[7.a]	The management system as claimed in claim 1, wherein the processing circuitry is further configured to: receive reservation request information indicating a request for reserving a meeting from the transmission terminal that has logged in to the management system, and
[7.b]	store, in the one or more memories, meeting information included in the reservation request information.
[8]	The management system as claimed in claim 1, wherein the processing circuitry is further configured to: transmit the second name information associated with a meeting corresponding to meeting information selected on the transmission terminal.
[9]	The management system as claimed in claim 8, wherein the processing circuitry is further configured to: transmit, in a case where the second name information associated with the meeting corresponding to the selected meeting information is not stored, the first name information associated with the identification information, to the transmission terminal on which the meeting information was selected.
[10]	The management system as claimed in claim 1, wherein the meeting information includes at least a meeting name, start date/time, and end date/time.
[11]	The management system as claimed in claim 1, wherein the management system includes one or more computer.
[12]	The management system as claimed in claim 1, wherein: the first name information is a name included in a destination list displayed on the transmission terminal, and the second name information is a name included in the information related to a meeting on which a predetermined date and time is set to be displayed on the transmission terminal.

[13]	The management system as claimed in claim 1, wherein: the meeting information includes at least the identification information as one or more participants of the scheduled meeting.
[14]	The management system as claimed in claim 1, wherein: the processing circuitry receives the second name information before the scheduled meeting is started.
[15]	The management system as claimed in claim 1, wherein: the updated name information of the first name information is name information that is to be displayed instead of displaying the first name information.
[16.pre]	A method, comprising:
[16.a]	reading, from one or more memories, first name information which indicates a name associated with identification information to be used upon logging in to a management system;
[16.b]	transmitting the read first name information to a transmission terminal that has logged in to a management system based on the identification information;
[16.c.1]	receiving, from the transmission terminal, second name information which is different from the first name information, is updated name information of the first name information, and is a name displayed in a meeting held based on meeting information relating to a scheduled meeting,
[16.c.2]	the meeting information being stored in the one or more memories; and
[16.d]	storing, in the one or more memories, the second name information in association with the meeting information.
[17]	The method as claimed in claim 16, wherein the first name information or the second name information is information based on the transmission terminal or information based on a user of the transmission terminal.
[18]	The method as claimed in claim 16, wherein the first name information stored in the one or more memories is information based on a request for registering name information from the transmission terminal.
[19]	The method as claimed in claim 16, further comprising:

	transmitting the first name information to the transmission terminal, in order to display a destination list including the first name information on the transmission terminal that has logged in to the management system.
[20]	The method as claimed in claim 16, further comprising: transmitting the second name information associated with the meeting information to the transmission terminal, in order to display information on participants of a meeting corresponding to the meeting information on the transmission terminal that has logged in to the management system.
[21]	The method as claimed in claim 20, wherein the second name information transmitted to the transmission terminal is name information associated with another transmission terminal in a state of participating in the meeting corresponding to the meeting information.
[22.a]	The method as claimed in claim 16, further comprising: receiving reservation request information indicating a request for reserving a meeting from the transmission terminal that has logged in to the management system, and
[22.b]	storing, in the one or more memories, meeting information included in the reservation request information.
[23]	The method as claimed in claim 16, further comprising: transmitting the second name information associated with a meeting corresponding to meeting information selected on the transmission terminal.
[24]	The method as claimed in claim 23, further comprising: transmitting, in a case where the second name information associated with the meeting corresponding to the selected meeting information is not stored, the first name information associated with the identification information, to the transmission terminal on which the meeting information was selected.

[25]	The method as claimed in claim 16, wherein the meeting information includes at least a meeting name, start date/time, and end date/time.
[26]	The method as claimed in claim 16, wherein the management system includes one or more computer.
[27]	The method as claimed in claim 16, wherein: the first name information is a name included in a destination list displayed on the transmission terminal, and the second name information is a name included in the information related to a meeting on which a predetermined date and time is set to be displayed on the transmission terminal.
[28]	The method as claimed in claim 16, wherein: the meeting information includes at least the identification information as one or more participants of the scheduled meeting.
[29]	The method as claimed in claim 16, wherein: the receiving of the second name information occurs before the scheduled meeting is started.
[30]	The method as claimed in claim 16, wherein: the updated name information of the first name information is name information that is to be displayed instead of displaying the first name information.
[31.pre]	A system, comprising:
[31.a]	a transmission terminal; and
[31.b]	a management system, including one or more memories to store
[31.b.1]	identification information to be used upon logging in to the management system,
[31.b.2]	first name information which indicates a name associated with the identification information, and

[31.b.3]	meeting information relating to a scheduled meeting; and
[31.c]	processing circuitry configured to:
[31.d]	transmit the first name information to a transmission terminal that has logged in to the management system based on the identification information;
[31.e]	receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information; and
[31.f]	store, in the one or more memories, the second name information in association with the meeting information.
[32]	The system as claimed in claim 31, wherein: the first name information is a name included in a destination list displayed on the transmission terminal, and the second name information is a name included in the information related to a meeting on which a predetermined date and time is set to be displayed on the transmission terminal.
[33]	The system as claimed in claim 31, wherein: the meeting information includes at least the identification information as one or more participants of the scheduled meeting.
[34]	The system as claimed in claim 31, wherein: the processing circuitry receives the second name information before the scheduled meeting is started.
[35]	The management system as claimed in claim 31 wherein: the updated name information of the first name information is name information that is to be displayed instead of displaying the first name information.

I. INTRODUCTION

A. Engagement

1. I, Dr. Kevin C. Almeroth, have been retained by counsel for Zoom Communications, Inc. (“Petitioner”) to provide my expert opinions regarding U.S. Patent No. 11,516,278 (“the ’278 Patent”), which is assigned to Ricoh Company, Ltd. (“Patent Owner”). I have been asked to evaluate the validity of claims 1-35 of the ’278 Patent in light of the prior art. I understand that my opinions will be submitted in support of a Petition for Inter Partes Review before the United States Patent and Trademark Office, Patent Trial and Appeal Board. This declaration sets forth my opinions and the bases for those opinions.

B. Background and Qualifications

2. My complete qualifications and professional experience are described in my curriculum vitae, a copy of which is provided as Appendix A. The following is a summary of my relevant qualifications and professional experience.

3. I am currently Professor Emeritus in the Department of Computer Science at the University of California, Santa Barbara (UCSB). I have been a faculty member at UCSB since July 1997. At UCSB, I held faculty appointments and was a founding member of the Computer Engineering Program, the Media Arts and Technology Program, and the Technology Management Program. I served as Associate Director of the Center for Information Technology and Society from 1999 to 2012. My administrative roles have included Vice Chair of Computer Science

from July 2000 through November 2005 and Associate Dean of the College of Engineering from March 2007 through August 2009.

4. I hold three degrees from the Georgia Institute of Technology. I received a B.S. degree in Information and Computer Science with high honors in June 1992, with minors in Economics, Technical Communication, and American Literature. My undergraduate work included courses typical of electrical engineering, including digital logic, signal processing, and telecommunications theory. I received an M.S. degree in Computer Science in June 1994, with a specialization in Networking and Systems. I received a Ph.D. degree in Computer Science in June 1997. My doctoral dissertation was titled “Networking and System Support for the Efficient, Scalable Delivery of Services in Interactive Multimedia Systems,” and I completed a minor in Telecommunications Public Policy.

5. For more than 30 years, my research has focused on the delivery of multimedia content and data between computing devices. This encompasses network architectures, large-scale content delivery systems, scalable delivery of content to hundreds or thousands of users simultaneously, and smaller-scale content exchange between computers and portable devices. My research has emphasized efficient content exchange across networks, scalable content delivery, mobile computing, satellite networking, delivery to mobile devices, and wireless data delivery.

6. Beginning in 1992, my research focused on interactive functions for near video-on-demand systems, including VCR-style functions such as pause, rewind, and fast-forward, and aggregation of requests for movies using one audio/video stream broadcast to multiple receivers. I have researched communicating multimedia content, including video, between computers across networks including the Internet, including streaming multimedia content and multicast protocols for efficient delivery to multiple endpoints simultaneously.

7. Starting in 1997, I worked on integrating Internet streaming media with web interactivity through a system called the Interactive Multimedia Jukebox (IMJ), where users selected content via a web page and content was scheduled and delivered through multicast channels. The IMJ combined web interactivity with Internet streaming to create a jukebox-like service supporting Video-on-Demand when capacity allowed and scalable service to many users. This work is relevant to the subject matter of the '278 Patent because it involved the integration of interactive user interface controls with real-time multimedia delivery across networked systems.

8. Since 1997, I have also researched wireless devices and sensors, lightweight devices, small form-factor and resource-constrained devices, wireless networking, ad hoc networks, mesh networks, and wireless protocols. My wireless networking work spans the protocol stack from applications through data link and physical layers. My research includes application development for mobile platforms,

opportunistic contact among mobile devices, wireless infrastructure support, challenged network environments, network monitoring, IEEE 802.11 networks, channel bonding, location information, handoffs, and location and movement prediction.

9. Since 2000, I have worked on network security, firewalls, intrusion detection, malware detection, and a Department of Defense/Army Research Office high-speed intrusion detection project. I have also investigated content delivery in online social networks, caching and cache placement strategies, reputation management systems, peer-to-peer communication architectures, and recommendations for downloadable applications.

10. One of my early research interests was in using technology in the classroom to aid in instruction. An initial concern was that too much technology, or technology used incorrectly could be a distraction. Therefore, starting in the late 1990s, I undertook research to first figure out what technology could be used in the classroom and then continued on with research to understand its effectiveness. This work included the design, deployment, and study of digital classroom systems, including work to build infrastructure for a next-generation digital classroom. It also led to a broader set of projects and publications involving classroom activity monitoring, network access controls, plagiarism detection, clicker-based interaction

in large lecture courses, and tools for measuring student engagement and learning in computer-equipped classrooms.

11. I have been involved in the Internet Engineering Task Force (IETF), including content-delivery and multicast-related working groups: AVT, MBONED, SSM, IDMR, RMT, and PIM. I served on the Multicast Directorate and chaired the Internet2 Multicast Working Group for seven years. I co-founded Santa Barbara Labs, which developed emulation systems for the U.S. Air Force's next-generation internetwork, including systems for IPv6, multicast, quality of service, satellite communication, security, video conferencing, and video-on-demand.

12. I have consulted with or collaborated with IBM, Hitachi Telecom, Turner Broadcasting System, Bell South, Digital Fountain, RealNetworks, Intel Research, Cisco Systems, and Lockheed Martin. I have held leadership roles in academic journals and conferences, including ACM NOSSDAV, ICNP, CHANTS, IEEE Global Internet Symposium, IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Network, ACM Computers in Entertainment, and ACM Computer Communications Review. I am a Fellow of IEEE and a member of ACM.

13. I have taught courses covering Internet and network communication, physical and data link layers, cable systems, telephone lines, wireless communication, high-speed LANs, data communication, multimedia encoding,

mobile application design, and infrastructures including cable, ISDN, Ethernet, ATM, fiber, and DSL. I received the UCSB Academic Senate Distinguished Teaching Award in 2006-2007, multiple Computer Science Outstanding Faculty Member awards, and the UCSB Spotlight on Excellence Award. Additional details of my education and work experience, awards and honors, and publications that may be relevant to the opinions I have formed are set forth in my CV, attached hereto as Appendix A.

14. Based on my education and experience, I am familiar with the state of the art before August 1, 2012 in networked multimedia systems, video conferencing, graphical interfaces for networked collaboration, interactive multimedia systems, content sharing, client/server and peer-to-peer content delivery, and software systems for displaying and controlling multimedia content across networked devices. The '278 Patent concerns a management system for video conferencing that stores name information associated with login identification information, sends that name information to a logged-in transmission terminal, receives different name information for display in a scheduled meeting from that logged-in transmission terminal, and stores that different name information in association with the meeting information—subjects that fall squarely within my expertise. My education, research, and professional experience provide me with a thorough understanding of

the technology at issue in this proceeding, and I am well qualified to opine on the level of ordinary skill in the art and the prior art relevant to the '278 Patent.

C. Compensation and Prior Testimony

15. I am being compensated at my standard hourly rate for my study and testimony in this matter. My compensation is not contingent on the outcome of this proceeding or the specifics of my testimony. I have previously provided expert testimony in matters involving patents related to computer systems, networking, multimedia systems, and related technologies, including depositions and trial testimony in federal court. A complete list of cases in which I have testified as an expert within the past four years is set forth in my CV, attached as Appendix A.

D. Information Considered

16. My opinions are based on my years of education, research, and experience, as well as my investigation and study of relevant materials. In forming my opinions, I have considered the materials I identify in this declaration and those listed in the Exhibit List at the start of this declaration.

17. I may rely upon these materials or additional materials to respond to arguments raised by the Patent Owner. I may also consider additional documents and information in forming any necessary opinions—including documents that may not yet have been provided to me.

18. My analysis of the materials produced in this matter is ongoing and I will continue to review any new materials as they are provided. This declaration represents only those opinions I have formed to date.

II. LEGAL STANDARDS FOR PATENTABILITY

19. In expressing my opinions and considering the subject matter of the claims of the '278 Patent, I am relying upon certain basic legal principles that have been explained to me. I understand that in an inter partes review, the petitioner bears the burden of proving unpatentability by a preponderance of the evidence. A preponderance of the evidence means that a proposition is more likely true than not true. I have applied this standard in forming my opinions in this Declaration.

20. I understand that claims subject to inter partes review are given their ordinary and customary meaning as understood by one of ordinary skill in the art in view of the patent specification and its prosecution history.

21. I understand that a prior art reference anticipates a patent claim under 35 U.S.C. § 102 if it discloses each and every element of the claim, either expressly or inherently, arranged as in the claim. Anticipation requires that the identical invention be described in a single prior art reference.

22. I understand that a claim is unpatentable as obvious under 35 U.S.C. §103 if the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill

in the art at the time the invention was made. The factual inquiries underlying the obviousness determination include: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) objective indicia of nonobviousness, such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results.

23. I understand that the obviousness analysis cannot be confined by a rigid requirement of a teaching, suggestion, or motivation to combine prior art references. Any motivation known to a person of ordinary skill in the art—including common sense, the nature of the problem to be solved, or market demand—is sufficient to explain why prior art references would have been combined. The analysis must be expansive and flexible, taking into account the interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person of ordinary skill in the art. Prior art is not limited to solving the same problem addressed by the patentee; any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining prior art elements.

24. I understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. If a technique has been used to improve one device, and a person of ordinary

skill would recognize that it would improve similar devices in the same way, using that technique is obvious unless its actual application is beyond that person's skill. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

25. I understand that a reference does not "teach away" from a combination simply because it suggests another embodiment is preferred. Teaching away requires a clear statement that the combination should not be attempted or will not work. I further understand that obviousness does not require bodily incorporation of features of one reference into another; the test is what the combined teachings of the prior art would have suggested to a person of ordinary skill. A person of ordinary skill is also a person of ordinary creativity, not an automaton.

26. I understand that obviousness must be assessed from the perspective of a person of ordinary skill in the art at the time of the invention, without the benefit of hindsight derived from the patent itself. Objective factors such as commercial success, long-felt but unsolved needs, failure of others, copying, licensing, and unexpected results may be considered as secondary indicia bearing on the question of obviousness.

27. I have applied these legal standards in my evaluation of the claims of the '278 Patent as set forth in this Declaration.

III. TECHNOLOGY BACKGROUND

28. It is my opinion that the technology of the challenged patent—a video conference system in which a centralized management apparatus tracks participating terminals, stores their identification information, and relays it for display during an active session—was developed and known in the art well before the earliest priority date.

A. Multi-Party Video Conferencing Was Well Known

29. Based on my review of the prior art, video conferencing systems enabling multi-party communication over IP networks were commercially available and deployed by the early 2000s. As Huang explained, “the evolution of the internet and World Wide Web (WWW) has made web conferencing an attractive option for people to meet online, to have video, voice, and text communications, and to view and collaborate on the same document remotely.” EX1019, [0002]. These systems often comprised multiple endpoint terminals equipped with cameras, microphones, and displays, connected through an IP network to a centralized server or multipoint control unit (“MCU”) that managed the distribution of audio and video data. EX1007, [0005]; EX1008, 1:21–30.

30. In my opinion, by 2007, the architectural pattern at issue—a centralized management server coordinating sessions among distributed terminals while individually controlling display layouts—was firmly established. Huber disclosed a teleconferencing system in which “each participant could individually choose the layout independently” from a central host, and in which “only the difference needs to be sent out” when a conference state changes, enabling efficient signaling for conferences with hundreds of participants. EX1009, [0005]–[0006]. Sekaran similarly disclosed a “scalable, pluggable multi-party, and distributed multimedia conferencing” architecture with “a centralized policy and control conferencing component” that managed conference sessions, participant rosters, and media components. EX1004, Abstract, [0007], [0042]. In my own work, I have worked extensively with multi-party video conferencing systems. One aspect of this work involved the creation of what we called the Collaborative Technologies Lab (CTL), a digital classroom environment designed to support presentation facilities, webcasting, remote collaboration, and lecture replay. The classroom acted as a central controller for all of the participants and included multiple projectors, video cameras, microphones, audio mixing, video switching, encoding systems, and support for remote participants.

B. Centralized Management of Terminal States and Identification Data

31. In my opinion, a core feature of prior art conferencing systems was the centralized management of terminal identification and status information. Known management systems maintained databases storing each terminal's unique identifier, human-readable name, operational state (e.g., online, offline, in transmission or absent), IP address, and associated metadata. Ueno, for example, disclosed a presence server, separate from the underlying conferencing server, that maintained a group state table and a user state table centrally tracking each user's identifying information and status—including an “initial” (offline) state, a “present” (online) state, an “out-zone” state, and an “absent” state—for every terminal participating in a group or conference room. EX1021, FIG. 20, 13:45–14:20. This centralized state-tracking architecture, in which a dedicated management system stores and disseminates terminal status independently of the terminals themselves, was known in the art.

USER STATE TABLE

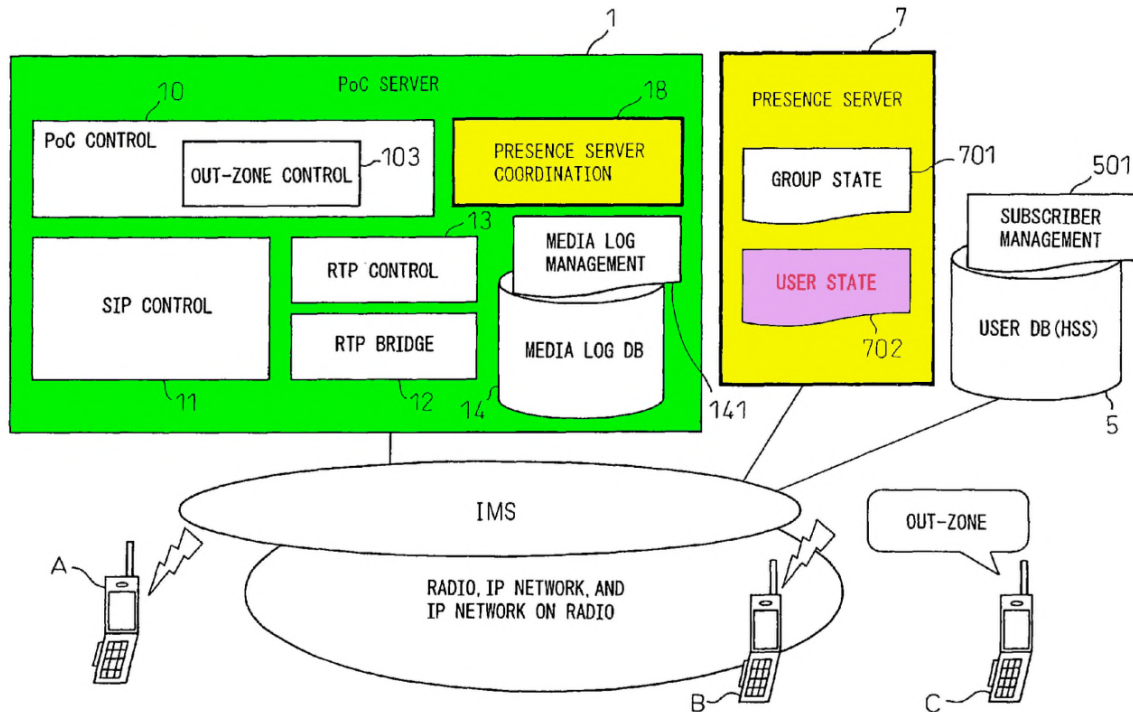
702

USER	STATE	FINAL CONFIRMATION TIME
A	INITIAL STATE	—
B	IN-ZONE	10 : 05
C	OUT-ZONE	9 : 55
D	ABSENCE	10 : 00

EX1021, FIG. 20.

32. Ueno disclosed a presence server that coordinated with a separate PoC server or teleconference server to authenticate and track participating users and to notify that server of a user's current state or any state change, either autonomously or in response to an inquiry from the conferencing server, thereby distributing the burden of session coordination across a management architecture. EX1021, 12:12–13:23, FIG. 19.

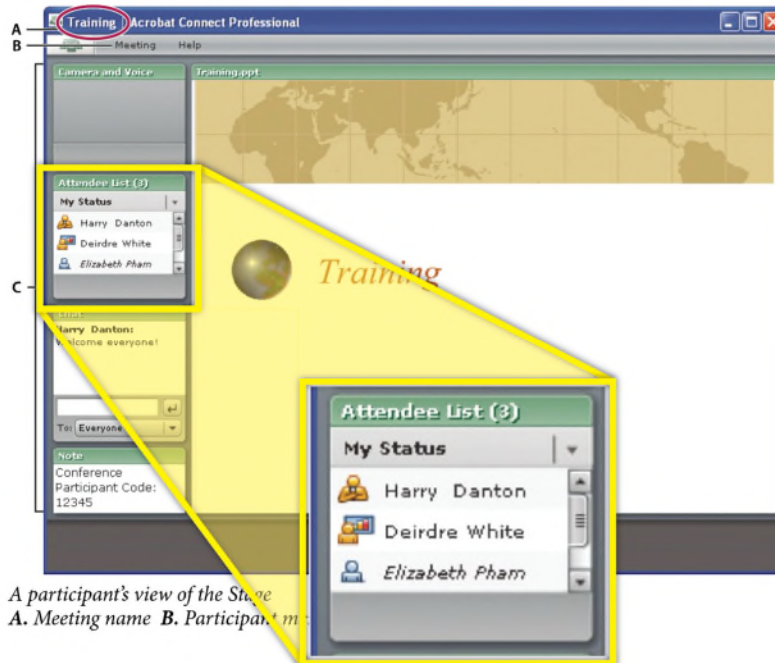
Fig.19



EX1021, FIG. 19.

C. Displaying Participant Information During Active Conferences

33. In my opinion, POSITAs understood how to display participant information during an active video conference. Prior art systems offered multiple display modes to address the inherent tension between showing video imagery and conveying conference attendance data. Among the prior art display modes were information display modes, in which participant information was displayed during active conferences, including participant names and connection status. EX1016, pp. 34, 63–65; EX1017, pp. 87–93.



EX1016, p.34

IV. '278 PATENT

A. Overview

34. Based on my review of the '278 Patent, the patent claims a management system that stores name information associated with login identification information, sends that name information to a logged-in transmission terminal, receives different name information for display in a scheduled meeting from that logged-in transmission terminal, and stores that different name information in association with the meeting information. EX1001, claims 1, 16, 31. The '278 Patent's Background section explains that videoconference systems were already known in the art, including systems in which transmission terminals communicate

over a network and exchange image and voice data. EX1001, 1:30-39. The patent further acknowledges that prior systems used a transmission management system to generate a destination list, transmit that list to a terminal, and prompt a user to select a destination name to request establishment of a communication session. EX1001, 1:40-58.

35. In my opinion, the patent identifies a problem: the name that is easy for a user to specify may vary depending on the communication context. EX1001, 1:63-2:8. For example, the patent states that team names may be useful for videoconferences within the same organization, while company names may be useful for videoconferences between different organizations. EX1001, 1:63-2:3. According to the patent, in prior systems there was only a single destination name for each destination, and therefore participants could not use easy-to-specify destination names tailored to the particular communication. EX1001, 2:4-8.

36. The management system manages multiple destination names for a given destination, reads at least one of those stored names, and transmits it to a terminal. EX1001, 2:17-29. In the disclosed embodiment, the management system stores first, second and third destination name data. EX1001, 12:47-14:14. The terminal reading unit then reads the appropriate destination name data from its databases, depending on which terminal is receiving the destination name data, and

the transmitting/receiving unit transmits that name data to that terminal for display. EX1001, 14:58-15:6, 15:54-16:56, 23:64-25:29.

37. In my opinion, that describes the full scope of the invention, and the claims do not reach all of those elements. As claimed, the system stores an initial name (associating it with a user ID), allows a party to provide a different name for display (in association with a scheduled meeting), and stores the new name. EX1001, claims 1, 5, 8, 12, 14-15. While the specification discloses embodiments implemented using transmission terminals, displays, relay devices, a management system, management data sessions, and content data sessions (EX1001, 3:33-4:49), the claims do not include most of this. Nor do the claims recite a new conferencing architecture, relay mechanism, terminal, display, codec, or communication protocol; instead they recite storage, lookup, and data transmission concepts that were known in the art. EX1001, claims 1, 16, 31; EX1001, 14:58-15:22, 23:64-25:29. Considering the full breadth of its disclosure, the '278 Patent is directed to using known transmission-management infrastructure to provide a different display name for the same destination depending on context. EX1001, 2:16-29, 23:64-25:29.

B. Prosecution History

38. Based on my review of the prosecution history, I understand that U.S. Patent Application No. 17/104,322 was filed on November 25, 2020, as a continuation of U.S. Patent Application No. 16/291,842, filed on March 4, 2019,

which issued as U.S. Patent No. 10,904,315; Application No. 16/291,842 was a continuation of U.S. Patent Application No. 15/290,917, filed on October 11, 2016, which issued as U.S. Patent No. 10,270,837; Application No. 15/290,917 was a continuation of U.S. Patent Application No. 14/417,868, filed January 28, 2015, which issued as U.S. Patent No. 9,661,057; and Application No. 14/417,868 was the National Stage of PCT/JP2013/070953, filed July 26, 2013, which claims priority to Japanese Patent Application No. 2012-171192, filed August 1, 2012. EX1001, Cover Page, 1:5-17. The '278 Patent is also subject to a terminal disclaimer. EX1001, Cover Page.

39. The application was initially filed with one claim. EX1002, 8. As initially examined, claim 1 was directed to a transmission management system including a destination name data managing unit, a destination name data reading unit, and a destination name data transmitting unit. EX1002, 8.

40. The Examiner issued a Non-Final Office Action on September 10, 2021 where claim 1 was rejected under pre-AIA 35 U.S.C. §102(b) as anticipated by Masahiro Wada (US 2007/0086065). EX1002, 131-140.

41. On December 8, 2021, the Applicant canceled claim 1 and added new claims 2-24. EX1002, 150-163. In the Remarks, the Applicant argued that Wada did not disclose updating name information of a destination set in association with meeting information to different name information. EX1002, 162-63.

42. On March 9, 2022, the Examiner issued a Final Office Action. EX1002, 168-176. The Examiner acknowledged the cancellation of claim 1 and the submission of new claims 2-24, but withdrew claims 2-24 from consideration as directed to a non-elected invention because those claims were directed to an invention independent or distinct from the originally presented claim 1. EX1002, 170. The Examiner therefore repeated the prior rejections of claim 1. EX1002, 170-176.

43. On June 9, 2022, the Applicant filed a Request for Continued Examination, amended claims 2-6, 13-16, and 24, and added claims 25-36. EX1002, 197-213. The Applicant noted that, during a May 24, 2022 interview, the Examiner indicated that an updated search was required and that, upon the filing of an RCE, the restriction/constructive election requirement would be withdrawn and the discussed claims would be examined. EX1002, 211. Applicant again argued that Wada only disclosed management of destinations including destination names, and did not disclose updating name information of a destination set in association with meeting information to different name information. EX1002, 212.

44. On July 1, 2022, the Applicant filed a terminal disclaimer over U.S. Patent No. 9,661,057. EX1002, 219-220. On July 13, 2022, the Examiner issued a Notice of Allowance, allowing claims 2-36. EX1002, 230-237. In the Reasons for Allowance, the Examiner stated that Applicant's listed arguments "make evident the

reason for allowance.” EX1002, 230-237. Applicant argued that the prior art of record failed to teach, among other limitations and in combination, processing circuitry configured to transmit first name information to a logged-in transmission terminal, receive different second name information for display in a meeting held based on meeting information, and store the second name information in association with the meeting information. EX1002, 211-214.

45. After allowance, the Applicant filed comments noting that the Examiner’s stated reasons quoted limitations of independent claim 2 and might not apply to independent claims 13 and 24 to the extent those claims used different language. EX1002, 254-55. The Applicant also filed an amendment under 37 C.F.R. §1.312 to correct minor issues in claims 13, 27, and 35. EX1002, 243-255, 259-260. On October 19, 2022, the Examiner issued a Corrected Notice of Allowability, again allowing claims 2-36. EX1002, 266-68.

V. LEVEL OF ORDINARY SKILL IN THE ART

46. A person of ordinary skill in the art (“POSITA”) relevant to the ’278 Patent as of August 1, 2012 would have had at least: (1) a bachelor’s degree in electrical engineering, computer science, computer engineering, or equivalent coursework, with at least two years of work experience in video conferencing systems, networked multimedia communication systems, or remote conference system architectures; or (2) a master’s degree in electrical engineering, computer

science, computer engineering, or equivalent coursework, with coursework or research focused on video conferencing systems, networked terminal management, real-time audio/video transmission, or client-server communication architectures. An individual with additional education could have less practical experience, and vice versa. I meet or exceed this definition of a person of ordinary skill in the art at all times relevant to this proceeding.

VI. CLAIM CONSTRUCTION

47. It is my opinion that no constructions are necessary for determining whether the prior art meets the limitations of the challenged claims.

VII. OVERVIEW OF CHALLENGE

48. It is my opinion that claims 1-35 are unpatentable for the reasons set forth below. I present two grounds of invalidity: (1) Ground 1, showing that Sekaran (EX1004) anticipates or renders obvious claims 1-35 under 35 U.S.C. §§102, 103, and (2) Ground 2, showing that Sekaran (EX1004) in view of Nam (EX1005) renders obvious claims 1-35 under 35 U.S.C. §103.

49. I understand that the challenge is based on the references discussed below, each of which is prior art under pre-AIA 35 U.S.C. §102. None of these references were considered or cited during prosecution of the '278 Patent.

VIII. OVERVIEW OF THE PRIOR ART

A. Sekaran

50. Sekaran relates to a multimedia conferencing architecture centered on a conference control component, or “focus,” that manages conference creation, scheduling, authentication, conference state, policy, rosters, and state notifications. EX1004, Abstract, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059], [0075]-[0077]. Sekaran’s clients subscribe to conference state, receive roster updates including user “display-text,” and issue conference-control commands that can modify conference state. EX1004, ¶¶[0101]-[0103], [0117]-[0122], [0158]-[0159], [0164]-[0166], [0179]-[0182].

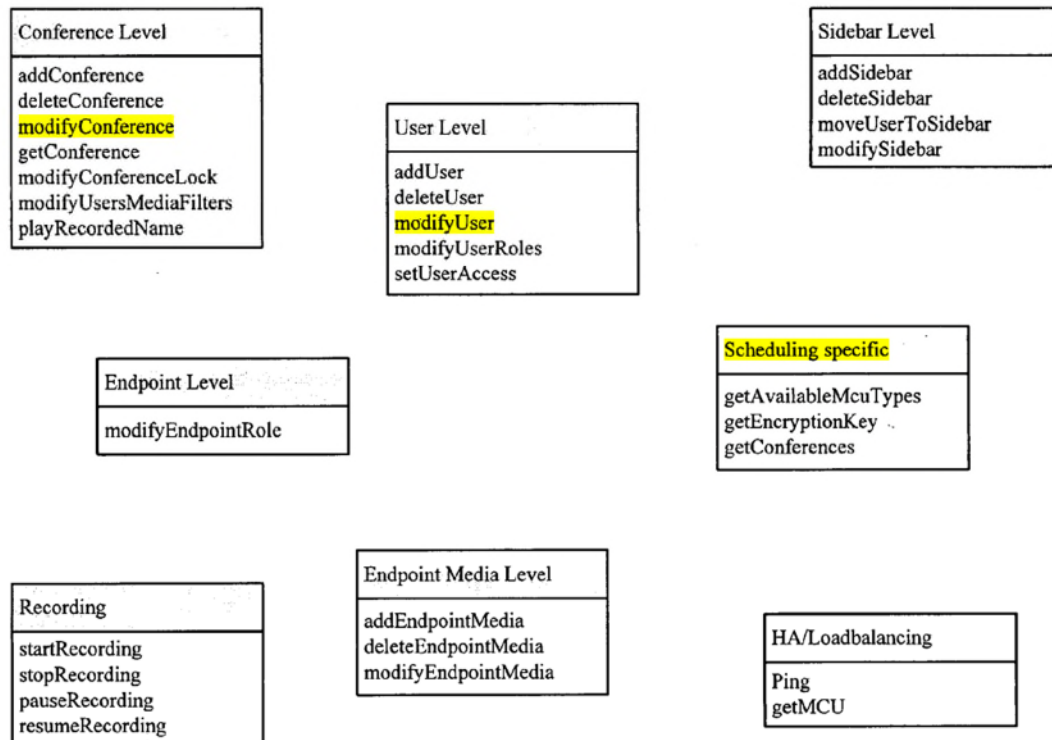


FIG. 22

51. Sekaran discloses the claimed management-system architecture, because it discloses a database-backed “focus” that stores scheduled-meeting and roster state, transmits participant display-name information to logged-in clients, receives client commands modifying user or conference state, and updates the master conference state for the meeting. EX1004, ¶¶[0047]-[0051], [0058]-[0059], [0075]-[0077], [0086]-[0088], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182].

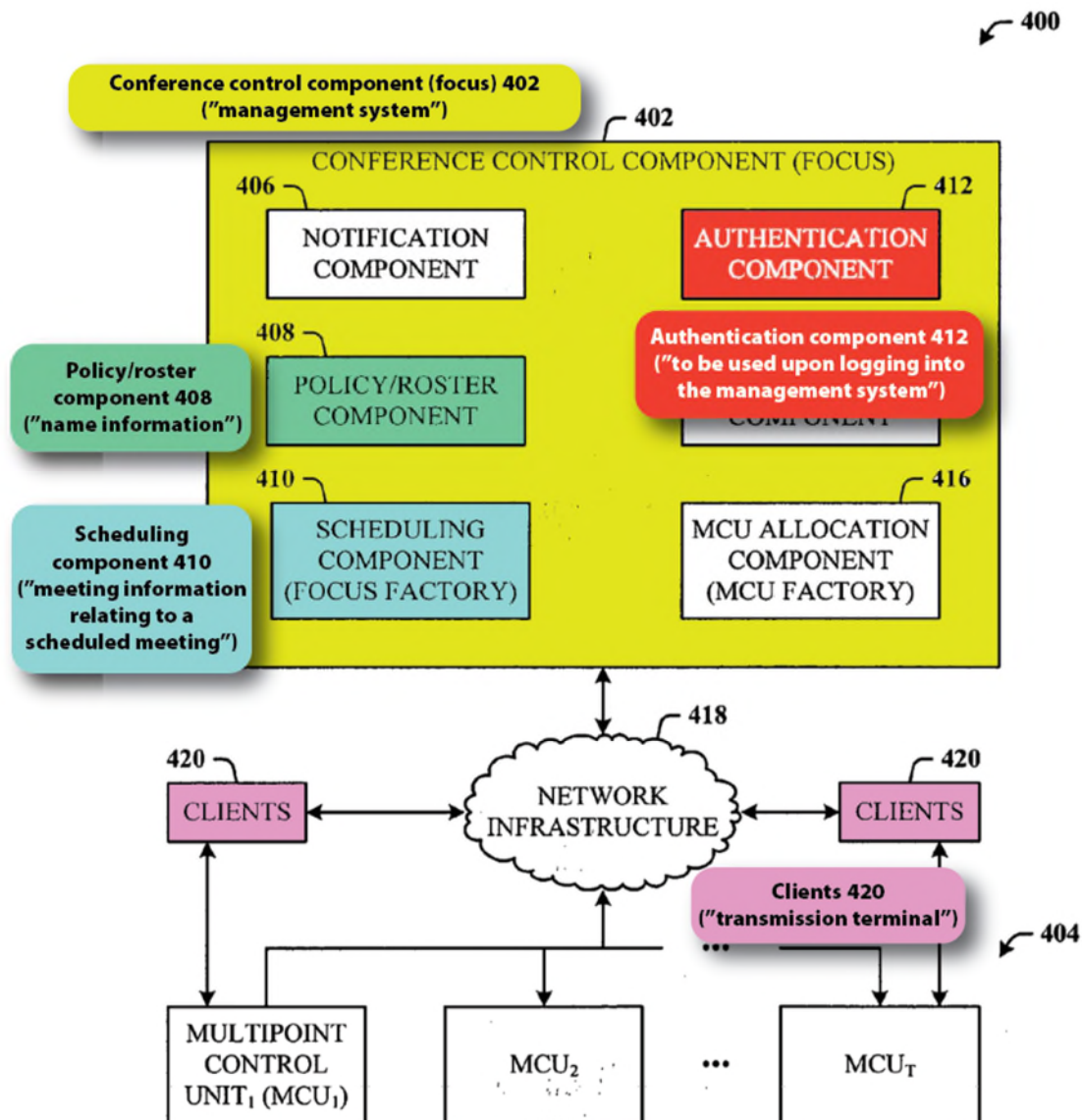


FIG. 4

B. Nam

52. Nam discloses a video-communication terminal interface, including user login with an ID and password, display of registered user IDs, registration and storage of added user information, contact-address lists, and participant views

identifying conference-call participants by icon, name, user ID, login state, and host status. EX1005, ¶¶[0116]-[0142], [0203]-[0205]; FIGS. 5, 7, 8, 33. Nam also teaches a user-selectable “name change” option that changes the name displayed for a communication counterpart. EX1005, ¶¶[0167]-[0168], FIG. 24.

FIG. 24

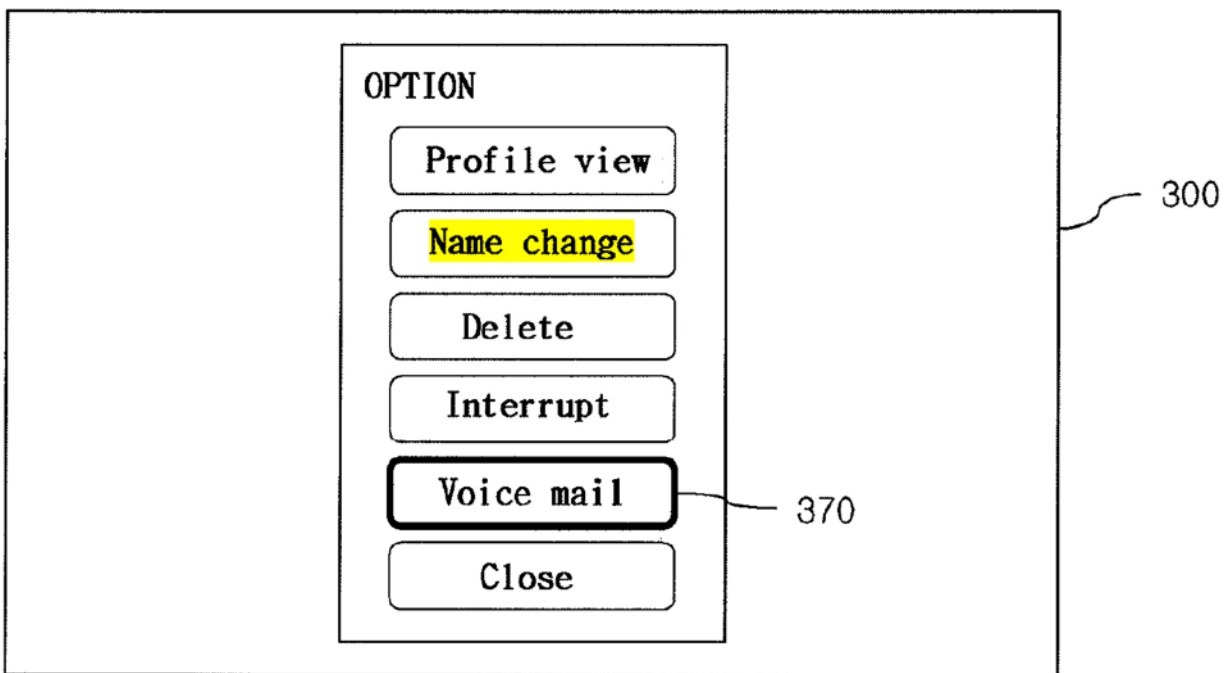
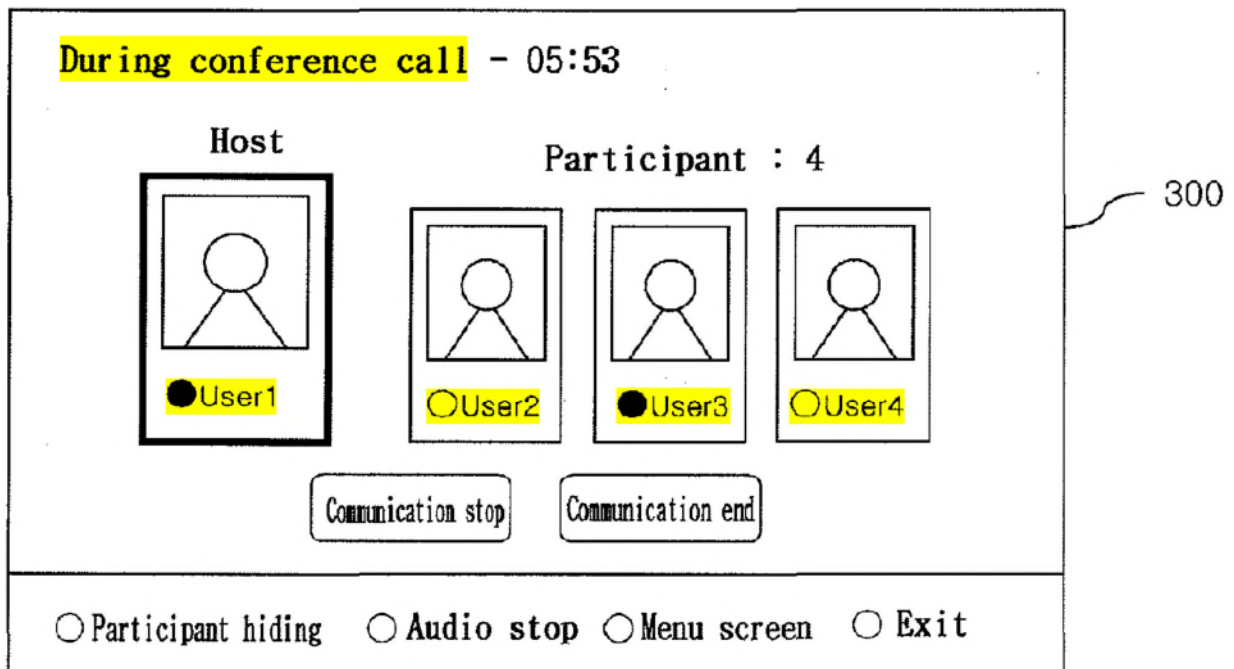


FIG. 33



53. For Ground 2, I add Nam for its disclosure of client-side interface details for name-management functionality, including registered user-name information, destination/contact-list displays, participant-information displays, and, when combined with Sekaran, changing the display-name that the “focus” would store and distribute. EX1004, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0164]-[0166], [0179]-[0182]; EX1005, ¶¶[0116]-[0142], [0140]-[0142], [0167]-[0168], [0203]-[0205].

IX. THE ASSERTED GROUNDS OF INVALIDITY

54. In Ground 1, I explain that Sekaran anticipates, or in the alternative renders obvious, claims 1-35. Sekaran discloses a centralized

multimedia conferencing architecture in which a “focus” manages conference scheduling, authentication, conference state, rosters, state notifications, and client-issued conference-control commands. EX1004, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059]. Sekaran also discloses that a client may provide a display name, that conference-state notifications include display-names, and that clients may issue commands that change conference state, causing the display-names in the master conference state to be updated. EX1004, ¶¶[0101]-[0103], [0117]-[0122], [0158]-[0159], [0164]-[0166], [0179]-[0182].

55. **In Ground 2, I explain that Sekaran in view of Nam renders obvious claims 1-35.** Nam discloses a video-communication terminal interface that allows a user to log in with an ID and password, registered user IDs, contact-address lists, participant displays with names and user IDs, and a “name change” user interface option for changing a displayed name. EX1005, ¶¶[0116]-[0142], [0167]-[0168], [0203]-[0205]; FIGS. 5, 7, 8, 24, 33. A POSITA would have been motivated to provide Nam’s known video-communication terminal interface as a way to allow users to access Sekaran’s functionality, including roster name changes and conference-state display information, and doing so would have predictably allowed users to display and update the names associated with conference participants or destinations. EX1004, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059], [0075]-[0077], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0164]-[0166],

[0179]-[0182]; EX1005, ¶¶[0116]-[0142], [0140]-[0142], [0167]-[0168], [0203]-[0205].

A. Ground 1: Sekaran Anticipates and/or Renders Obvious Claims 1-35

56. It is my opinion that Sekaran anticipates and/or renders obvious claims 1-35 of the '278 Patent. Sekaran discloses a scalable, distributed multimedia conferencing architecture built around a centralized conference control component, also called a “focus,” that manages conference creation, scheduling, authentication, rosters, conference state, state notifications, participant information, and conference-control commands. EX1004, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059], [0075]-[0077].

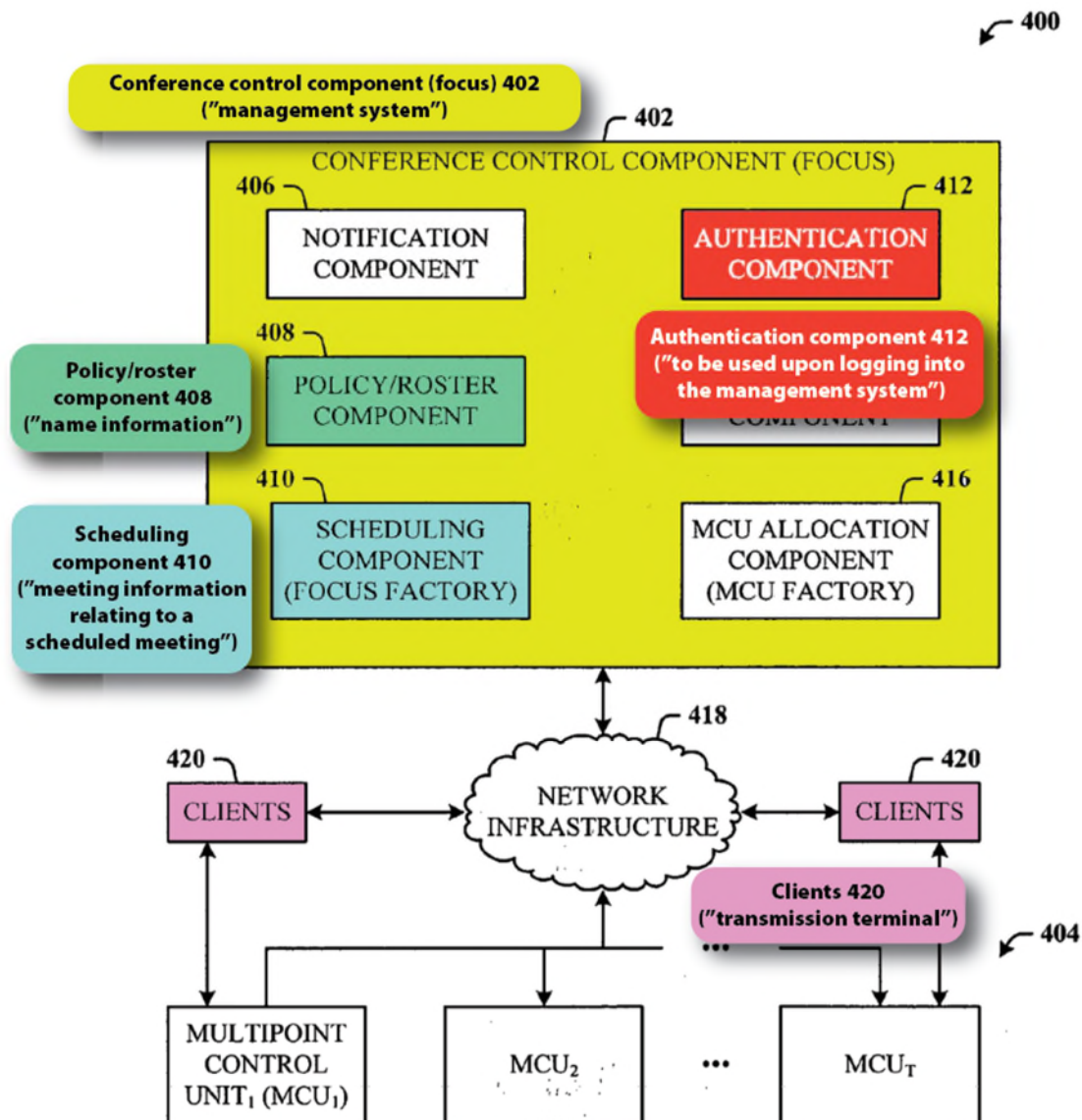


FIG. 4

57. In my view, Sekaran's system discloses the same basic functionality claimed in the '278 Patent: storing user/participant identification and name information, storing scheduled-conference information, transmitting participant display-name information to conferencing clients, handling commands to modify

conference/user state, and storing the resulting updated conference state for the meeting. EX1004, ¶¶[0047]-[0051], [0058]-[0059], [0075]-[0077], [0102]-[0103], [0117]-[0122], [0153]-[0166], [0179]-[0182].

58. To the extent it is determined that any claim limitation requires more disclosure of updating a participant's display name for a particular scheduled meeting, that implementation would have been obvious in view of Sekaran's disclosure of display-name attributes, roster/display-text state, user-level modification commands, and master conference-state updates. EX1004, ¶¶[0101]-[0103], [0117]-[0122], [0158]-[0159], [0164]-[0166], [0179]-[0182].

1. **[1.pre] "A management system, comprising:"; [16.pre] "A method, comprising:"; [31.pre] "A system, comprising:"**

59. It is my opinion that Sekaran discloses "a management system, comprising."

60. **Sekaran discloses a management system** in the form of its centralized conference control component ("focus"), focus factory, conference manager, and associated conference database. EX1004, ¶¶[0007]-[0010], [0042]-[0051], [0054]-[0059], [0075]-[0077]. The focus is "the centralized policy and state manager for a conference session" and "acts as the central coordinator for all aspects of the conference." EX1004, ¶[0058].

61. **Sekaran also discloses methods performed** by that management system, including creating conference instances, authenticating participants,

notifying participants, storing conference state, updating conference state, and distributing conference-state information to clients. EX1004, ¶¶[0047]-[0051], [0058]-[0059], [0101]-[0103], [0117]-[0122], [0158]-[0160], [0179]-[0182].

62. **Sekaran further discloses a system** including conferencing clients—i.e., transmission terminals—and centralized conference management components. EX1004, ¶¶[0043], [0055]-[0056], [0090]-[0092]. Sekaran’s “system 400” “facilitates creation of a conference session” and includes the focus component “which is a centralized conference controller,” and “a conference policy/roster component 408” “that can store and manipulate the conference policy/roster.” EX1004, ¶¶[0049]-[0050].

63. Therefore, in my opinion, Sekaran discloses “a management system, comprising.”

2. [1.a]/[31.b] “one or more memories to store”; [16.a] “reading, from one or more memories”

64. It is my opinion that Sekaran discloses “one or more memories to store.”

65. Sekaran discloses one or more memories in which conference, authentication, roster, and state information is stored. EX1004, ¶¶[0059], [0077], [0084], [0153]-[0156], [0190]-[0196], [0203]-[0205], FIG. 27. Sekaran explains that the “focus” stores “all of the state needed to answer queries about a conference” and that conference information “can be persisted” in a SQL server database for future

use. EX1004, ¶[0059]. Sekaran's conference database 620 contains both conferencing information and presence information, including information about each provisioned conference, including conference ID, passwords or PINs, start time, end time, roles, and privileges. EX1004, ¶[0077].

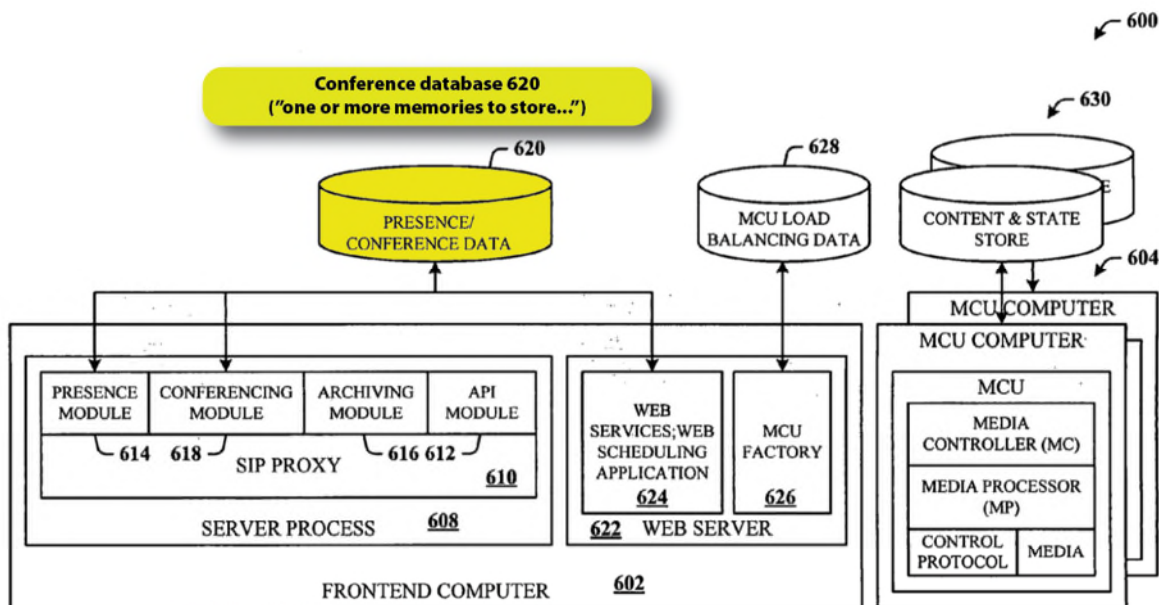


FIG. 6

66. Therefore, in my opinion, Sekaran discloses “one or more memories to store.”

3. [1.a.1]/[31.b.1] “identification information to be used upon logging in to the management system”

67. It is my opinion that Sekaran discloses “identification information to be used upon logging in to the management system.”

68. Sekaran discloses identification information used to log in to the management system. EX1004, ¶¶[0010], [0051], [0077], [0086]-[0089]. Sekaran's "focus" provides session security through authorization and authentication services "based on **identity information** and/or a PIN." EX1004, ¶¶[0010], [0042], [0051]. Sekaran further discloses that authentication may use a user's login credentials, including username and password. EX1004, ¶[0086]. In addition to session security, Sekaran discloses that authorization can be required prior to a videoconference session being started. EX1004, ¶[0088].

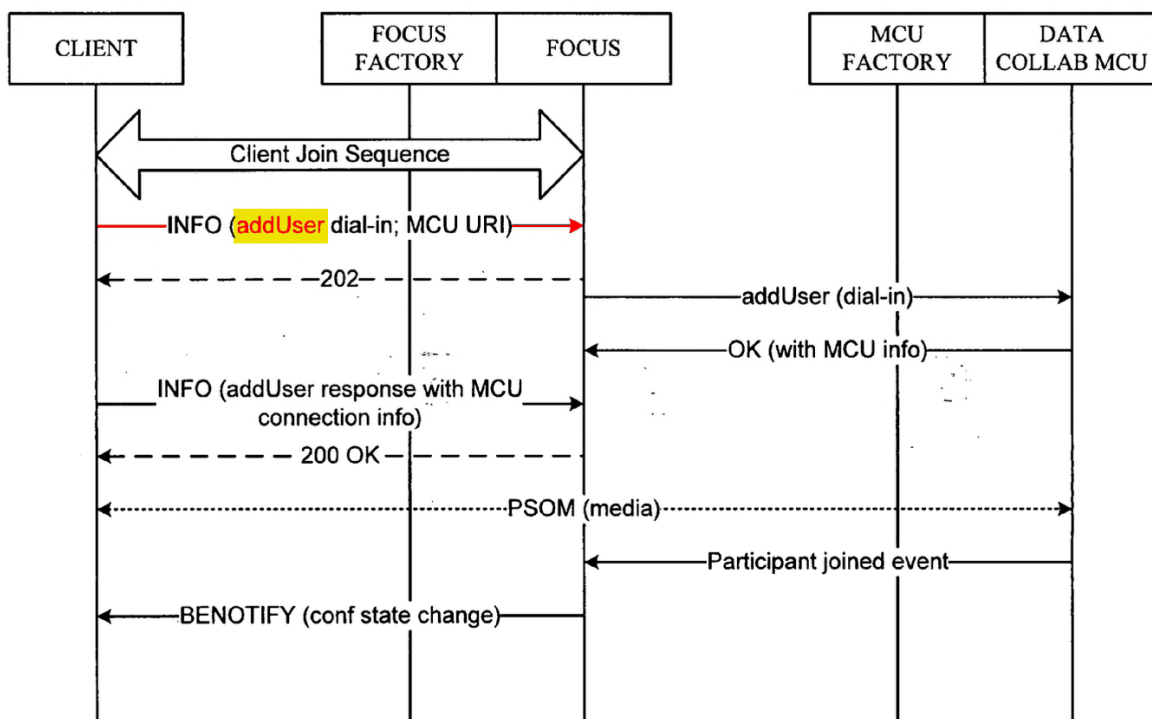


FIG. 12

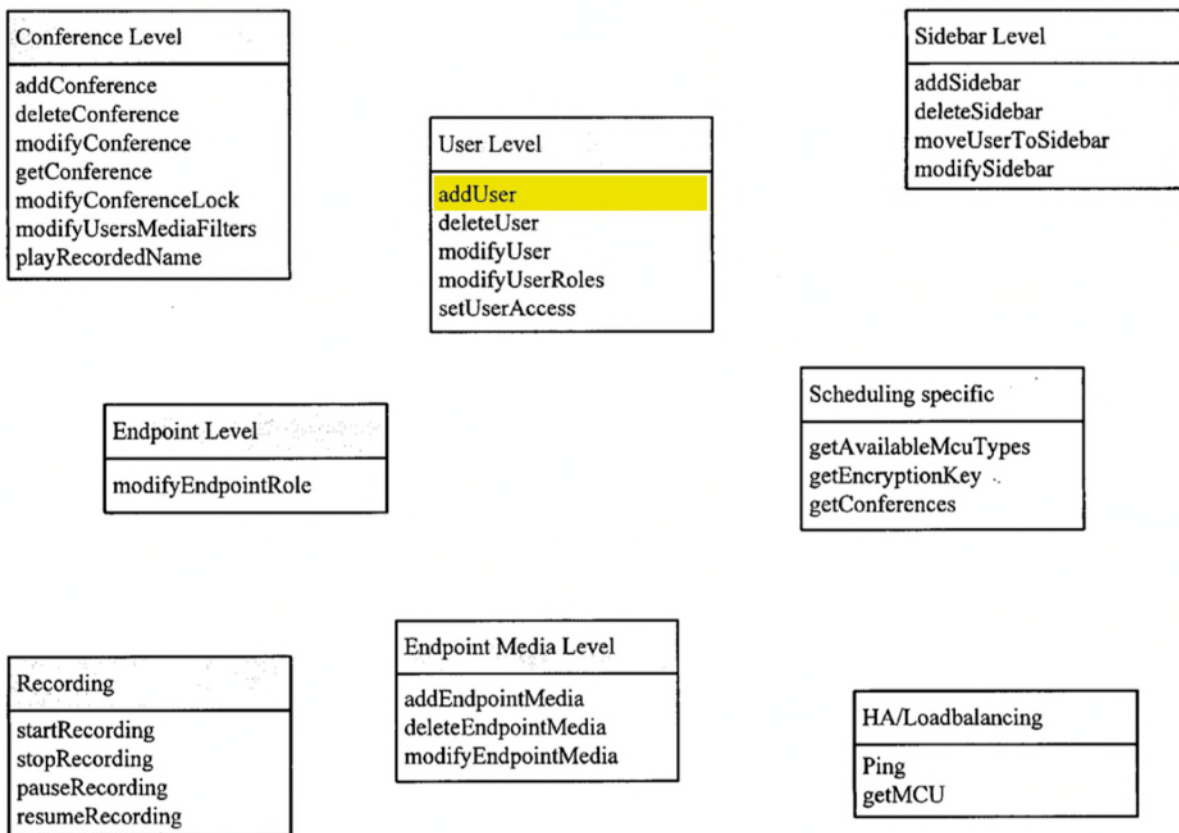


FIG. 22

69. Therefore, in my opinion, Sekaran discloses “identification information to be used upon logging in to the management system.”

4. [1.a.2]/[31.b.2] “first name information which indicates a name associated with the identification information”

70. It is my opinion that Sekaran discloses or renders obvious “first name information which indicates a name associated with the identification information.”

71. Sekaran discloses first name information in the form of a participant display name or display-text associated with the participant’s user identity. EX1004, ¶¶[0103], [0117]-[0122]. When a client joins a conference, the client may provide

“specific client attributes,” including a “display name.” EX1004, ¶[0103]. Sekaran’s conference-state hierarchy includes users keyed by user URI, and Sekaran’s example identifies the user sip:bob and endpoint sip:bob;focus with corresponding “display-text” of “bob.” EX1004, ¶¶[0117]-[0122].

```
<conference-info >
  <conference-description>
  ...
</conference-description>
<conference-view>
....
</conference-view>
<users >
  <user entity="sip:bob state="full" >
    <display-text>bob</display-text>
    <roles><entry>presenter</entry></roles>
    <endpoint entity="sip:bob;focus" >
      <status>connected</status>
    </endpoint>
  </user>
</users>
</conference-info >
```

EX1004, ¶[0121]

72. **Additional Obviousness Rationale.** To the extent it is determined that Sekaran does not state that the display name is “associated with” login identification information, that association would also have been obvious. Sekaran authenticates users based on identity or login credentials and then maintains user-state entries keyed by user URI containing the user’s display-text. EX1004, ¶¶[0010], [0050]-

[0051], [0075]-[0077], [0086]-[0088], [0103], [0117]-[0122]. A POSITA would have understood that associating each displayed name with the authenticated user or user URI so that the system can identify and display the correct participant in the conference avoids having to perform additional mappings and storing additional, redundant, identification information. EX1004, ¶¶[0010], [0050]-[0051], [0103], [0117]-[0122].

73. Therefore, in my opinion, Sekaran discloses or renders obvious “first name information which indicates a name associated with the identification information.”

5. [1.a.3]/[31.b.3] “meeting information relating to a scheduled meeting”; [16.c.2] “the meeting information being stored in the one or more memories”

74. It is my opinion that Sekaran discloses “meeting information relating to a scheduled meeting.”

75. Sekaran discloses meeting information relating to scheduled meetings. EX1004, ¶¶[0008]-[0009], [0048]-[0051], [0077], [0084]-[0085], [0139]-[0140]. Sekaran’s client sends conference information to the control component, including participant information and the time and date of the session. EX1004, ¶[0048]. Sekaran’s conference database contains conference ID, passwords or PINs, start time, end time, roles, and privileges. EX1004, ¶[0077]. Sekaran also discloses a web scheduling application for scheduling online conferences and a focus-factory

web service interface allowing meetings to be scheduled ahead of time. EX1004, ¶¶[0084], [0140]. Sekaran also discloses a system memory. EX1004, ¶[0193], [0196], FIG. 27.

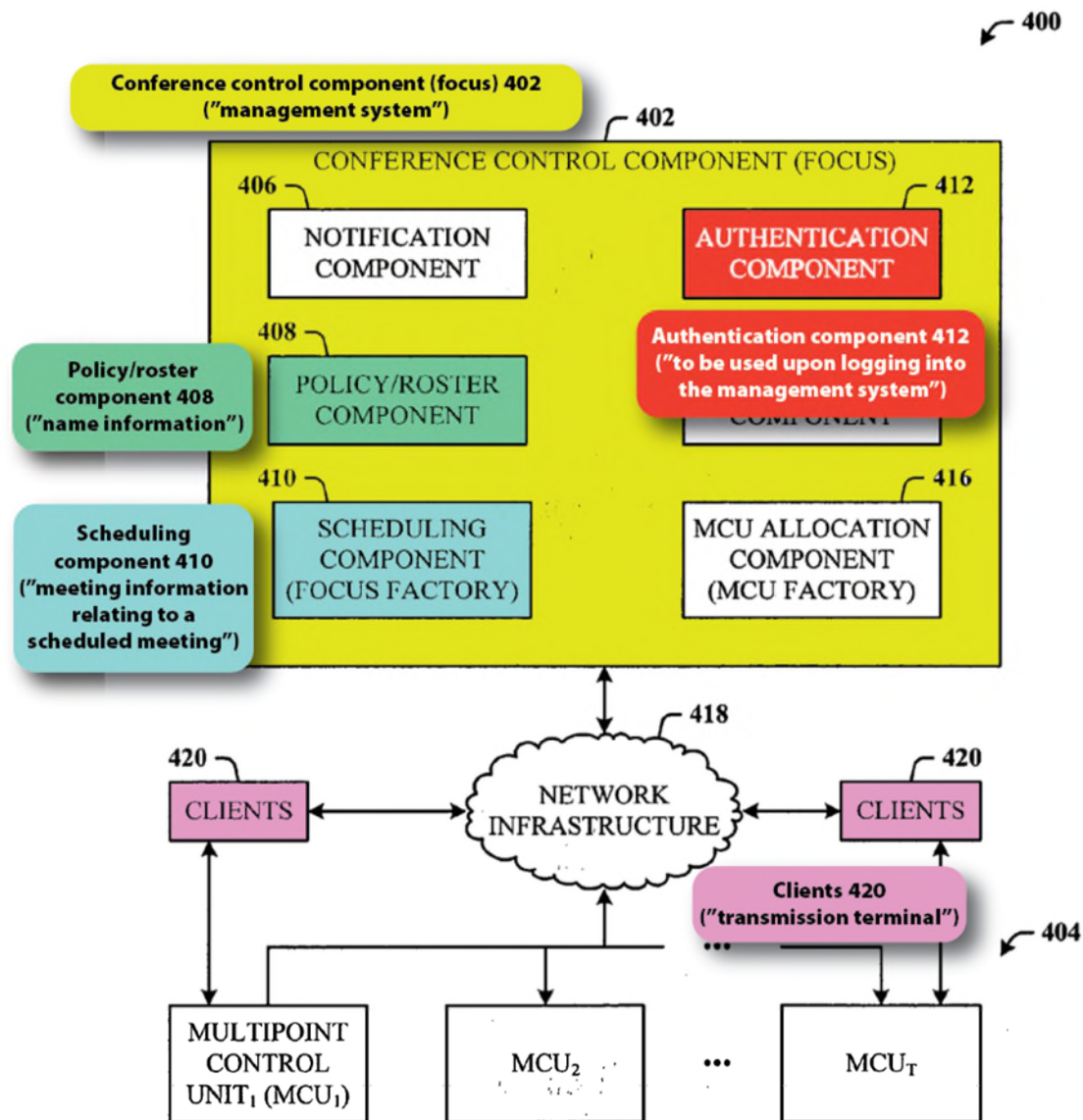


FIG. 4

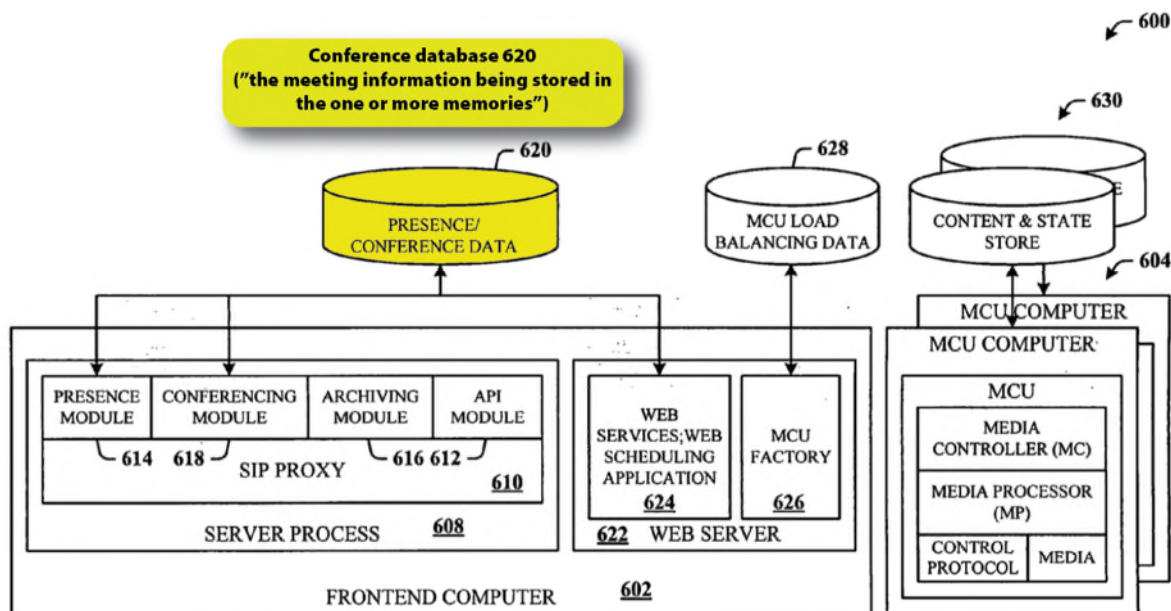


FIG. 6

76. Therefore, in my opinion, Sekaran discloses “meeting information relating to a scheduled meeting.”

6. [1.b]/[31.c] “processing circuitry configured to:”

77. It is my opinion that Sekaran discloses “processing circuitry configured to.”

78. Sekaran discloses processing circuitry in the form of server computers, frontend computers, processors, and software components executing conference-management functions. EX1004, ¶¶[0073]-[0081], [0171], [0187]-[0196], FIGS. 6, 27. Sekaran discloses a frontend computer 602 running server process 608 and conferencing module 618, whose main elements are the focus and focus factory.

EX1004, ¶¶[0073]-[0075], FIG. 6. Sekaran also discloses an exemplary computer with processing unit 2704, system memory, drives, applications, modules, and data.

EX1004, ¶¶[0192]-[0196], FIG. 27.

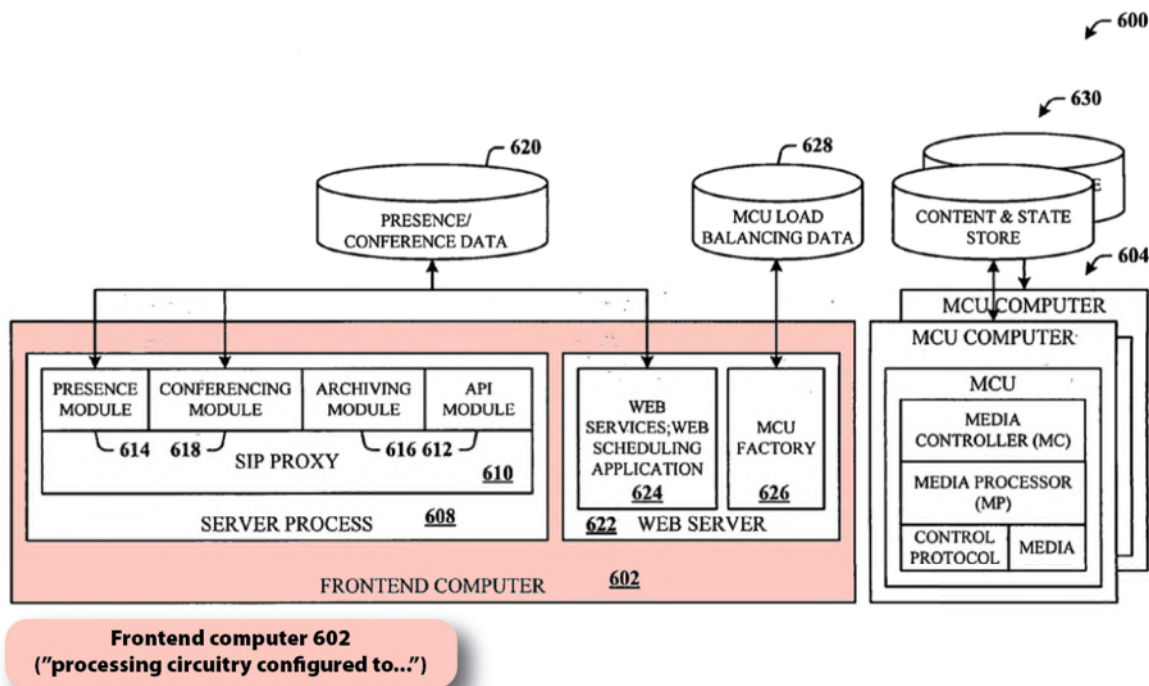


FIG. 6

79. Therefore, in my opinion, Sekaran discloses “processing circuitry configured to.”

7. [1.c]/[16.b]/[31.d] “transmit[ting] the first name information to a transmission terminal that has logged in to the management system based on the identification information”

80. It is my opinion that Sekaran discloses “transmit[ting] the first name information to a transmission terminal that has logged in to the management system based on the identification information.”

81. Sekaran discloses transmitting “first name information” to a logged-in transmission terminal. EX1004, ¶¶[0010], [0053], [0086], [0102]-[0103], [0117]-[0122], [0159], [0179]-[0180]. Sekaran’s clients are authorized to participate by the “focus,” receive notifications about changes in conference state from the “focus,” and issue conference-control operations to the “focus.” EX1004, ¶¶[0010], [0053]. Sekaran’s client uses a SUBSCRIBE/NOTIFY mechanism for watching conference state, and the “focus” notifies subscribers of conference-state changes. EX1004, ¶[0102]. Sekaran discloses transmitting state notifications from the “focus to the client.” EX1004, ¶[0117]. Changing the state information so as to trigger client notifications may be done by issuing C3P commands, including “modifyUser.” EX1004, ¶¶[0165]-[0166], FIGs. 21, 22. Sekaran also discloses that “conference information” includes information about the participants. EX1004, FIG3.

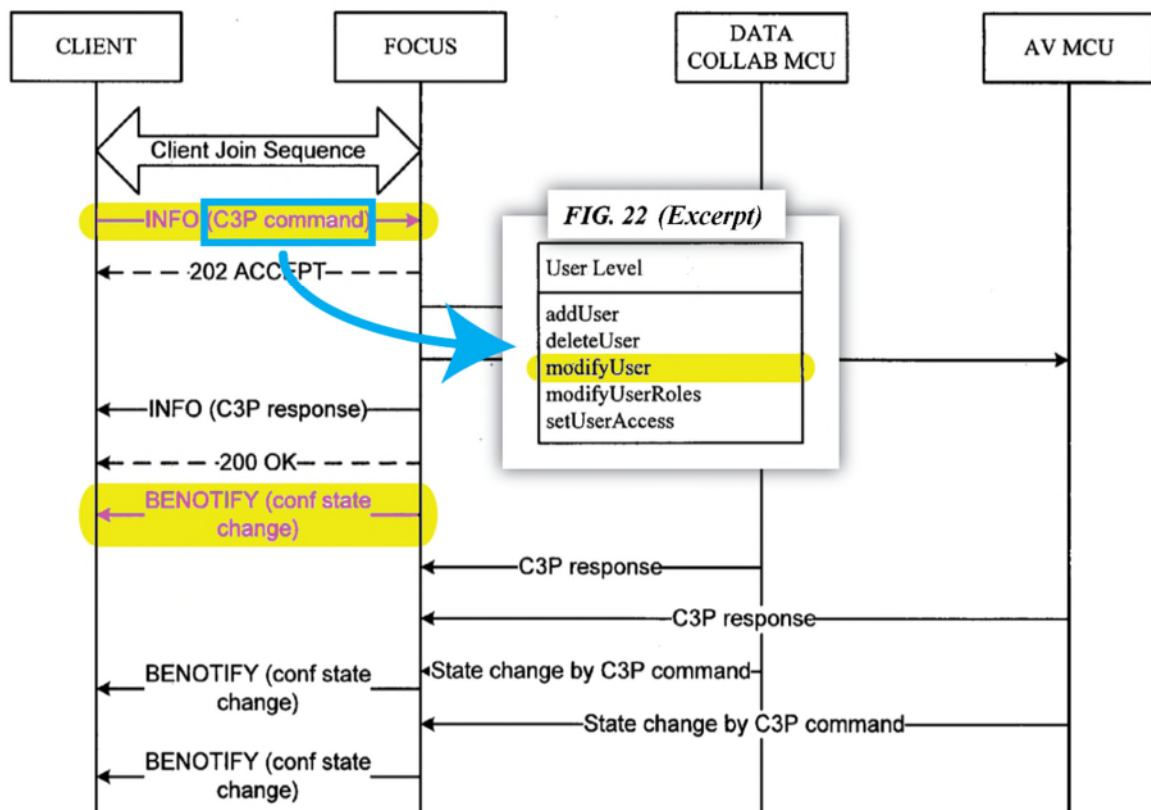


FIG. 21

82. Sekaran’s conference-state change notifications include changes to user and endpoint information. Sekaran provides an example state notification including the user “sip:bob” and the display-text “bob.” EX1004, ¶¶[0117]-[0122]. And Sekaran discloses that participants are authenticated, and that authentication is “based on user identity information.” EX1004, Abstract, ¶¶[0010], [0042]. Sekaran further refers to this use of “login credentials” for authentication. EX1004, ¶[0086].

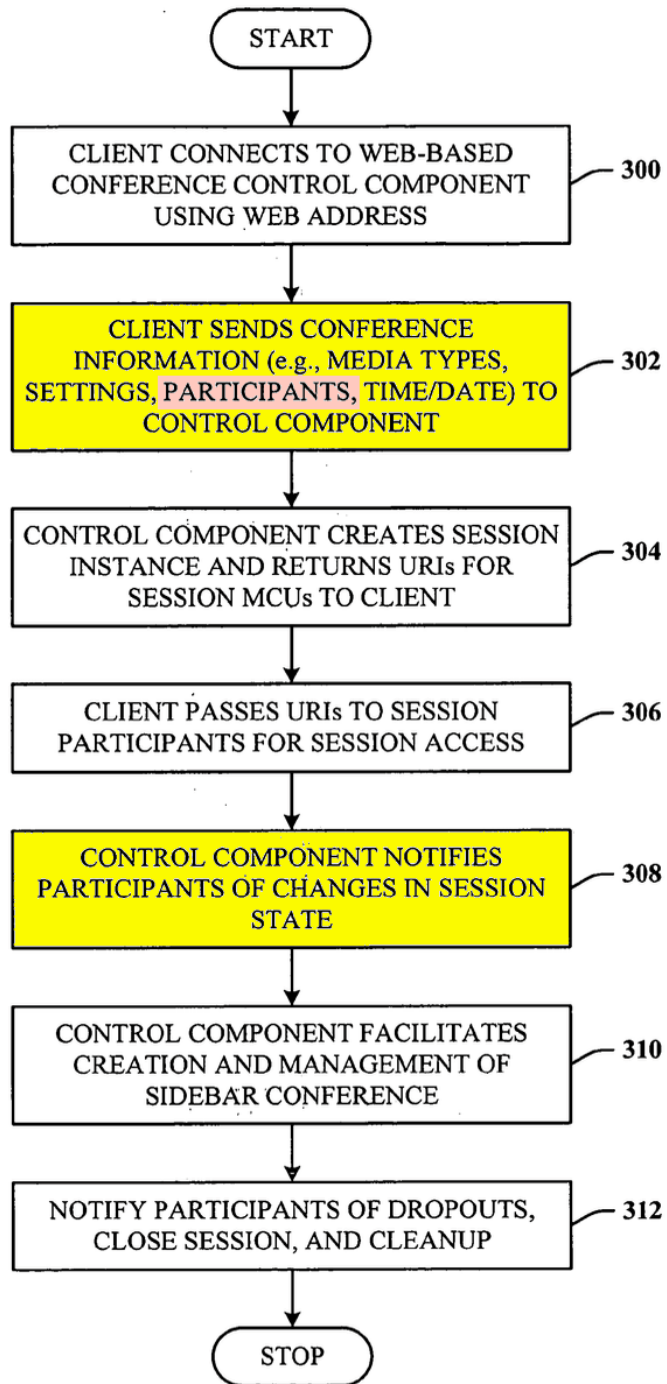


FIG. 3

83. Therefore, in my opinion, Sekaran discloses “transmit[ting] the first name information to a transmission terminal that has logged in to the management system based on the identification information.”

8. [1.d]/[16.c.1]/[31.e] “receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information”

84. It is my opinion that Sekaran discloses or renders obvious “receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information.”

85. Sekaran discloses receiving updated user-state information from a client through C3P/CCCP conference-control commands. EX1004, ¶¶[0059], [0091], [0158]-[0160], [0164]-[0166], [0179]-[0182], FIGS. 21-22. Sekaran states that C3P is the conference-control protocol used to modify conference state, that the C3P command flows from the client to the “focus,” and that conference notifications flow from “focus” to client. EX1004, ¶[0164].

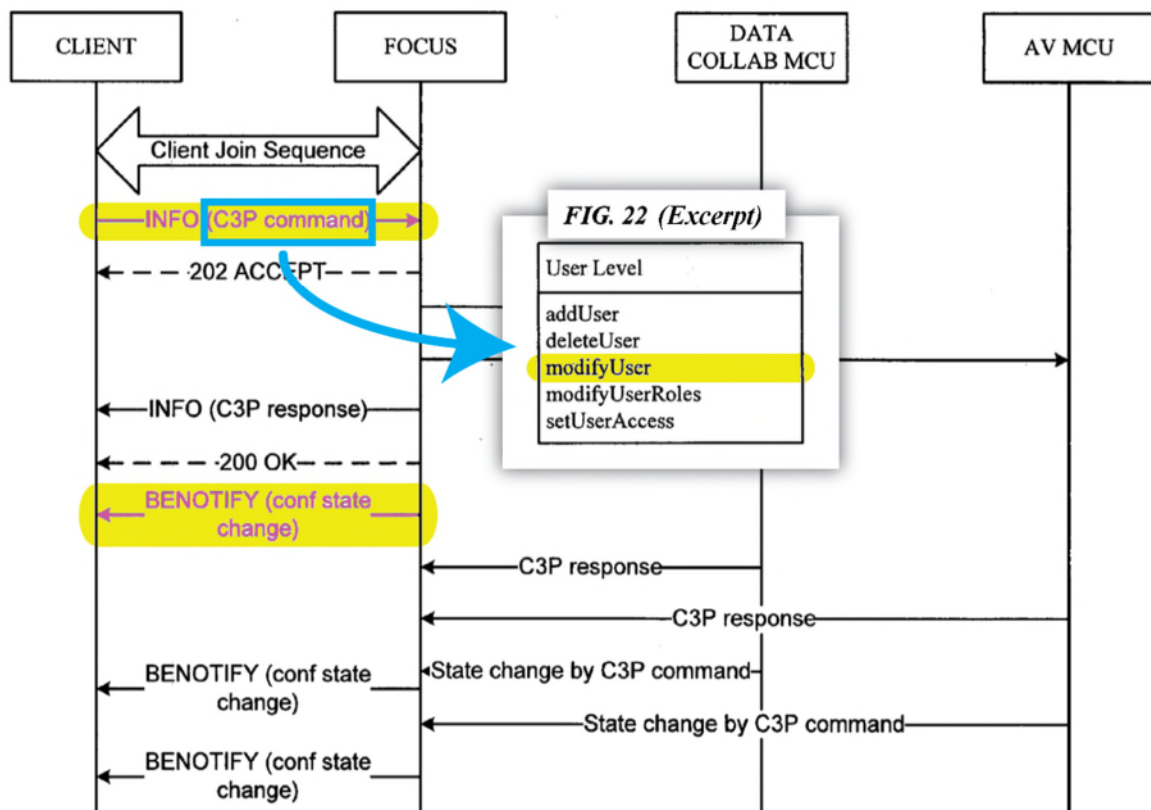


FIG. 21

86. Sekaran discloses user-level commands, including “modifyUser,” and explains that clients may issue conference-control and policy-control commands inside INFO messages processed by the focus. EX1004, ¶¶[0158], [0166], FIG. 22. Sekaran also teaches that a client can affect its own state and the state of other participants, and that the CCCP server performs the operation and updates its master conference state to reflect the changes. EX1004, ¶[0182]. Because the conference user state includes display-text and Sekaran identifies “display name” as a client attribute, Sekaran discloses receiving updated “display name” information as

updated user-state information for display in the conference. EX1004, ¶¶[0103], [0117]-[0122], [0164]-[0166], [0182].

87. Sekaran’s user-level ‘modifyUser’ command would have been understood by a POSITA to include modification of the user’s display-text because display-text is part of Sekaran’s user state and because Sekaran identifies “display name” as a client attribute. EX1004, ¶¶[0103], [0117]-[0122], FIG. 22. The user state is keyed by user URI and includes the displayed name, roles, and endpoints; modifying that user state to change the displayed name is therefore a natural and predictable use of the user-level modification command. EX1004, ¶¶[0117]-[0122], [0182]. Once the client submits the requested display-name change through Sekaran’s CCCP control mechanism, Sekaran’s CCCP server performs the operation and updates its master conference state to reflect the change. EX1004, ¶[0182].

88. **Additional Obviousness Rationale.** To the extent it is determined that Sekaran does not state that the “modifyUser” command specifically modifies a display name, that use would have been obvious for the concrete reason that accurate participant identification is central to a useful conference roster, a user may want to change names based on the context of the meeting, or may prefer to use a nickname instead of their full name. EX1004, ¶¶[0010], [0051], [0102]-[0103], [0117]-[0122], FIG. 22. Additionally, Sekaran discloses a “modifyUser” command, which a POSITA would assume modifies information about a user, but only discloses limited

information about user state, namely display-text and roles. A POSITA would thus understand that modifyUser likely refers to modifying the information that Sekaran reveals is kept about users: display-text and roles.

89. The known mechanism was Sekaran's user-level "modifyUser" command, which operates on user state that already includes display-text, together with Sekaran's CCCP master-state update process. EX1004, ¶¶[0103], [0117]-[0122], [0164]-[0166], [0182], FIG. 22. The predictable result was that changed display-text would appear in Sekaran's conference-state notifications, because Sekaran distributes altered conference state to subscribed clients after state-changing commands. EX1004, ¶¶[0158]-[0159], [0179]-[0182].

90. Therefore, in my opinion, Sekaran discloses or renders obvious "receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information."

9. [1.e]/[16.d]/[31.f] "store, in the one or more memories, the second name information in association with the meeting information"

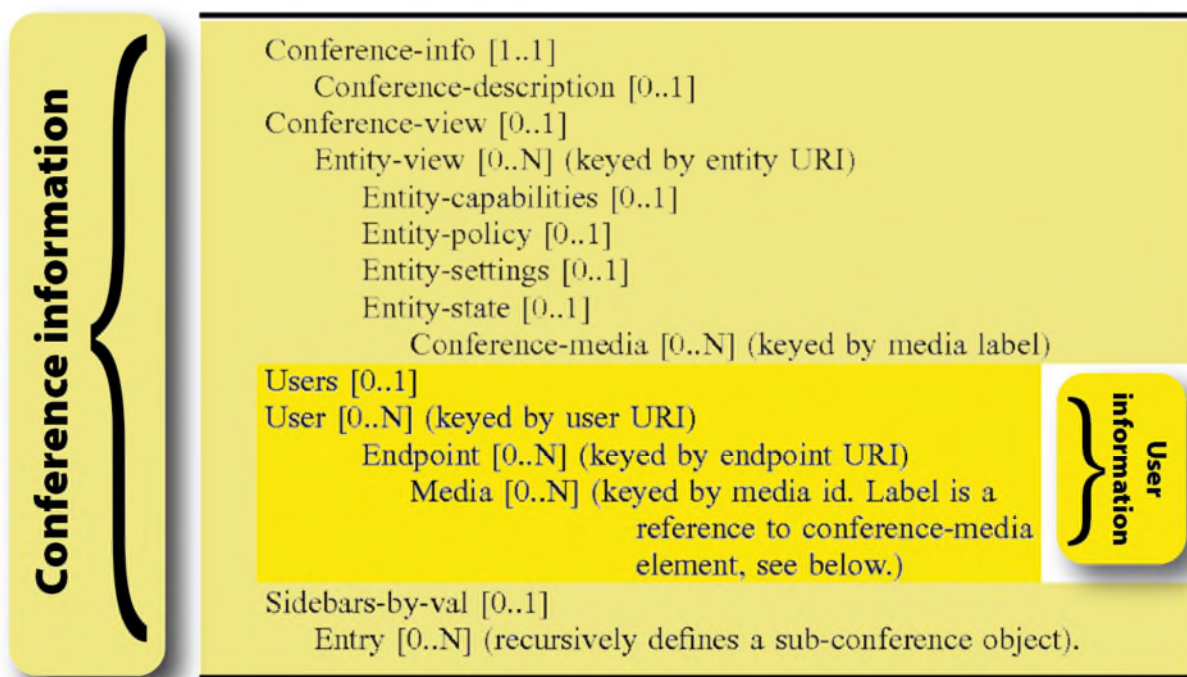
91. It is my opinion that Sekaran discloses "store, in the one or more memories, the second name information in association with the meeting information."

92. Sekaran discloses storing updated conference-state information, including updated user/roster state, in association with a particular conference. EX1004, ¶¶[0059], [0077], [0153]-[0160], [0179]-[0182]. Sekaran teaches that the “focus” stores all state needed to answer queries about a conference and that conference information can be persisted in a SQL server database for future use until session cleanup. EX1004, ¶[0059]. Sekaran also teaches that shared “focus” state includes roster information, roles, privileges, media types, and MCU identities, and that conference state is stored in a database accessible to frontend machines. EX1004, ¶¶[0153]-[0156]. When a CCCP operation changes conference state, the CCCP server updates its master conference state to reflect the changes. EX1004, ¶[0182].

93. The updated display-text is stored ‘in association with the meeting information’ because Sekaran’s “focus” represents a particular conference, each conference is identified by a conference URI, and the “focus” stores the conference state for that conference. EX1004, ¶¶[0052], [0058]-[0059], [0147]-[0149]. Sekaran’s shared conference state is stored in a database accessible by frontends, and the CCCP server updates the master conference state to reflect client-requested changes. EX1004, ¶¶[0157]-[0159], [0182]. Thus, when the user display-text is changed, the changed display-text is stored as part of the conference state for the

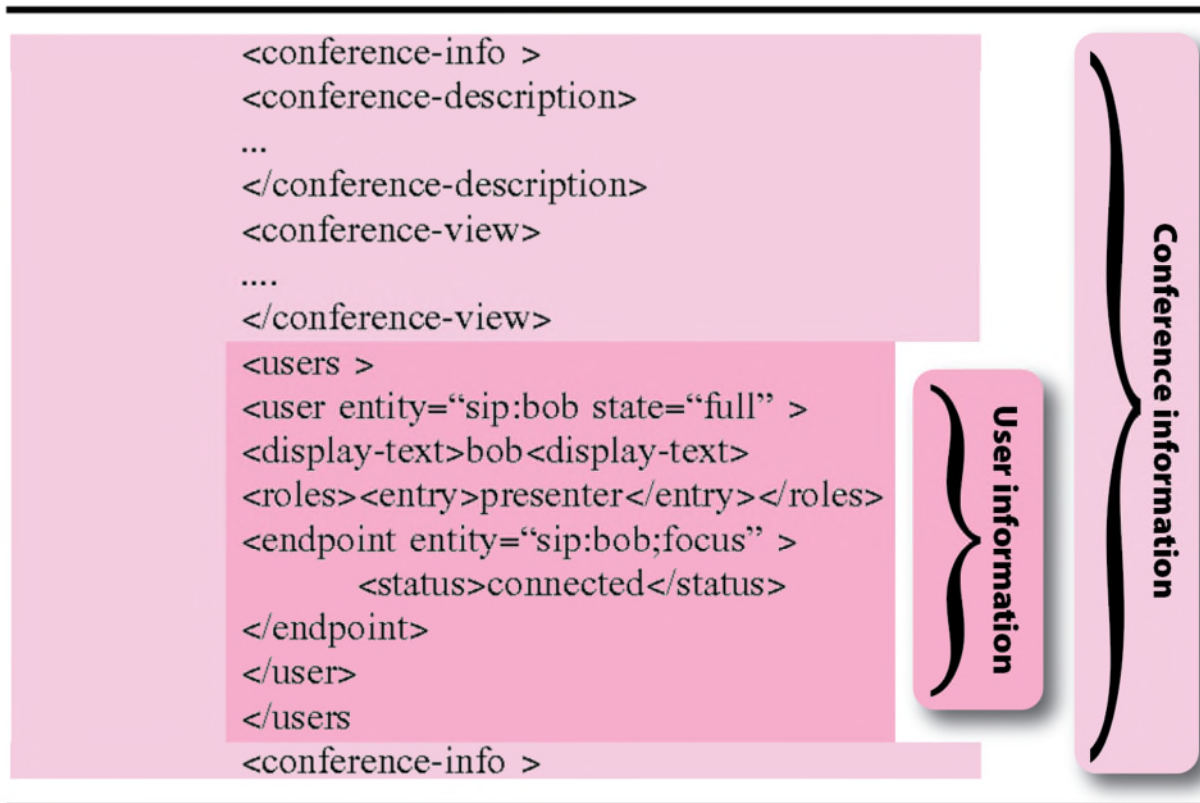
corresponding scheduled meeting. EX1004, ¶¶[0059], [0117]-[0122], [0157]-[0159], [0182].

94. Sekaran's association between user information and meeting information is illustrated by "one example of conference state hierarchy" which shows that information about users is a sub-element of (and thus associated with) the conference state, and that for each conference there may be conference (i.e. "meeting") information (conference descriptions, conference views, etc.) and user information (users, keyed by user URI, endpoints, media, etc.). EX1004, ¶¶[0118]-[0122]. Specifically, the bracketed ranges after each keyword in the following is syntax that would have been understood by a POSITA to reflect Sekaran's teaching of an N-to-1 association between users and meetings, where information about multiple users may be specified for a single conference.



EX1004, ¶[0118]

95. Sekaran also discloses “code,” consistent with this hierarchy, in which for a given conference (i.e. “meeting”), the meeting information (e.g. “conference-description” information”) is associated with a set of users, and at least some of those users have information which includes a stored “display-text.” EX1004, ¶[0121].



EX1004, ¶0121

96. Therefore, in my opinion, Sekaran discloses “store, in the one or more memories, the second name information in association with the meeting information.”

10. Claims 2/17: first or second name information based on a transmission terminal or user

97. It is my opinion that Sekaran discloses “first or second name information based on a transmission terminal or user.”

98. Sekaran discloses this limitation because its display name and display-text are based on the conference user and are associated with the user’s URI and

endpoint. EX1004, ¶¶[0103], [0117]-[0122]. Sekaran’s example identifies the user “sip:bob” and displays “bob” as the user’s display-text. EX1004, ¶[0121]. Sekaran also associates that user with endpoints, including focus and A/V endpoints, confirming that the displayed name is based on user and terminal information. EX1004, ¶¶[0121]-[0122].

99. Therefore, in my opinion, Sekaran discloses “first or second name information based on a transmission terminal or user.”

11. Claims 3/18: first name information based on a request for registering name information from the transmission terminal

100. It is my opinion that Sekaran discloses “first name information based on a request for registering name information from the transmission terminal.”

101. Sekaran discloses this limitation because the client supplies its display name as a client attribute when joining the conference. EX1004, ¶[0103]. Sekaran’s client sends an INVITE or INFO request with an addUser request specifying client attributes, including display name, and the focus processes that request as part of the participant’s join sequence. EX1004, ¶¶[0101]-[0103], [0106], FIGs. 11-12.

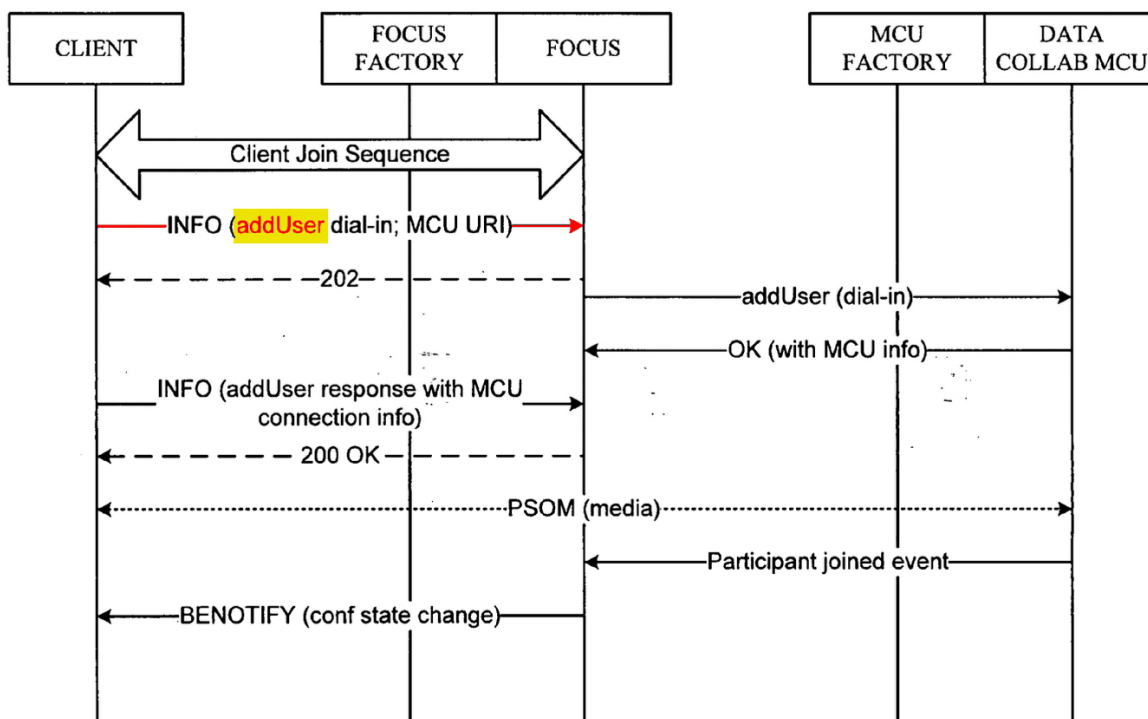


FIG. 12

102. Therefore, in my opinion, Sekaran discloses “first name information based on a request for registering name information from the transmission terminal.”

12. Claims 4/19: transmitting first name information to display a destination list

103. It is my opinion that Sekaran discloses or renders obvious “transmitting first name information to display a destination list.”

104. Sekaran discloses transmitting first name information for display in a roster or participant list, which corresponds to the claimed destination list. EX1004, ¶¶[0010], [0051], [0090]-[0092], [0117]-[0122]. Sekaran states that conference

participants receive a “single conference picture using a single integrated roster” from the focus and control the conference through the focus. EX1004, ¶¶[0010], [0051]. Further, the “state notification data model includes ... information about capabilities, current state, settings and policy; user (e.g., a roster of the conferences, the users, corresponding endpoints and the media sessions they are connected to); and sidebar, a representation of a sub-conference.” EX1004, ¶[0117]. For example, Sekaran discloses that a client can initiate a conference, using a SIP INVITE that includes a list of intended participants. EX1004, ¶[0097], FIG. 9. A POSITA would have understood that, in view of Sekaran’s disclosure that participants receive the integrated roster, this roster is displayed in some form; the roster includes users and their display-text, and the focus transmits that state to subscribed clients. EX1004, ¶¶[0102]-[0103], [0117]-[0122].

105. Sekaran also discloses that the client 700 has a user interface 704 that can access conference control and management component 706, and that management component 706 “can access a roster component 710 that provides a session invitation roster and/or third-party conference roster.” EX1004, ¶[0090]. A POSITA would have understood that since the user interface is connected to a management component that “can access the roster component 710,” the user interface displays the roster.

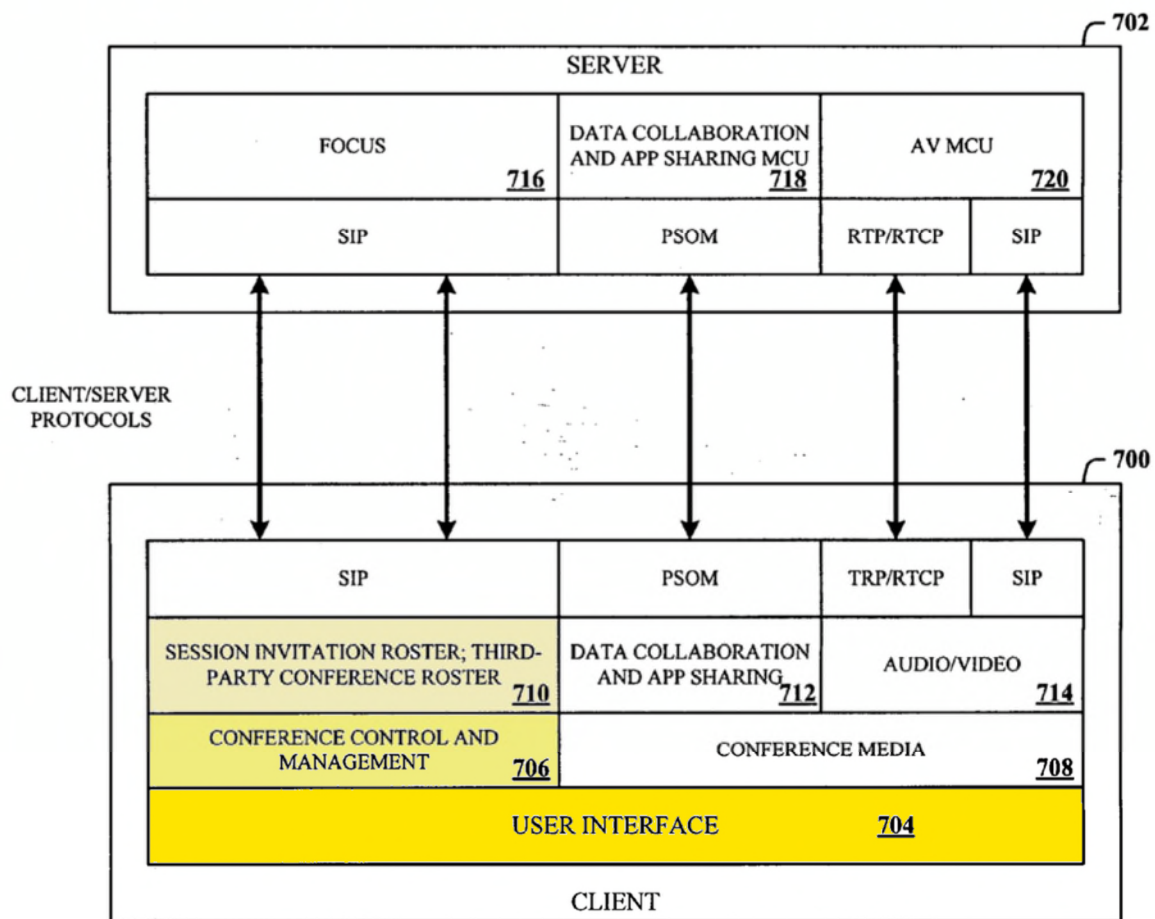


FIG. 7

106. **Additional Obviousness Rationale.** It would also have been obvious that a conference roster listing users/endpoints functions as a destination list that is displayed in the context of the '278 Patent because it identifies the terminals or users with which the logged-in terminal can communicate in the meeting. EX1004, ¶¶[0010], [0051], [0090]-[0092], [0117]-[0122], [0160]. Additionally, since the client can initiate a conference by transmitting a list of participants as part of an INVITE request, a POSITA would have understood that a user interface that displays potential participants (i.e. a “destination list”) would be provided to allow the client

to choose who to include in the INVITE command, and it would be obvious to use Sekaran's disclosed user interface 704 which has access to the roster to accomplish this. EX1004, ¶[0097].

107. Additionally, in my opinion, a POSITA would have found it obvious to display a list of conference attendees or participants. Any multi-party conferencing system that maintains a roster of participants would naturally display that roster to its users, because knowing who is in the meeting, and who can be contacted, is a fundamental expectation of conferencing itself. Providing a participant list would therefore have been a basic and predictable feature that any skilled person would include, not an inventive step, and would have required no more than the ordinary exercise of skill.

108. Therefore, in my opinion, Sekaran discloses or renders obvious "transmitting first name information to display a destination list."

13. Claims 5/20: transmitting second name information associated with meeting information to display participant information

109. It is my opinion that Sekaran discloses "transmitting second name information associated with meeting information to display participant information."

110. Sekaran discloses transmitting updated second name information associated with meeting information to display participant information. EX1004, ¶¶[0117]-[0122], [0159], [0179]-[0182]. Sekaran's conference-state notifications include the conference description, conference view, users, endpoints, and media

sessions, and those notifications are distributed to clients by the focus. EX1004, ¶¶[0117]-[0122], [0179]-[0180]. Once the display-text is modified through Sekaran's C3P/CCCP mechanism, the focus reports that altered conference state to subscribed users, thereby transmitting second name information for display as participant information. EX1004, ¶¶[0159], [0164]-[0166], [0182]. Additionally, the second name information is associated with meeting information for the same reasons provided with respect to claims [1.e]/[16.d]/[31.f].

111. Therefore, in my opinion, Sekaran discloses “transmitting second name information associated with meeting information to display participant information.”

14. Claims 6/21: second name information associated with another transmission terminal participating in the meeting

112. It is my opinion that Sekaran discloses or renders obvious “second name information associated with another transmission terminal participating in the meeting.”

113. Sekaran discloses this limitation because its conference-state model associates each user with one or more endpoints participating in the conference. EX1004, ¶¶[0117]-[0122]. Sekaran's example identifies Bob as a user and shows Bob connected through endpoints, including an endpoint associated with the focus and an endpoint associated with the A/V MCU. EX1004, ¶¶[0121]-[0122].

114. Sekaran also discloses that the name information being transmitted can represent the names of participants other than the participant/client that transmits the

message. For example, Sekaran discloses that different users may have different permissions or roles that enable them to affect the conference state. EX1004, ¶¶[0088]-[0089]. Additionally, Sekaran's conference state hierarchy, consistent with the various "code" examples provided in the reference, permits "N" (more than 1) users to be associated with a single conference entity; as it is unlikely that all participants would be operating the same terminal, a POSITA would have understood that some users are associated with other terminals. EX1004, ¶¶[0118], [0121]-[0122]. And Sekaran discloses that a C3P command (such as addUser) issued by one client ("CLIENT1"), can include information about a user associated with a different client ("CLIENT2"). EX1004, FIG. 16, ¶[0115]. A POSITA would have understood that the disclosed modifyUser command would have similar functionality.

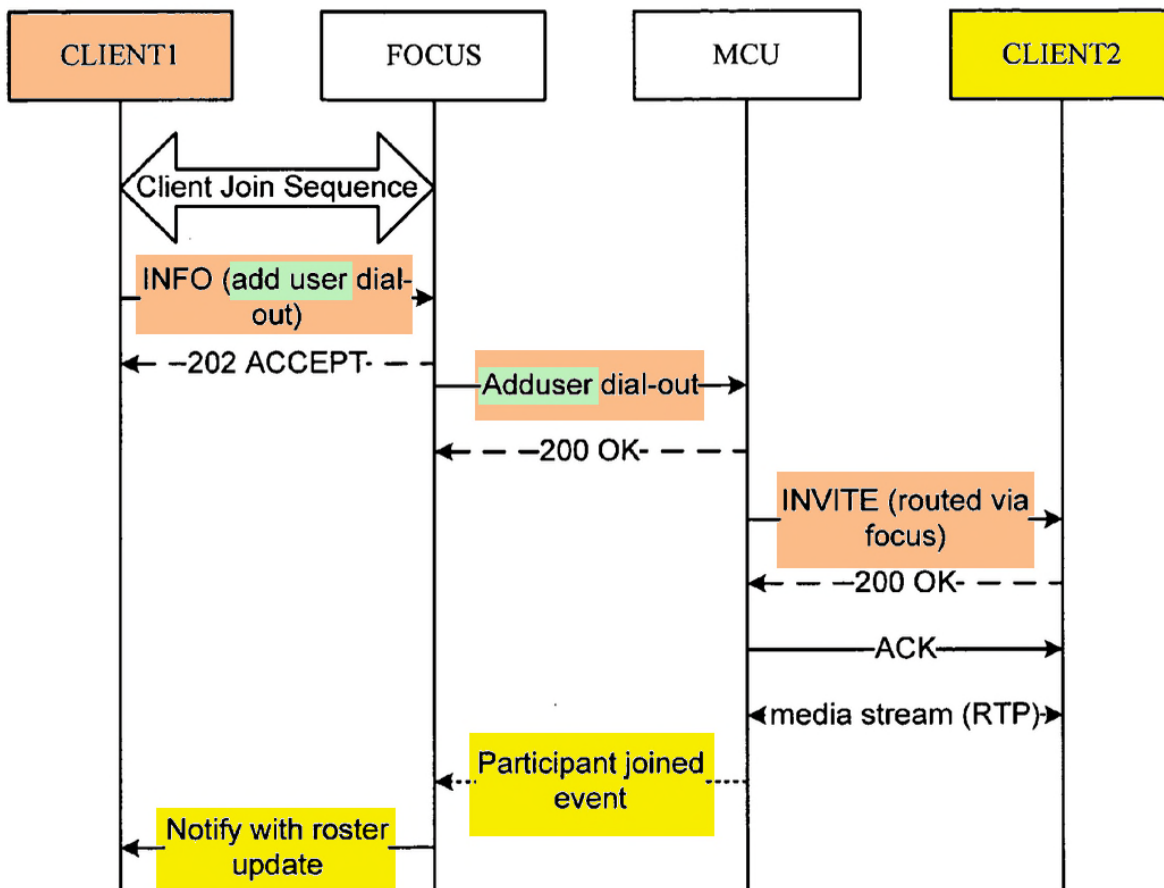


FIG. 16

115. **Additional Obviousness Rationale.** To the extent the “another transmission terminal” limitation is determined to require terminal-specific name information, it would have been obvious because Sekaran’s user display-text is associated with endpoints, and those endpoints are the client-side conference terminals participating in the meeting. EX1004, ¶¶[0117]-[0122], [0179]-[0182]. Additionally, given Sekaran’s disclosure of C3P commands such as addUser and modifyUser, disclosure that such commands can include information about other

terminals, and disclosure that participants may have roles or permissions that enable them to modify conference state, a POSITA would have included the ability for participants with permission to administer the conference to use `modifyUser` to change the display-text associated with a different participant.

116. Therefore, in my opinion, Sekaran discloses or renders obvious “second name information associated with another transmission terminal participating in the meeting.”

15. Claims 7/22: receiving and storing meeting reservation request information

117. It is my opinion that Sekaran discloses “receiving and storing meeting reservation request information.”

118. Sekaran discloses receiving reservation request information and storing meeting information included in that request. EX1004, ¶¶[0048], [0084], [0095]-[0100], [0139]-[0140]. Sekaran discloses that a client can “**request[] that a conference session be created [or] scheduled []**.” EX1004, ¶[0008]. Sekaran teaches that the client sends conference information to the control component, including participant information, time/date, media types, and settings. EX1004, ¶[0048], FIG. 3. Sekaran also discloses a web scheduling application for scheduling online conferences, and the focus factory has a web service interface allowing meetings to be scheduled ahead of time. EX1004, ¶¶[0081]-[0084], [0140]. Sekaran’s conference database stores the resulting meeting information,

including conference ID, passwords or PINs, start time, end time, roles, and privileges. EX1004, ¶¶[0077], [0084].

119. Sekaran's conference-creation request is the claimed reservation request information because the client sends information needed to create the conference, including participants and time/date, to the focus factory or conference control component. EX1004, ¶¶[0048], [0099]-[0100], FIGs. 3, 10. Where the requested conference is scheduled for a future time, Sekaran's focus/focus factory stores the resulting conference information for future use, which satisfies storing meeting information included in the reservation request. EX1004, ¶¶[0051], [0059], [0147]-[0149].

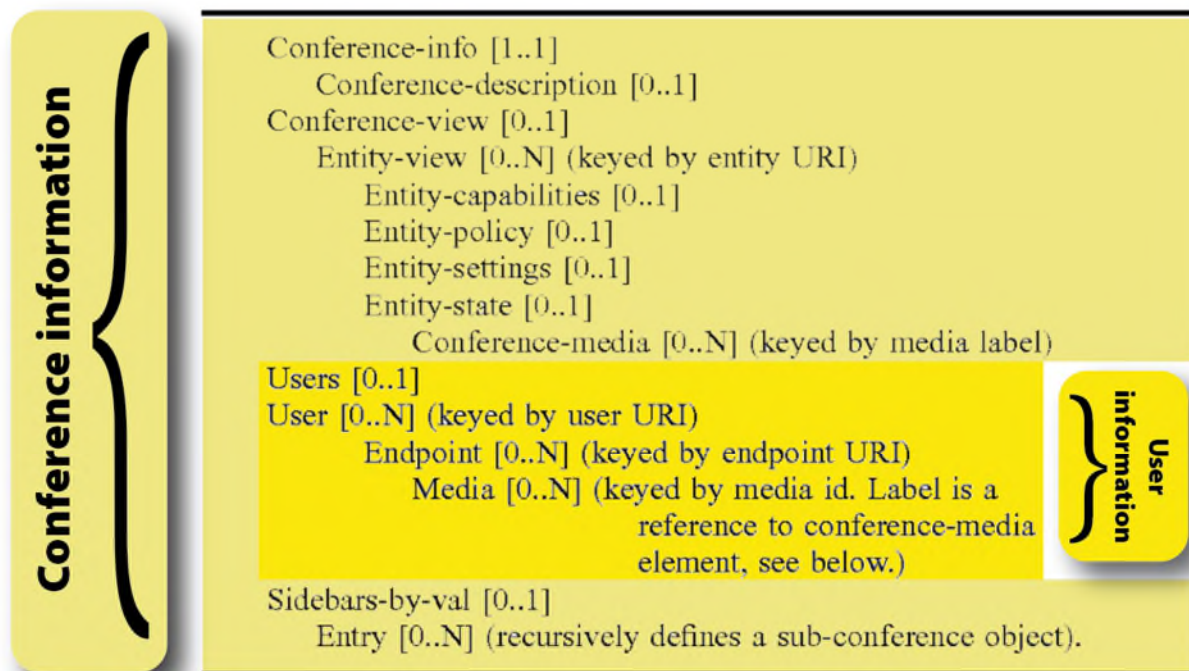
120. Therefore, in my opinion, Sekaran discloses receiving and storing meeting reservation request information.

16. Claims 8/23: transmitting second name information associated with selected meeting information

121. It is my opinion that Sekaran discloses "transmitting second name information associated with selected meeting information."

122. Sekaran discloses transmitting name information associated with a selected meeting. EX1004, ¶¶[0095]-[0103], [0117]-[0122], [0179]-[0180]. Sekaran's client obtains a focus URI corresponding to a particular conference and uses that URI to join or subscribe to the conference. EX1004, ¶¶[0095]-[0103], [0147]-[0154]. The first conference-state notification includes all

information about the conference, and the focus distributes the complete conference view to subscribed clients. EX1004, ¶¶[0179]-[0180]. Additionally, for the reasons discussed with respect to claims [1.e]/[16.d]/[31.f], the name information is associated with the meeting information.



123. **Additional Obviousness Rationale.** To the extent it is determined that Sekaran does not state that the meeting information is “selected on the transmission terminal,” it would have been obvious because Sekaran’s client selects or joins a particular conference by using the conference URI and subscribing to that conference’s event package. EX1004, ¶¶[0095]-[0103], [0147]-[0154], [0179]-[0180]. Sekaran also discloses that after receiving a URI, the client can issue an INVITE command associated with the URI to join the conference. EX1004, ¶[0147],

FIG. 18. A POSITA would understand that a user interaction corresponding to selection would be performed in a fully-implemented system to cause issuance of the INVITE command.

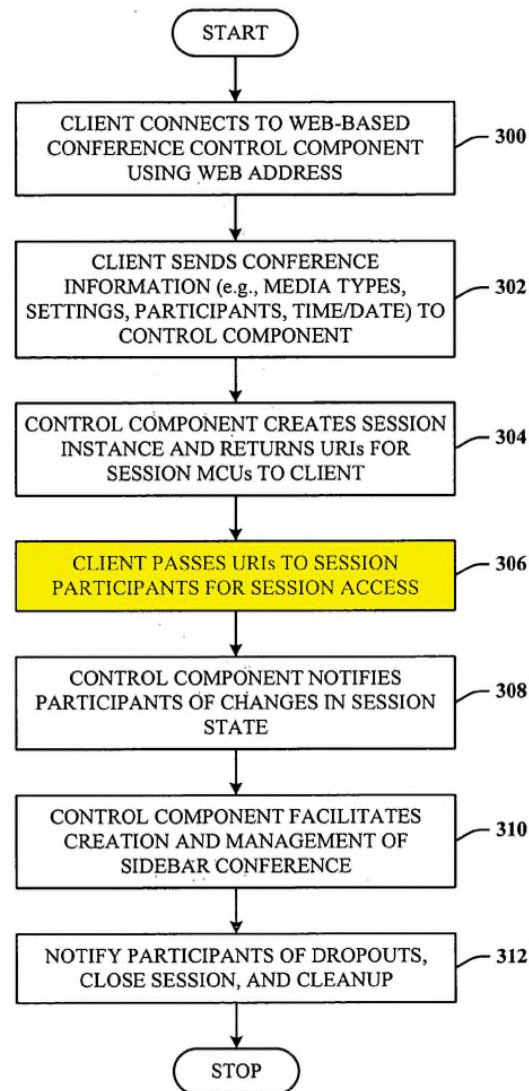


FIG. 3

124. Therefore, in my opinion, Sekaran discloses “transmitting second name information associated with selected meeting information.”

17. Claims 9/24: transmitting first name information if second name information is not stored

125. It is my opinion that Sekaran discloses “transmitting first name information if second name information is not stored.”

126. Sekaran discloses transmitting the original first name information when no updated second name information has been stored because the focus transmits the current roster state, including the participant display-text originally supplied when the user joined. EX1004, ¶¶[0102]-[0103], [0117]-[0122], [0179]-[0180]. If no modification has been made, the current conference state remains the original display-text, and Sekaran transmits that current state to subscribed clients. EX1004, ¶¶[0102], [0117]-[0122], [0179]-[0180].

127. **Additional Obviousness Rationale.** To the extent it is determined that Sekaran does not disclose a conditional fallback rule, it would have been obvious to transmit the default display name when no meeting-specific updated display name exists because the alternative would be to omit the participant’s name, create an arbitrary name for no useful purpose, or display a blank entry, contrary to Sekaran’s purpose of providing a useful integrated roster. EX1004, ¶¶[0010], [0051], [0117]-[0122].

128. Therefore, in my opinion, Sekaran discloses “transmitting first name information if second name information is not stored.”

18. Claims 10/25: meeting information includes meeting name, start date/time, and end date/time

129. It is my opinion that Sekaran discloses “meeting information includes meeting name, start date/time, and end date/time.”

130. Sekaran discloses meeting information including at least a meeting name, start date/time, and end date/time. EX1004, ¶¶[0048], [0077], [0117]-[0122], FIG. 3. Sekaran’s client sends conference information including time and date of the session. EX1004, ¶[0048]. Sekaran’s conference database stores conference ID, start time, and end time. EX1004, ¶[0077]. Sekaran’s conference-state model includes a conference description, including title and subject, and its example includes display-text for the conference description. EX1004, ¶¶[0117]-[0119]. Sekaran also discloses that the conference information about each conference may include the “start time and end time (if any).” EX1004, ¶[0077].

131. Therefore, in my opinion, Sekaran discloses “meeting information includes meeting name, start date/time, and end date/time.”

19. Claims 11/26: management system includes one or more computer

132. It is my opinion that Sekaran discloses “management system includes one or more computer.”

133. Sekaran discloses that the management system includes one or more computers. EX1004, ¶¶[0073]-[0077], [0167]-[0171], [0187]-[0196]. Sekaran’s conferencing system includes a frontend computer 602, server process 608,

conferencing module 618, and database 620. EX1004, ¶¶[0073]-[0077]. Sekaran also discloses multi-server pools of frontend servers running focus factory, foci, MCU factory, MCUs, and web scheduling interfaces. EX1004, ¶¶[0167]-[0171].

134. Therefore, in my opinion, Sekaran discloses “management system includes one or more computer.”

20. Claims 12/27/32: first name in destination list; second name in meeting-related information displayed on terminal

135. It is my opinion that Sekaran discloses “first name in destination list; second name in meeting-related information displayed on terminal.”

136. Sekaran discloses first name information included in a displayed roster and second name information included in meeting-related information displayed on the terminal, for the reasons discussed with respect to claims 4/19. EX1004, ¶¶[0010], [0051], [0090]-[0092], [0102]-[0103], [0117]-[0122], [0179]-[0182]. Sekaran’s roster is transmitted to clients and includes participant display-text. EX1004, ¶¶[0117]-[0122]. Sekaran stores scheduled meeting information, including start and end times, and transmits conference-state information associated with the selected conference to subscribed clients. EX1004, ¶¶[0077], [0179]-[0180].

137. Additionally, for the reasons discussed with respect to claims [1.a.3]/[31.b.3], both the first and second names are included in information relating

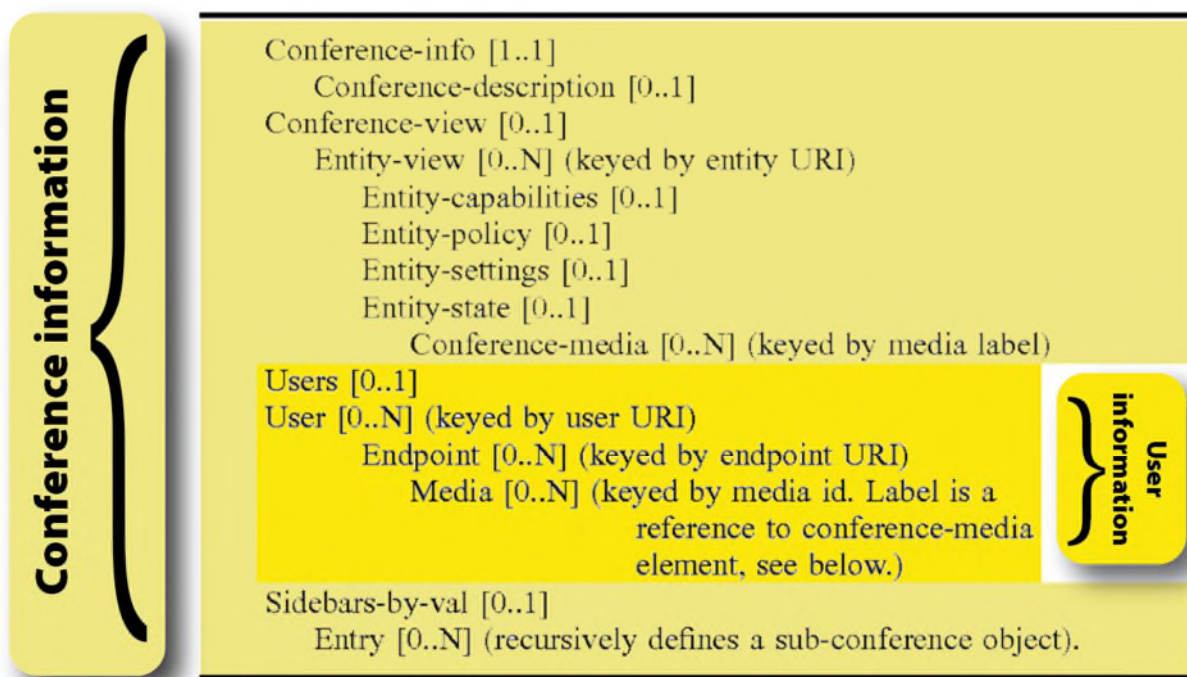
to a scheduled meeting. And, as disclosed with respect to claims 10/25, Sekaran discloses that for scheduled meetings, a predetermined date and time is set.

138. Therefore, in my opinion, Sekaran discloses “first name in destination list; second name in meeting-related information displayed on terminal.”

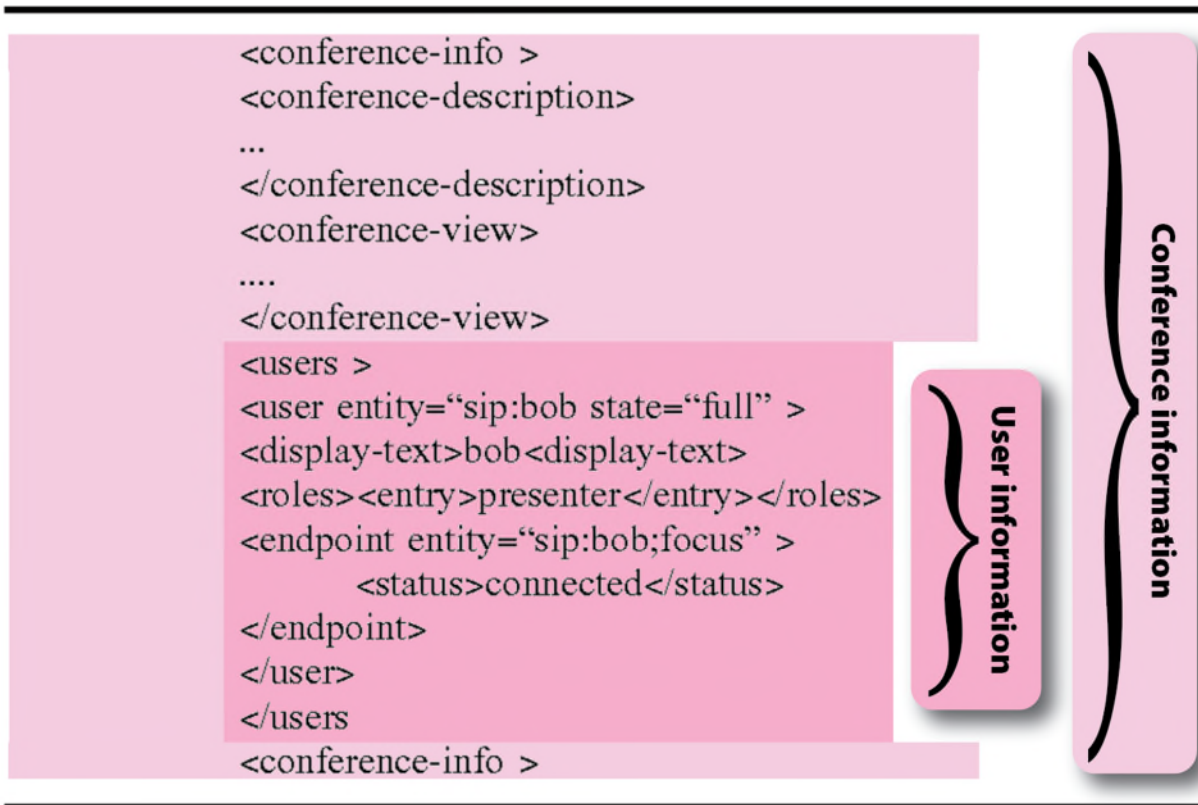
21. Claims 13/28/33: the meeting information includes at least identification information as one or more participants of the scheduled meeting

139. It is my opinion that Sekaran discloses “the meeting information includes at least identification information as one or more participants of the scheduled meeting.”

140. Sekaran discloses that meeting information includes identification information for one or more participants. EX1004, ¶¶[0048], [0077], [0117]-[0122], [0153]-[0160]. Sekaran’s client sends participant information when setting up a conference. EX1004, ¶[0048]. Sekaran’s “focus” state includes roster information, roles, privileges, media types, and MCU identities, and the conference-state hierarchy includes users keyed by user URI and endpoints keyed by endpoint URI. EX1004, ¶¶[0118], [0153].



141. Sekaran explains that the “following represents one example of code for a user Bob who joins the focus.” EX1004, ¶[0121].



142. Therefore, in my opinion, Sekaran discloses “the meeting information includes at least identification information as one or more participants of the scheduled meeting.”

22. Claims 14/29/34: receiving second name information before the scheduled meeting starts

143. It is my opinion that Sekaran discloses or renders obvious “receiving second name information before the scheduled meeting starts.”

144. Sekaran discloses scheduled meetings and discloses client commands that modify conference state, including user state, through the focus. EX1004, ¶¶[0084], [0140], [0158]-[0160], [0164]-[0166], [0182]. Sekaran also teaches that

scheduled meeting state and expected-participant roster information can exist before participants join the media session. EX1004, ¶¶[0140], [0153]-[0160].

145. A POSITA would have had a specific reason to receive the updated display name before the scheduled meeting starts: doing so ensures that the meeting roster is accurate when invitees first view or join the conference, avoids confusion at meeting launch, and uses Sekaran's existing pre-meeting conference-creation and stored-state mechanisms. EX1004, ¶¶[0048], [0051], [0059], [0147]-[0149]. Sekaran separates conference creation from joining, so the system already has an interval in which meeting state can be configured before participants join the media session. EX1004, ¶¶[0147]-[0149]. Updating display-text during that interval would require no architectural change because Sekaran already stores master conference state and processes client commands that modify that state. EX1004, ¶¶[0059], [0158]-[0159], [0182].

146. **Additional Obviousness Rationale.** There are three possibilities for when second name information is received in relation to a scheduled meeting: before, during, or after. However, only two of those possibilities—before and during—make sense in the context of a scheduled video conference meeting. To the extent it is determined that Sekaran does not state that a display-name update is received before the scheduled meeting starts, receiving the update before the meeting would have been obvious. EX1004, ¶¶[0084], [0140], [0153]-[0160], [0164]-[0166],

[0182]. Sekaran already allows meetings to be scheduled ahead of time and stores meeting/roster state before the meeting, so a POSITA would have had a straightforward reason to allow the user display name for that scheduled meeting to be modified before the meeting begins, ensuring the correct participant name appears when the meeting starts. EX1004, ¶¶[0084], [0140], [0153]-[0160], [0182].

147. Therefore, in my opinion, Sekaran discloses or renders obvious “receiving second name information before the scheduled meeting starts.”

23. Claims 15/30/35: updated name information displayed instead of first name information

148. It is my opinion that Sekaran discloses or renders obvious “updated name information displayed instead of first name information.”

149. Sekaran discloses displaying updated name information instead of the first name information because the CCCP server updates the master conference state to reflect the requested change, and the focus then sends notifications containing the altered conference state to subscribed clients. EX1004, ¶¶[0159], [0179]-[0182]. Sekaran’s conference-state roster contains the current display-text for each user, so an updated display-text replaces the prior display-text in the current conference state distributed to clients. EX1004, ¶¶[0117]-[0122], [0159], [0179]-[0182].

150. **Additional Obviousness Rationale.** To the extent it is determined that Sekaran does not say “instead of,” replacement display would have been obvious

because Sekaran updates the master conference state to reflect the changed user state and distributes the altered state, rather than displaying stale and updated names simultaneously. EX1004, ¶¶[0159], [0179]-[0182]. A POSITA would have understood that a current conference roster displays the current display-text for a participant, and once the display-text is updated, the updated display-text is displayed in place of the prior display-text. EX1004, ¶¶[0117]-[0122], [0159], [0182].

151. Therefore, in my opinion, Sekaran discloses or renders obvious “updated name information displayed instead of first name information.”

24. Conclusion

152. For these reasons, it is my opinion that Sekaran anticipates, or at least renders obvious, independent claims 1/16/31 because it discloses a centralized conference management system with memory and processing circuitry that stores login identification information, display-name information, scheduled-meeting information, transmits participant display-name information to logged-in clients, receives client commands modifying user/conference state, and stores the updated state in association with the conference. EX1004, ¶¶[0007]-[0010], [0042]-[0051], [0058]-[0059], [0073]-[0077], [0084]-[0086], [0102]-[0103], [0117]-[0122], [0153]-[0166], [0179]-[0182]. Sekaran also anticipates, or at minimum renders obvious, the additional limitations of claims 2-15, 17-30, and 32-35, including user-

based name information, name information supplied by a client, roster/destination-list display, participant-information display, reservation and scheduled-meeting information, fallback to default name information, meeting time information, participant identification information, pre-meeting updates, and replacement display of updated name information. EX1004, ¶¶[0048], [0051], [0077], [0084], [0103], [0117]-[0122], [0139]-[0140], [0153]-[0166], [0179]-[0182]. Claims 1-35 therefore are unpatentable under 35 U.S.C. §§102 and/or 103 over Sekaran.

B. Ground 2: Sekaran in View of Nam Renders Obvious Claims 1-35

153. It is my opinion that Sekaran in view of Nam renders obvious claims 1-35. As set forth in Ground 1, Sekaran discloses or renders obvious the limitations of claims 1-35, including the centralized management system, memory, processing circuitry, login identification information, scheduled-meeting information, participant roster storage, transmission of name and meeting information, and conference-state update functionality, including the ability to modify the display name for a meeting participant. EX1004, ¶¶[0047]-[0051], [0058]-[0059], [0086], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182].

154. Under Ground 2, Sekaran in view of Nam renders obvious claims 1-35 because Nam provides additional support, namely registration-based first name information, client-side display of contact or destination lists, participant-list

displays with names and user IDs, and a user interface for changing a displayed name. EX1005, ¶¶[0117]-[0142], [0167]-[0168], [0203]-[0205].

155. Nam discloses the client-side video-communication interface features that a POSITA would have implemented with Sekaran's conference clients. EX1005, ¶¶[0117]-[0142], [0144]-[0148], [0167]-[0168], [0203]-[0205], FIGS. 5, 7, 8, 14, 24, 33. Nam discloses user interfaces that allow login using an ID and password, storage of registered user information, display of registered user IDs, display of contact-address lists, display of participant names and user IDs during a conference call, and a user-selectable "name change" option for changing a displayed name. EX1005, ¶¶[0117]-[0142], [0167]-[0168], [0203]-[0205], FIGS. 5, 7, 8, 24, 33. In my opinion, this disclosure shows that video-communication terminals displayed and updated user-identifying name information in the manner recited by the '278 Patent.

156. In this Ground, Sekaran supplies the scheduled-meeting architecture and infrastructure for transmitting, modifying, and storing display names, while Nam provides client-side user interface features for registration, contact/destination lists, participant displays, and displayed-name changes.

1. Motivation to Combine

157. A POSITA would have been motivated to incorporate Nam's client-side user interface features into Sekaran's scheduled-meeting architecture for several

independently sufficient reasons. I am not aware of any secondary considerations that would overcome the obviousness of the Ground.

158. **Same Field of Endeavor.** Sekaran and Nam are both directed to networked video or multimedia communication among remote participants. EX1004, ¶¶[0007]-[0008]; EX1005, ¶¶[0010]-[0015], [0049]-[0051]. Sekaran discloses a scalable multimedia conferencing architecture that accommodates data, audio/video, and messaging media components for client participation in a conference session. EX1004, ¶¶[0007]-[0008], [0042]. Nam discloses a video communication system in which display devices transmit and receive video and audio data over networks so that parties can communicate while seeing video transmitted from the other party. EX1005, ¶¶[0049]-[0051]. Both references therefore address the same class of systems: networked terminals participating in real-time video or multimedia communication sessions. EX1004, ¶¶[0007]-[0008]; EX1005, ¶¶[0049]-[0051]. It is my opinion that a POSITA designing a method for multimedia communication among remote participants would have naturally looked to both references.

159. **Sekaran's Need for Client-Side User Interfaces.** A POSITA implementing Sekaran's conferencing clients would, as discussed with respect to the first Ground, have understood that Sekaran disclosed the claimed user interface and display limitations, or would have found these limitations obvious in light of

Sekaran. To the extent it is determined otherwise, however, a POSITA would have looked to Nam for concrete user-interfaces for displaying and updating user names and participant information.

160. Sekaran provides a single integrated roster from the main “focus,” conference-state notifications to clients, and client commands for changing conference state, including display names. EX1004, ¶¶[0007]-[0010], [0042], [0047]-[0051], [0058]-[0059], [0075]-[0077], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]. Sekaran, and its figures, however, focus on system architecture, data structures, and signaling flows rather than providing detailed illustrations of graphical screens a client would use to present the roster and name information to users, and controls that would be used to permit modification of display names. EX1004, FIGS. 1-24. A POSITA would have understood that Sekaran left the details of the Graphical User Interface to the implementor and her preferences. Nam supplies an example of what those GUI details would be by disclosing login screens, registered user list and contact-address list interfaces, displayed current-user information, participant views, and a “name change” interface. EX1005, ¶¶[0117]-[0142], [0146]-[0148], [0167]-[0168], [0203]-[0205]; FIGS. 5, 7, 8, 24, 33.

161. Sekaran discloses that the client includes a user interface that accesses conference control and management components, and that the management

component accesses a roster component providing a session invitation roster and/or third-party conference roster. EX1004, ¶[0090], FIG. 7. A POSITA would have understood from this disclosure that Sekaran's clients would have a client-side user interface. Nam supplies screens and user interactions for implementing that user interface, including contact lists, current-user information, participant views, and name change. EX1005, ¶¶[0125]-[0128], [0146]-[0148], [0167]-[0168], [0203]-[0205].

162. **Predictable Use of Known Interface Features.** The combination would have been a predictable use of Nam's known video-communication user interface features in Sekaran's known centralized conferencing system. Sekaran already generates and distributes the conference roster and conference-state information and provides command protocols that permit modification of participant display names. EX1004, ¶¶[0051], [0102]-[0103], [0117]-[0122], [0179]-[0182]. Nam discloses ways to display and edit the user names, user IDs, and participant information that make such a roster useful to users. EX1005, ¶¶[0125]-[0128], [0146]-[0148], [0167]-[0168], [0203]-[0205]. Applying Nam's user interface features to Sekaran's client interface therefore would have yielded the predictable result of allowing Sekaran's clients to show and update participant-identifying information in a user-friendly video-communication interface.

163. No Change to Sekaran’s Core Architecture. Incorporating Nam’s name-display and name-change user interface into Sekaran would not alter Sekaran’s conferencing architecture, “focus,” scheduling service, roster service, or state-notification protocol. EX1004, ¶¶[0051], [0058]-[0059], [0102]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]. The modification would add user interfaces for presenting and editing Sekaran’s existing user-name/display-name data. EX1004, ¶¶[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0167]-[0168], [0203]-[0205]. Because Sekaran already processes C3P/CCCP commands from clients and updates master conference state, accepting a changed display name through a Nam-style name-change user interface would require only routine software implementation. EX1004, ¶¶[0158]-[0159], [0182]; EX1005, ¶¶[0167]-[0168].

164. Direct Response to the Examiner’s Allowance Rationale. The Examiner allowed the ’278 claims because of Applicant’s listed arguments “make evident the reason for allowance”: the art of record allegedly failed to teach receiving different second name information that updates first name information for display in a meeting and storing that second name information in association with meeting information. EX1002, 211-214, 235-237, 266-68. Sekaran discloses the scheduled-meeting architecture, conference-state storage, and state-notification framework. EX1004, ¶¶[0051], [0058]-[0059], [0158]-[0159], [0179]-[0182]. Nam

discloses the user-facing name-change function for changing a displayed name in a video-communication interface. EX1005, ¶¶[0167]-[0168]. A POSITA would have understood that combining those teachings provides the claimed receipt and storage of updated second name information in association with the scheduled meeting information. EX1004, ¶¶[0059], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0167]-[0168].

2. **[1.d]/[16.c.1]/[31.e] “receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information”**

165. It is my opinion that the combination of Sekaran and Nam discloses “receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information.”

166. Sekaran discloses receiving client commands that modify user/conference state. EX1004, ¶¶[0101]-[0103], [0158]-[0159], [0181]-[0182]; FIGS. 20, 22. Sekaran’s C3P/CCCP command set includes a “modifyUser” command. EX1004, FIG. 22. Sekaran further discloses that using CCCP commands, a client can affect its own state, the state of other participants, and the state of the focus/MCUs, and the CCCP server updates its master conference state to reflect the

changes. EX1004, ¶¶[0179]-[0182]. Because Sekaran’s user state includes display-text and Sekaran identifies display name as a client attribute, Sekaran at minimum suggests receiving updated display-name information from a client as updated user-state information. EX1004, ¶¶[0103], [0117]-[0122], [0179]-[0182].

167. Nam discloses that a user can select a “name change” item to change the name of “user 1” displayed on the screen. EX1005, ¶¶[0167]-[0168]; FIG. 24. Nam further discloses that participant information displayed during a conference call may include an icon, name, user ID, login state, and host designation. EX1005, ¶¶[0203]-[0205]; FIG. 33. A POSITA would have found it obvious to implement Nam’s displayed-name change function in Sekaran so that a Sekaran client could submit changed display-name information to the focus, which would update the user’s display-text in the master conference state and distribute the changed display name to subscribed clients. EX1004, ¶¶[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0167]-[0168], [0203]-[0205].

FIG. 24

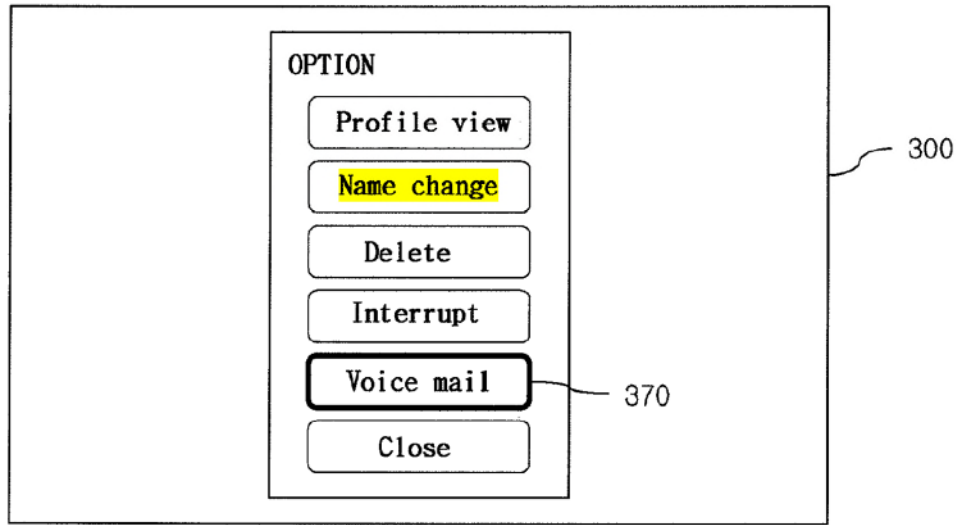
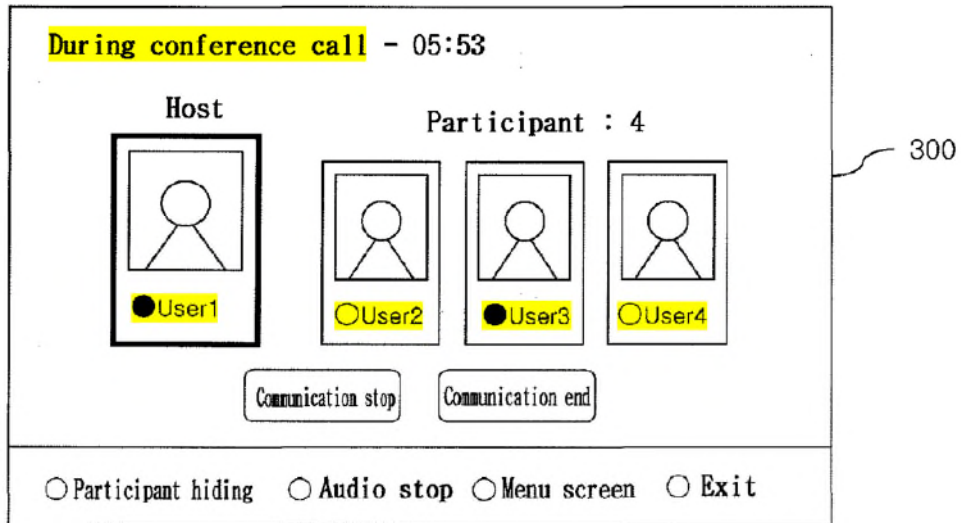


FIG. 33



168. In the combination, Nam's user interface with its "Name change" option would be integrated with Sekaran's system so as to issue the C3P "modifyUser" command to change the display name, and to trigger notifications to subscribed terminals informing them of the change in conference state.

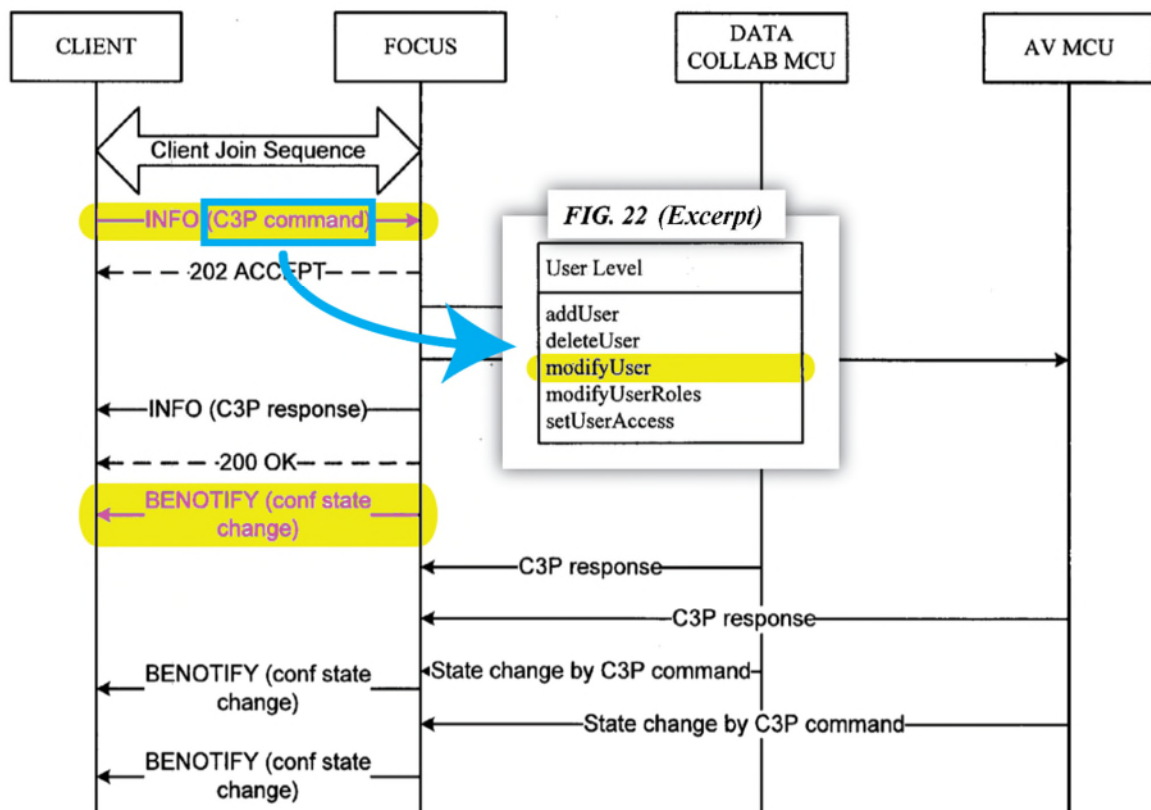


FIG. 21

169. Therefore, in my opinion, the combination of Sekaran and Nam discloses “receive, from the transmission terminal, second name information which is different from the first name information and is updated name information of the first name information, the second name information being a name displayed in a meeting held based on the meeting information.”

3. Claims 2/17: the first or second name information is based on a transmission terminal or user

170. It is my opinion that the combination of Sekaran and Nam discloses “the first or second name information is based on a transmission terminal or user.”

171. Sekaran discloses that user display-text is associated with a user URI and corresponding endpoints. EX1004, ¶¶[0117]-[0122]. Nam confirms the same concept by disclosing user names, user IDs, contact-address buttons, and currently logged-in user information displayed on the terminal screen. EX1005, ¶¶[0120]-[0128], [0146]-[0148]. Both the first and second name information in the combined system is therefore information based on a user or transmission terminal. EX1004, ¶¶[0117]-[0122]; EX1005, ¶¶[0120]-[0128], [0146]-[0148].

172. Therefore, in my opinion, the combination of Sekaran and Nam discloses “the first or second name information is based on a transmission terminal or user.”

4. Claims 3/18: first name information based on a request for registering name information from the transmission terminal

173. It is my opinion that the combination of Sekaran and Nam discloses “first name information based on a request for registering name information from the transmission terminal.”

174. Nam discloses this limitation. EX1005, ¶¶[0140]-[0142]. Nam teaches that when a user selects an account-addition button, the user may input a user name, ID, and password to be additionally registered. EX1005, ¶[0140]. Nam further teaches that the added user ID information is stored in the storage unit of the display device and in the video communication service’s server. EX1005, ¶[0142]. A POSITA would have found it obvious to use Nam’s registration-based name

information as the first name information in Sekaran's client/"focus" architecture because Sekaran already authenticates users based on login credentials and maintains user display-text in conference state. EX1004, ¶¶[0086], [0103], [0117]-[0122]; EX1005, ¶¶[0140]-[0142].

175. Nam's registration mechanism stores the added user ID information both in the terminal and in the video communication service server, making it directly analogous to the claimed first name information stored in memory based on a registration request from the terminal. EX1005, ¶¶[0140]-[0142].

176. Therefore, in my opinion, the combination of Sekaran and Nam discloses "first name information based on a request for registering name information from the transmission terminal."

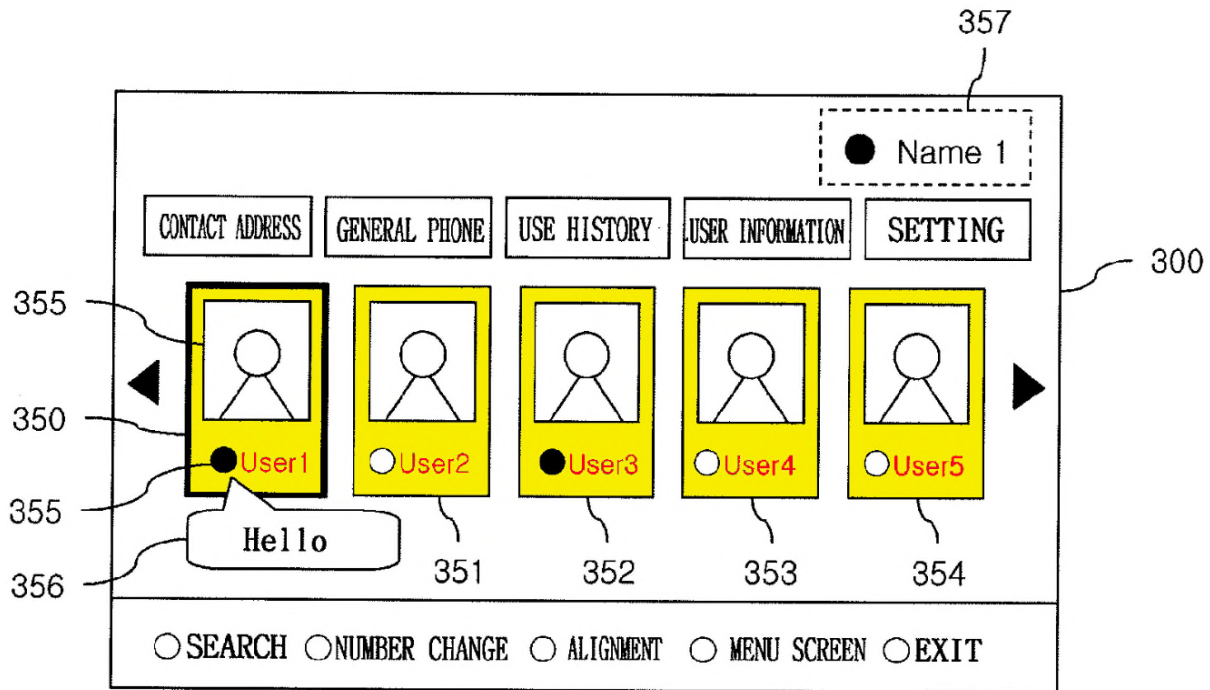
5. Claims 4/19: transmitting first name information to display a destination list

177. It is my opinion that the combination of Sekaran and Nam discloses "transmitting first name information to display a destination list."

178. Sekaran discloses transmitting roster information, including user display-text, to conference clients through conference-state notifications. EX1004, ¶¶[0051], [0102]-[0103], [0117]-[0122], [0179]-[0180]. Nam confirms that the transmitted first name information is displayed in a destination/contact list because Nam displays registered contact addresses corresponding to "user 1," "user 2," "user 3," "user 4," and "user 5" as selectable items. EX1005, ¶¶[0125]-[0128]; FIG. 8.

Nam also discloses that each contact address may include user information such as a user ID and login state. EX1005, ¶¶[0128]-[0131]. Nam's contact-address screen is a destination list because it lists selectable communication destinations, displays each destination by name or user-identifying information, and allows the user to choose the party with whom to communicate. EX1005, ¶¶[0125]-[0128], [0136], [0143]-[0144]. The reason to combine was to enable users to select communication destinations from the roster information Sekaran already provided; the mechanism was Nam's contact-address list populated with Sekaran's roster/display-text state; and the predictable result was a displayed destination list including the first name information. EX1004, ¶¶[0051], [0102]-[0103], [0117]-[0122], [0179]-[0180]; EX1005, ¶¶[0125]-[0128], [0136].

FIG. 8



179. Therefore, in my opinion, the combination of Sekaran and Nam discloses “transmitting first name information to display a destination list.”

6. Claims 5/20: transmitting second name information associated with meeting information to display participant information

180. It is my opinion that the combination of Sekaran and Nam discloses “transmitting second name information associated with meeting information to display participant information.”

181. Sekaran discloses transmitting altered conference state to clients when a command changes conference state. EX1004, ¶¶[0158]-[0159], [0179]-[0182]. Nam discloses changing a displayed name and displaying participant

information during a conference call. EX1005, ¶¶[0167]-[0168], [0203]-[0205]; FIGS. 24, 33. In the combination, after Nam's name-change function updates Sekaran's display-text for a scheduled conference, Sekaran's "focus" transmits that updated display-text as second name information associated with the meeting information. EX1004, ¶¶[0059], [0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0167]-[0168], [0203]-[0205].

182. Therefore, in my opinion, the combination of Sekaran and Nam discloses "transmitting second name information associated with meeting information to display participant information."

7. Claims 6/21: the second name information is associated with another transmission terminal participating in the meeting

183. It is my opinion that the combination of Sekaran and Nam discloses "the second name information is associated with another transmission terminal participating in the meeting."

184. Sekaran's conference-state model associates each user with one or more endpoints participating in the conference. EX1004, ¶¶[0117]-[0122]. Nam discloses that a participant-view screen displays information on other parties participating in the conference call and that such information may include icon, name, user ID, login state, and host designation. EX1005, ¶¶[0203]-[0205]; FIG. 33. Nam also discloses that a user can invoke the "name change" function with respect

to other parties on the participant view in order to change the name as displayed on the user's screen. EX1005, ¶¶[0167]-[0168].

185. In the combined system, Nam's user interface for changing the name is used to provide the updated name information to Sekaran's C3P command mechanism and conference state hierarchy, where each user is associated with a client ("terminal"), and where C3P commands may affect clients other than the client that issues the command. EX1004, FIG. 16, ¶¶[0115], [0182].

186. The updated displayed name in the combined system is therefore name information associated with another transmission terminal participating in the meeting. EX1004, ¶¶[0117]-[0122]; EX1005, ¶¶[0203]-[0205].

187. Therefore, in my opinion, the combination of Sekaran and Nam discloses "the second name information is associated with another transmission terminal participating in the meeting."

8. Claims 12/27/32: first name in destination list and second name in meeting-related information displayed on the terminal

188. It is my opinion that the combination of Sekaran and Nam discloses "first name in destination list and second name in meeting-related information displayed on the terminal."

189. As explained with respect to Ground 1, Sekaran supplies the scheduled-meeting information and conference-state framework for these claims. EX1004, ¶¶[0048], [0051], [0117]-[0122], [0179]-[0180]. Nam supplies a destination/contact

list user interface because it displays registered contact-address buttons corresponding to users such as “user 1,” “user 2,” “user 3,” “user 4,” and “user 5.” EX1005, ¶¶[0125]-[0128]; FIG. 8. Nam supplies an interface for the updated-name feature because it discloses a “name change” item that changes the name displayed on the screen. EX1005, ¶¶[0167]-[0168]; FIG. 24. A POSITA would have found it obvious to include the first name information in Nam’s displayed destination/contact list and to include the updated second name information in Sekaran’s scheduled-meeting conference-state information displayed through Nam’s terminal interface. EX1004, ¶¶[0048], [0117]-[0122], [0179]-[0180]; EX1005, ¶¶[0125]-[0128], [0167]-[0168].

190. Further, Nam displays registered names/contact names and user information in list form, and Sekaran displays or transmits conference-state information for a scheduled meeting including user display-text and meeting description information. EX1005, ¶¶[0125]-[0128], [0146]-[0148], [0167]-[0168], [0203]-[0205]; EX1004, ¶¶[0048], [0117]-[0122], [0179]-[0180]. A POSITA would have found it routine to display both the default contact/destination name and the meeting-specific changed name when editing or viewing scheduled-meeting participant information, because doing so gives users the same type of user-identifying context that Nam’s contact and participant views already provide. EX1005, ¶¶[0125]-[0128], [0146]-[0148], [0203]-[0205].

191. Therefore, in my opinion, the combination of Sekaran and Nam discloses “first name in destination list and second name in meeting-related information displayed on the terminal.”

9. Claims 13/28/33: meeting information includes identification information as one or more participants of the scheduled meeting

192. It is my opinion that the combination of Sekaran and Nam discloses “meeting information includes identification information as one or more participants of the scheduled meeting.”

193. Sekaran discloses meeting information that includes participant identification information because the client passes participant information to the focus factory when creating a conference. EX1004, ¶¶[0048], [0067], [0099]-[0100]. Sekaran’s conference-state data model includes users keyed by user URI and endpoints keyed by endpoint URI. EX1004, ¶¶[0117]-[0122]. Nam confirms the same participant-identification concept by disclosing that participant information displayed during a conference call includes an icon, a name, a user ID, and login state. EX1005, ¶¶[0203]-[0205]; FIG. 33. The combination therefore discloses or renders obvious meeting information including identification information for one or more participants of the scheduled meeting. EX1004, ¶¶[0048], [0067], [0099]-[0100], [0117]-[0122]; EX1005, ¶¶[0203]-[0205].

194. Therefore, in my opinion, the combination of Sekaran and Nam discloses “meeting information includes identification information as one or more participants of the scheduled meeting.”

10. Claims 14/29/34: receiving second name information before the scheduled meeting starts

195. It is my opinion that the combination of Sekaran and Nam discloses “receiving second name information before the scheduled meeting starts.”

196. Sekaran discloses scheduled conference creation and separates conference creation from conference joining. EX1004, ¶¶[0048], [0051], [0059], [0147]-[0149]. Sekaran further discloses storing conference state and conference information for future use. EX1004, ¶[0059]. Nam discloses that user names, IDs, and passwords can be entered and registered before communication, and that name information can be stored in the display device and server. EX1005, ¶¶[0140]-[0142]. Nam also discloses a name-change control for changing the displayed name. EX1005, ¶¶[0167]-[0168].

197. Nam discloses that the current user of a terminal can select a user “as the other party that he/she wants to have the vide [sic] communication with (e.g., video talk/conference/chat).” EX1005, ¶[0144], FIG. 14. Nam also discloses a menu providing “name change” as an option from the same screen. EX1005, ¶¶[0167]-[0168], FIG. 24. In my opinion, this shows that the second name information can be provided prior to a meeting being initiated.

FIG. 14

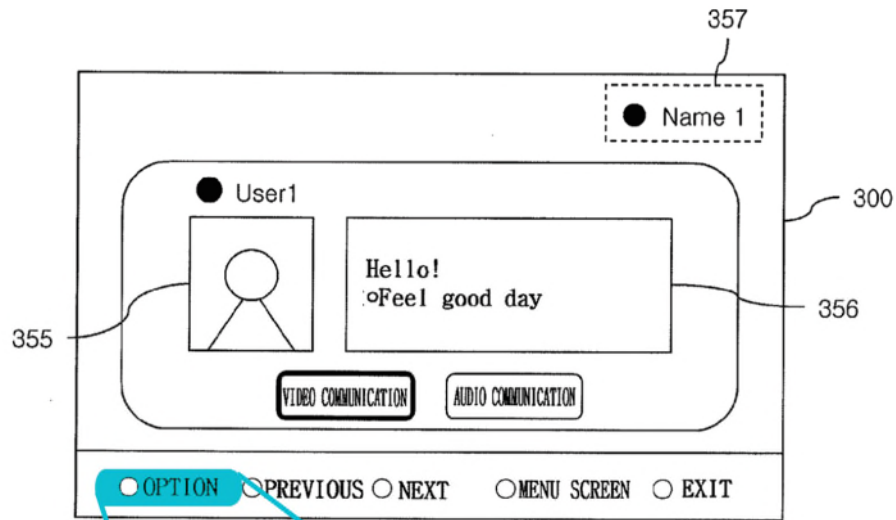
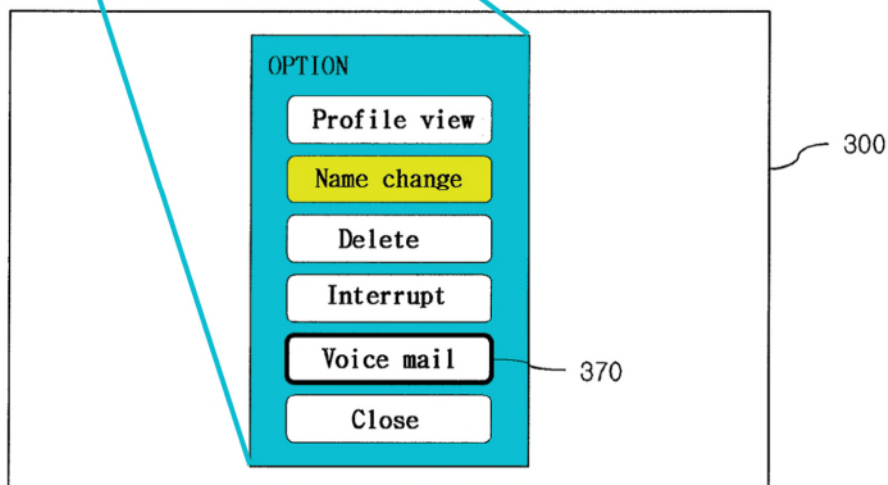


FIG. 24



198. A POSITA would have been motivated to permit Nam's displayed-name change to be submitted to Sekaran before a scheduled meeting starts so that the meeting roster displays the desired name when the meeting begins, using the same user interface as Nam provides for allowing name changes prior to an ad hoc

meeting. EX1004, ¶¶[0048], [0051], [0059], [0147]-[0149]; EX1005, ¶¶[0140]-[0142], [0167]-[0168]. The concrete reason was accurate roster presentation at the scheduled start time; the mechanism was Sekaran's stored conference state combined with Nam's pre-communication registration/name entry and name-change interface; and the predictable result was receipt and storage of updated name information before the scheduled meeting begins. EX1004, ¶¶[0059], [0157]-[0159]; EX1005, ¶¶[0140]-[0142], [0167]-[0168]. That modification would have applied Nam's known name-editing user interface to Sekaran's already-stored scheduled conference state. EX1004, ¶¶[0059], [0157]-[0159]; EX1005, ¶¶[0140]-[0142], [0167]-[0168].

199. Therefore, in my opinion, the combination of Sekaran and Nam discloses "receiving second name information before the scheduled meeting starts."

11. Claims 15/30/35: updated name information displayed instead of first name information

200. It is my opinion that the combination of Sekaran and Nam discloses "updated name information displayed instead of first name information."

201. Nam discloses changing the name displayed on the screen, which corresponds to displaying the updated name information instead of the prior first name information. EX1005, ¶¶[0167]-[0168]; FIG. 24. Sekaran discloses that when a command changes conference state, the "focus" informs the client by sending a NOTIFY message containing the altered section of the conference state. EX1004,

¶[0159]. Sekaran further discloses that the CCCP server updates its master conference state to reflect the requested changes. EX1004, ¶[0182]. In the combined system, the updated display name replaces the prior display name in the current conference state and is displayed as the user's current meeting name. EX1004, ¶¶[0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0167]-[0168].

202. Nam's 'name change' interface is used to change the name displayed on the screen, which means the changed name is displayed in place of the prior displayed name rather than merely appended as an additional label. EX1005, ¶¶[0167]-[0168]. This is consistent with Sekaran's altered-state notifications, which transmit the altered section of current conference state after a state-changing command. EX1004, ¶[0159].

203. Therefore, in my opinion, the combination of Sekaran and Nam discloses "updated name information displayed instead of first name information."

12. Conclusion

204. In sum, it is my opinion that Sekaran in view of Nam renders obvious independent claims 1, 16, and 31 because Sekaran discloses the centralized scheduled-conference management system, memories, authentication, first/display-name information, scheduled-meeting information, conference-state transmission, client control commands, and storage of updated conference state, while Nam discloses the conventional video-communication user interface for displaying

registered user names, user IDs, contact lists, participant information, and changed displayed names. EX1004, ¶¶[0048]-[0059], [0086], [0101]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0117]-[0142], [0146]-[0148], [0167]-[0168], [0203]-[0205]. Sekaran in view of Nam also renders obvious dependent claims 2-15, 17-30, and 32-35 because Nam supplies additional support for registration-based first name information, destination/contact-list display, participant-list display with names and user IDs, displayed name changes, and replacement display of an updated name, while Sekaran supplies the scheduled-meeting, conference-state storage, conference-selection, fallback, and notification architecture. EX1004, ¶¶[0048], [0051], [0059], [0102]-[0103], [0117]-[0122], [0147]-[0149], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0120]-[0128], [0140]-[0142], [0146]-[0148], [0167]-[0168], [0203]-[0205]. Claims 1-35 therefore are unpatentable under 35 U.S.C. §103 over Sekaran in view of Nam. EX1004, ¶¶[0048]-[0059], [0086], [0101]-[0103], [0117]-[0122], [0158]-[0159], [0179]-[0182]; EX1005, ¶¶[0117]-[0142], [0146]-[0148], [0167]-[0168], [0203]-[0205].

X. CONCLUSION

205. It is my opinion that the Challenged Claims are rendered obvious for the reasons I have set forth.

* * *

206. I declare under penalty of perjury that the foregoing is true and correct.

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

Executed on: September 2, 2026


Dr. Kevin C. Almeroth

Appendix A

Kevin C. Almeroth

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<http://www.cs.ucsb.edu/~almeroth> (WWW URL)

Education

- Ph.D.** June 1997 *Georgia Institute of Technology* Computer Science
Dissertation Title: Networking and System Support for the Efficient,
Scalable Delivery of Services in Interactive Multimedia Systems
Minor: Telecommunications Public Policy
- M.S.** June 1994 *Georgia Institute of Technology* Computer Science
Specialization: Networking and Systems
- B.S.** June 1992 *Georgia Institute of Technology* Information and Computer Science
(high honors) *Minors:* Economics, Technical Communication, American Literature

Employment History

Professor Emeritus	Department of Computer Science University of California Santa Barbara, CA	Nov 2020 -- present
Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 2005 -- Oct 2020
Associate Dean	College of Engineering University of California Santa Barbara, CA	Mar 2007 -- Aug 2009
Vice Chair	Department of Computer Science University of California Santa Barbara, CA	Jul 2000 -- Nov 2005

Associate Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 2001 -- Jun 2005
Assistant Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 1997 -- Jun 2001
Graduate Researcher	Broadband Telecommunications Center Georgia Center for Adv Telecom Tech Atlanta, GA	Sep 1996--Jun 1997
Graduate Intern	IBM T.J. Watson Research Labs Hawthorne, NY	Jun 1995--Sep 1995
Support Specialist	Office of Information Technology Georgia Institute of Technology Atlanta, GA	Sep 1995--Jun 1997
Research Assistant	College of Computing Georgia Institute of Technology Atlanta, GA	Jan 1994--Mar 1994
Graduate Intern	Hitachi Telecommunications Norcross, GA	Jun 1992--Sep 1992
Undergraduate Intern	IBM Research Triangle Park, NC	Jun 1989--Sep 1989 Jun 1990--Sep 1990 Mar 1991--Sep 1991

Industry Technical Advising

Board of Directors	The New Media Studio Santa Barbara, CA	Nov 2006 -- present
Co-Founder & Chairman of the Board	Santa Barbara Labs, LLC Santa Barbara, CA	Sep 2007 -- Dec 2009
Board of Advisors	Techknowledge Point Santa Barbara, CA	May 2001 -- Dec 2007
Technical Advisory Board	Occam Networks, Inc. Santa Barbara, CA	May 2000 -- Dec 2010
Board of Advisors	Airplay Inc. San Francisco, CA	Jun 2005 -- Aug 2009
Consultant	Lockheed Martin Corporation San Jose, CA	Nov 1999 -- Jun 2009

Board of Advisors	Santa Barbara Technology Group Santa Barbara, CA	Sep 2000 -- Dec 2004
Board of Directors	Virtual Bandwidth, Inc. Santa Barbara, CA	Nov 2000 -- Jun 2001
Board of Advisors & Affiliated Scientist	Digital Fountain San Francisco, CA	Jan 2000 -- Dec 2001
Senior Technologist	IP Multicast Initiative, Stardust Forums Campbell, CA	Jun 1998 -- Dec 2000

I. Teaching

A. Courses Taught

CS 176A	Intro to Computer Communication Networks	Fall 1997, Fall 1998, Fall 2002, Fall 2003, Fall 2004, Spring 2005, Spring 2006, Spring 2007, Spring 2008, Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Spring 2017, Spring 2018, Spring 2020, Fall 2020
CS 176B	Network Computing	Winter 2000, Winter 2001, Winter 2002, Winter 2012, Winter 2014, Winter 2015, Winter 2018, Winter 2019, Winter 2020
MAT 201B	Media Networks and Services	Fall 1999, Fall 2000, Fall 2001, Fall 2003
CS 276	Distributed Computing and Computer Networks	Winter 1999, Spring 2000, Fall 2002, Fall 2005, Fall 2018
CS 290I	Networking for Multimedia Systems	Winter 1998, Spring 1999, Fall 2004, Winter 2010
CS 595N	Technology and Society	Winter 2005, Fall 2005, Spring 2006, Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009
CS 595N	Economic Systems Seminar	Winter 2004, Spring 2004, Winter 2005, Spring 2005
CS 595N	Networking Seminar	Winter 1999, Fall 1999, Winter 2003, Winter 2019
CS 595N	Wireless Networking & Multimedia Seminar	Fall 2000
CS 595I	Systems Design and Implementation Seminar	Fall 1999, Fall 2000, Winter 2001, Spring 2001, Winter 2002, Spring 2002

B. Other Teaching Experience

- *The Evolution of Advanced Networking Services: From the ARPAnet to Internet2*, Instructor, Summer 2001. Short course taught at Escuela de Ciencias Informatica (ECI) sponsored by the Universidad de Buenos Aires.

- *Johns Hopkins Center for Talented Youth*, Instructor, Summer 1994. CTY is a program to teach gifted high school students the fundamentals of computer science.
- *Georgia Institute of Technology*, Graduate Teaching Assistant, Sep 1994--Sep 1996. Worked as a TA for 12 quarters teaching 7 different courses (4 undergraduate and 3 graduate).

C. Ph.D. Students Advised [14 graduated]

14. Daniel Havey
 Research Area: *Throughput and Delay on the Packet Switched Internet*
 Date Graduated: Winter 2015
 First Position: Microsoft
13. Lara Deek (co-advised with E. Belding)
 Research Area: *Resource-Efficient Wireless Systems for Emerging Wireless Networks*
 Date Graduated: Summer 2014
 First Position: Post Doc, UIUC
12. Mike Wittie
 Research Area: *Towards Sustained Scalability of Communication Networks*
 Date Graduated: Summer 2011
 First Position: Assistant Professor, Montana State University
11. Allan Knight
 Research Area: *Supporting Integration of Educational Technologies and Research of Their Effects on Learning*
 Date Graduated: Summer 2009
 First Position: Research Scientist, Citrix Online
10. Hangjin Zhang
 Research Area: *Towards Blended Learning: Educational Technology to Improve and Assess Teaching and Learning*
 Date Graduated: Spring 2009
 First Position: Microsoft
9. Gayatri Swamynathan
 Dissertation Title: *Towards Reliable Reputations for Distributed Applications*
 Date Graduated: Spring 2008
 First Position: Zynga
8. Amit Jardosh (co-advised with E. Belding)
 Dissertation Title: *Adaptive Large-Scale Wireless Networks: Measurements, Protocol Designs, and Simulation Studies*
 Date Graduated: Fall 2007
 First Position: Yahoo!
7. Khaled Harras
 Dissertation Title: *Protocol and Architectural Challenges in Delay and Disruption Tolerant Networks*
 Date Graduated: Summer 2007
 First Position: Assistant Professor, Carnegie Mellon University
6. Krishna Ramachandran (co-advised with E. Belding)
 Dissertation Title: *Design, Deployment, and Management of High-Capacity Wireless Mesh Networks*
 Date Graduated: Winter 2006
 First Position: Research Scientist, Citrix Online

5. Robert Chalmers
Dissertation Title: *Improving Device Mobility with Intelligence at the Network Edge*
Date Graduated: Summer 2004
First Position: President and CEO, Limbo.net
4. Prashant Rajvaidya
Dissertation Title: *Achieving Robust and Secure Deployment of Multicast*
Date Graduated: Spring 2004
First Position: President and CTO, Mosaic Networking
3. Sami Rollins
Dissertation Title: *Overcoming Resource Constraints to Enable Content Exchange Applications in Next-Generation Environments*
Date Graduated: Spring 2003
First Position: Assistant Professor, Mount Holyoke College
2. Srinivasan Jagannathan
Dissertation Title: *Multicast Tree-Based Congestion Control and Topology Management*
Date Graduated: Spring 2003
First Position: Consultant, Kelly & Associates
1. Kamil Sarac
Dissertation Title: *Supporting a Robust Multicast Service in the Global Infrastructure*
Date Graduated: Spring 2002
First Position: Assistant Professor, UT-Dallas

D. M.S. Students Advised (Thesis/Project Option) [19 graduated]

19. Neer Shey
Research Area: *Analyzing Content Distribution Through Opportunistic Contact for Smart Cellular Phones*
Date Graduated: Spring 2010
18. Camilla Fiorese
Research Area: *Analysis of a Pure Rate-Based Congestion Control Algorithm*
Date Graduated: Summer 2009
17. Brian Weiner
Research Area: *Multi-Socket TCP: A Simple Approach to Improve Performance of Real-Time Applications over TCP*
Date Graduated: Fall 2007
16. Avijit Sen Mazumder
Research Area: *Facilitating Robust Multicast Group Management*
Date Graduated: Fall 2005
15. Rishi Matthew
Thesis Title: *Providing Seamless Access to Multimedia Content on Heterogeneous Platforms*
Date Graduated: Summer 2004
14. Camden Ho
Research Area: *Tools and Techniques for Wireless Network Management*
Date Graduated: Spring 2004
13. Amit Jardosh (co-advised with E. Belding)
Research Area: *Realistic Environment Models for Mobile Network Evaluation*
Date Graduated: Spring 2004
12. Nitin Solanki
Research Area: *SongWand: A Wireless Barcode Scanner Using Bluetooth Technology*

- Date Graduated: Winter 2004
11. Vrishali Wagle (co-advised with E. Belding)
 Research Area: *An Ontology-Based Service Discovery Mechanism*
 Date Graduated: Winter 2004
 10. Uday Mohan
 Thesis Title: *Scalable Service Discovery in Mobile Ad hoc Networks*
 Date Graduated: Spring 2003
 9. Krishna Ramachandran
 Thesis Title: *Ubiquitous Multicast*
 Date Graduated: Spring 2003
 8. John Slonaker
 Thesis Title: *Inductive Loop Signature Acquisition Techniques*
 Date Graduated: Spring 2002
 7. Mohammad Battah
 Thesis Title: *Dedicated Short-Range Communications Intelligent Transportation Systems Protocol (DSRC-ITS)*
 Date Graduated: Spring 2002
 6. Kevin Vogel
 Thesis Title: *Integrating E-Commerce Applications into Existing Business Infrastructures*
 Date Graduated: Spring 2001
 5. Sami Rollins
 Thesis Title: *Audio Xml: Aural Interaction with XML Documents*
 Date Graduated: Winter 2000
 4. Andy Davis
 Thesis Title: *Stream Scheduling for Data Servers in a Scalable Interactive TV System*
 Date Graduated: Spring 1999
 3. David Makofske
 Thesis Title: *MHealth: A Real-Time Graphical Multicast Monitoring Tool*
 Date Graduated: Winter 1999
 2. Prashant Rajvaidya
 Thesis Title: *MANTRA: Router-Based Monitoring and Analysis of Multicast Traffic*
 Date Graduated: Winter 1999
 1. Alex DeCastro (co-advised with Yuan-Fang Wang)
 Thesis Title: *Web-Based Collaborative 3D Modeling*
 Date Graduated: Winter 1998

E. Teaching Awards

2006-2007 UCSB Academic Senate Distinguished Teaching Award
 2004-2005 Computer Science Outstanding Faculty Member
 2000-2001 UCSB Spotlight on Excellence Award
 1999-2000 Computer Science Outstanding Faculty Member (co-recipient)
 1998-1999 Computer Science Outstanding Faculty Member (co-recipient)
 1997-1998 Computer Science Outstanding Faculty Member

II. Research

A. Journal Papers, Magazine Articles, Books, and Book Chapters

62. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[A Practical Framework for 802.11 MIMO Rate Adaptation](#)," *Computer Networks*, vol. 83, num. 6, pp. 332-348, June 2015.
61. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[Intelligent Channel Bonding in 802.11n WLANs](#)," *IEEE Transactions on Mobile Computing*, vol. 13, num. 6, pp. 1242-1255, June 2014.
60. H. Zhang and K. Almeroth, "[Alternatives for Monitoring and Limiting Network Access to Students in Network-Connected Classrooms](#)," *Journal of Interactive Learning Research (JILR)*, vol. 24, num. 3, pp. 237-265, July 2013.
59. M. Tavakolifard and K. Almeroth, "[A Taxonomy to Express Open Challenges in Trust and Reputation Systems](#)," *Journal of Communications*, vol. 7, num. 7, pp. 538-551, July 2012.
58. M. Tavakolifard and K. Almeroth, "[Social Computing: An Intersection of Recommender Systems, Trust/Reputation Systems, and Social Networks](#)," *IEEE Network*, vol. 26, num. 4, pp. 53-58, July/August 2012.
57. M. Tavakolifard, K. Almeroth, and P. Ozturk, "[Subjectivity Handling of Ratings for Trust and Reputation Systems: An Abductive Reasoning Approach](#)," *International Journal of Digital Content Technology and its Applications (JDCTA)*, vol. 5, num. 11, pp. 359-377, November 2011.
56. R. Raghavendra, P. Acharya, E. Belding and K. Almeroth, "[MeshMon: A Multi-Tiered Framework for Wireless Mesh Network Monitoring](#)," *Wireless Communications and Mobile Computing (WCMC) Journal*, vol. 11, num. 8, pp. 1182-1196, August 2011.
55. A. Knight and K. Almeroth, "[Automatic Plagiarism Detection with PAIRwise 2.0](#)," *Journal of Interactive Learning Research (JILR)*, vol. 22, num. 3, pp. 379-400, July 2011.
54. V. Kone, M. Zheleva, M. Wittie, B. Zhao, E. Belding, H. Zheng, and K. Almeroth, "[AirLab: Consistency, Fidelity and Privacy in Wireless Measurements](#)," *ACM Computer Communications Review*, vol. 41, num. 1, pp. 60-65, January 2011.
53. G. Swamynathan, K. Almeroth, and B. Zhao, "[The Design of a Reliable Reputation System](#)," *Electronic Commerce Research Journal*, vol. 10, num. 3-4, pp. 239-270, December 2010.
52. P. Acharya, A. Sharma, E. Belding, K. Almeroth and K. Papagiannaki, "[Rate Adaptation in Congested Wireless Networks through Real-Time Measurements](#)," *IEEE Transactions on Mobile Computing*, vol. 9, num. 11, pp. 1535-1550, November 2010.
51. R. Raghavendra, E. Belding, K. Papagiannaki, and K. Almeroth, "[Unwanted Link Layer Traffic in Large IEEE 802.11 Wireless Networks](#)," *IEEE Transactions on Mobile Computing*, vol. 9, num. 9, pp. 1212-1225, September 2010.
50. H. Zhang and K. Almeroth, "[Moodog: Tracking Student Activity in Online Course Management Systems](#)," *Journal of Interactive Learning Research (JILR)*, vol. 21, num. 3, pp. 407-429, July 2010.
49. R. Chertov and K. Almeroth, "[Qualitative Comparison of Link Shaping Techniques](#)," *International*

48. A. Knight and K. Almeroth, "[Fast Caption Alignment for Automatic Indexing of Audio](#)," International Journal of Multimedia Data Engineering and Management, vol. 1, num. 2, pp. 1-17, April-June 2010.
47. K. Harras and K. Almeroth, "[Scheduling Messengers in Disconnected Clustered Mobile Networks](#)," Ad Hoc & Sensor Wireless Networks, vol. 9, num. 3-4, pp. 275-304, March-April 2010.
46. A. Jardosh, K. Papagiannaki, E. Belding, K. Almeroth, G. Iannaccone, and B. Vinnakota, "[Green WLANs: On-Demand WLAN Infrastructures](#)," ACM Journal on Mobile Networks and Applications (MONET), vol. 14, num. 6, pp. 798-814, December 2009.
45. M. Wittie, K. Harras, K. Almeroth, and E. Belding, "[On the Implications of Routing Metric Staleness in Delay Tolerant Networks](#)," Computer Communications Special Issue on Delay and Disruption Tolerant Networking, vol. 32, num. 16, pp. 1699-1709, October 2009.
44. K. Harras, L. Deek, C. Holman, and K. Almeroth, "[DBS-IC: An Adaptive Data Bundling System for Intermittent Connectivity](#)," Computer Communications Special Issue on Delay and Disruption Tolerant Networking, vol. 32, num. 16, pp. 1687-1698, October 2009.
43. S. Karpinski, E. Belding, K. Almeroth, and J. Gilbert, "[Linear Representations of Network Traffic](#)," ACM Journal on Mobile Networks and Applications (MONET), vol. 14, num. 4, pp. 368-386, August 2009.
42. K. Harras and K. Almeroth, "[Controlled Flooding in Disconnected Sparse Mobile Networks](#)," Wireless Communications and Mobile Computing (WCMC) Journal, vol. 9, num. 1, pp. 21-33, January 2009.
41. R. Mayer, A. Stull, K. DeLeeuw, K. Almeroth, B. Bimber, D. Chun, M. Bulger, J. Campbell, A. Knight, and H. Zhang, "[Clickers in College Classrooms: Fostering Learning with Questioning Methods in Large Lecture Classes](#)," Contemporary Educational Psychology, vol. 34, num. 1, pp. 51-57, January 2009.
40. A. Knight, K. Almeroth, and B. Bimber, "[Design, Implementation and Deployment of PAIRwise](#)," Journal of Interactive Learning Research (JILR), vol. 19, num. 3, pp. 489-508, July 2008.
39. A. Garyfalos and K. Almeroth, "[Coupons: A Multilevel Incentive Scheme for Information Dissemination in Mobile Networks](#)," IEEE Transactions on Mobile Computing, vol. 7, num. 6, pp. 792-804, June 2008.
38. I. Sheriff, K. Ramachandran, E. Belding, and K. Almeroth, "[A Multi-Radio 802.11 Mesh Network Architecture](#)," ACM Journal on Mobile Networks and Applications (MONET), vol. 13, num. 1-2, pp. 132-146, April 2008.
37. M. Bulger, R. Mayer, K. Almeroth, and S. Blau, "[Measuring Learner Engagement in Computer-Equipped College Classrooms](#)," Journal of Educational Multimedia and Hypermedia, vol. 17, num. 2, pp. 129-143, April 2008.
36. G. Swamynathan, B. Zhao, and K. Almeroth, "[Exploring the Feasibility of Proactive Reputations](#)," Concurrency and Computation: Practice and Experience, vol. 20, num. 2, pp. 155-166, February 2008.
35. G. Swamynathan, B. Zhao, K. Almeroth, and H. Zheng, "[Globally Decoupled Reputations for Large Distributed Networks](#)," Advances in Multimedia, vol. 2007, pp. 1-14, 2007.

34. R. Mayer, A. Stull, J. Campbell, K. Almeroth, B. Bimber, D. Chun and A. Knight, "[Overestimation Bias in Self-reported SAT Scores](#)," *Educational Psychology Review*, vol. 19, num. 4, pp. 443-454, December 2007.
33. P. Namburi, K. Sarac and K. Almeroth, "[Practical Utilities for Monitoring Multicast Service Availability](#)," *Computer Communications Special Issue on Monitoring and Measurement of IP Networks*, vol. 29, num. 10, pp. 1675-1686, June 2006.
32. R. Chalmers, G. Krishnamurthi and K. Almeroth, "[Enabling Intelligent Handovers in Heterogeneous Wireless Networks](#)," *ACM Journal on Mobile Networks and Applications (MONET)*, vol. 11, num. 2, pp. 215-227, April 2006.
31. H. Lundgren, K. Ramachandran, E. Belding, K. Almeroth, M. Benny, A. Hewatt, A. Touma and A. Jardosh, "[Experience from the Design, Deployment and Usage of the UCSB MeshNet Testbed](#)," *IEEE Wireless Communications*, vol. 13, num. 2, pp. 18-29, April 2006.
30. R. Mayer, K. Almeroth, B. Bimber, D. Chun, A. Knight and A. Campbell, "[Technology Comes to College: Understanding the Cognitive Consequences of Infusing Technology in College Classrooms](#)," *Educational Technology*, vol. 46, num. 2, pp. 48-53, March-April 2006.
29. A. Garyfalos and K. Almeroth, "[A Flexible Overlay Architecture for Mobile IPv6 Multicast](#)," *Journal on Selected Areas in Communications (JSAC) Special Issue on Wireless Overlay Networks Based on Mobile IPv6*, vol. 23, num. 11, pp. 2194-2205, November 2005.
28. K. Sarac and K. Almeroth, "[Monitoring IP Multicast in the Internet: Recent Advances and Ongoing Challenges](#)," *IEEE Communications*, vol. 43, num. 10, pp. 85-91, October 2005.
27. K. Sarac and K. Almeroth, "[Application Layer Reachability Monitoring for IP Multicast](#)," *Computer Networks*, vol. 48, num. 2, pp. 195-213, June 2005.
26. A. Jardosh, E. Belding, K. Almeroth and S. Suri, "[Real-world Environment Models for Mobile Network Evaluation](#)," *Journal on Selected Areas in Communications Special Issue on Wireless Ad hoc Networks*, vol. 23, num. 3, pp. 622-632, March 2005.
25. S. Rollins and K. Almeroth, "[Evaluating Performance Tradeoffs in a One-to-Many Peer Content Distribution Architecture](#)," *Journal of Internet Technology*, vol. 5, num. 4, pp. 373-387, Fall 2004.
24. K. Sarac and K. Almeroth, "[Tracetree: A Scalable Mechanism to Discover Multicast Tree Topologies in the Network](#)," *IEEE/ACM Transactions on Networking*, vol. 12, num. 5, pp. 795-808, October 2004.
23. K. Sarac and K. Almeroth, "[A Distributed Approach for Monitoring Multicast Service Availability](#)," *Journal of Network and Systems Management*, vol. 12, num. 3, pp. 327-348, September 2004.
22. P. Rajvaidya, K. Ramachandran and K. Almeroth, "[Managing and Securing the Global Multicast Infrastructure](#)," *Journal of Network and Systems Management*, vol. 12, num. 3, pp. 297-326, September 2004.
21. P. Rajvaidya and K. Almeroth, "[Multicast Routing Instabilities](#)," *IEEE Internet Computing*, vol. 8, num. 5, pp. 42-49, September/October 2004.
20. D. Johnson, R. Patton, B. Bimber, K. Almeroth and G. Michaels, "[Technology and Plagiarism in the University: Brief Report of a Trial in Detecting Cheating](#)," *Association for the Advancement of Computing in Education (AACE) Journal*, vol. 12, num. 3, pp. 281-299, Summer 2004.

19. R. Chalmers and K. Almeroth, "[A Security Architecture for Mobility-Related Services](#)," *Journal of Wireless Personal Communications*, vol 29, num. 3, pp. 247-261, June 2004.
18. B. Stiller, K. Almeroth, J. Altmann, L. McKnight, and M. Ott, "[Pricing for Content in the Internet](#)," *Computer Communications*, vol. 27, num. 6, pp. 522-528, April 2004.
17. S. Rollins and K. Almeroth, "[Lessons Learned Deploying a Digital Classroom](#)," *Journal of Interactive Learning Research (JILR)*, vol. 15, num. 2, pp. 169-185, April 2004.
16. S. Jagannathan and K. Almeroth, "[A Dynamic Pricing Scheme for E-Content at Multiple Levels-of-Service](#)," *Computer Communications*, vol. 27, num. 4, pp. 374-385, March 2004.
15. K. Almeroth, "[Using Satellite Links in the Delivery of Terrestrial Multicast Traffic](#)," *Internetworking and Computing over Satellites*, Kluwer Academic Publishers, 2003.
14. R. Chalmers and K. Almeroth, "[On the Topology of Multicast Trees](#)," *IEEE/ACM Transactions on Networking*, vol. 11, num. 1, pp. 153-165, January 2003.
13. S. Jagannathan, J. Nayak, K. Almeroth, and M. Hofmann, "[On Pricing Algorithms for Batched Content Delivery Systems](#)," *Electronic Commerce Research and Applications Journal*, vol. 1, num. 3-4, pp. 264-280, Fall 2002.
12. D. Makofske and K. Almeroth, "[Multicast Sockets: Practical Guide for Programmers](#)," *Morgan Kaufmann Publishers*, November 2002.
11. S. Jagannathan and K. Almeroth, "[Price Issues in Delivering E-Content On-Demand](#)," *ACM Sigecom Exchanges*, vol. 3, num. 2, pp. 18-27, May 2002.
10. D. Makofske and K. Almeroth, "[From Television to Internet Video-on-Demand: Techniques and Tools for VCR-Style Interactivity](#)," *Software: Practice and Experience*, vol. 31, num. 8, pp. 781-801, July 2001.
9. K. Sarac and K. Almeroth, "[Supporting Multicast Deployment Efforts: A Survey of Tools for Multicast Monitoring](#)," *Journal on High Speed Networking*, Special Issue on Management of Multimedia Networking, vol. 9, num. 3/4, pp. 191-211, March 2001.
8. K. Almeroth, "[Adaptive, Workload-Dependent Scheduling for Large-Scale Content Delivery Systems](#)," *Transactions on Circuits and Systems for Video Technology*, *Special Issue on Streaming Video*, vol. 11, num. 3, pp. 426-439, March 2001.
7. D. Makofske and K. Almeroth, "[Real-Time Multicast Tree Visualization and Monitoring](#)," *Software: Practice and Experience*, vol. 30, num. 9, pp. 1047-1065, July 2000.
6. M. Ammar, K. Almeroth, R. Clark and Z. Fei, "Multicast Delivery of WWW Pages," *Electronic Commerce Technology Trends: Challenges and Opportunities*, IBM Press, February 2000.
5. K. Almeroth, "[The Evolution of Multicast: From the MBone to Inter-Domain Multicast to Internet2 Deployment](#)," *IEEE Network Special Issue on Multicasting*, vol. 10, num. 1, pp. 10-20, January/February 2000.
4. K. Almeroth and M. Ammar, "[An Alternative Paradigm for Scalable On-Demand Applications: Evaluating and Deploying the Interactive Multimedia Jukebox](#)," *IEEE Transactions on Knowledge and Data Engineering Special Issue on Web Technologies*, vol. 11, num. 4, pp 658-672, July/August 1999.

3. K. Almeroth and M. Ammar, "[The Interactive Multimedia Jukebox \(IMJ\): A New Paradigm for the On-Demand Delivery of Audio/Video](#)," *Computer Networks and ISDN Systems*, vol. 30, no. 1, April 1998.
2. K. Almeroth and M. Ammar, "[Multicast Group Behavior in the Internet's Multicast Backbone \(MBone\)](#)," *IEEE Communications*, vol. 35, no. 6, pp. 124-129, June 1997.
1. K. Almeroth and M. Ammar, "[On the Use of Multicast Delivery to Provide a Scalable and Interactive Video-on-Demand Service](#)," *Journal on Selected Areas of Communication (JSAC)*, vol. 14, no. 6, pp. 1110-1122, August 1996.

B. Conference Papers with Proceedings (refereed)

89. D. Havey and K. Almeroth, "[Active Sense Queue Management \(ASQM\)](#)," *IFIP Networking Conference*, Toulouse, FRANCE, May 2015.
88. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[Joint Rate and Channel Width Adaptation in 802.11 MIMO Wireless Networks](#)," *IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, New Orleans, LA, USA, June 2013.
87. D. Havey and K. Almeroth, "[Fast Wireless Protocol: A Network Stack Design for Wireless Transmission](#)," *IFIP Networking Conference*, Brooklyn, New York, USA, May 2013.
86. M. Tavakolifard, J. Gulla, K. Almeroth, J. Ingvaldsen, G. Nygreen, and E. Berg, "[Tailored News in the Palm of Your HAND: A Multi-Perspective Transparent Approach to News Recommendation](#)," *Demo Track at the International World Wide Web Conference (WWW)*, Rio de Janeiro, BRAZIL, May 2013.
85. S. Patterson, M. Wittie, K. Almeroth, and B. Bamieh, "[Network Optimization with Dynamic Demands and Link Prices](#)," *Allerton Conference*, Monticello, Illinois, USA, October 2012.
84. D. Havey, R. Chertov, and K. Almeroth, "[Receiver Driven Rate Adaptation](#)," *ACM Multimedia Systems Conference (MMSys)*, Chapel Hill, North Carolina, USA, February 2012.
83. M. Tavakolifard and K. Almeroth, "[Trust 2.0: Who to Believe in the Flood of Online Data?](#)" *International Conference on Computing, Networking and Communications (ICNC)*, Maui, Hawaii, USA, January 2012.
82. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[The Impact of Channel Bonding on 802.11n Network Management](#)," *ACM CoNEXT*, Tokyo, JAPAN, December 2011.
81. L. Deek, X. Zhou, K. Almeroth, and H. Zheng, "[To Preempt or Not: Tackling Bid and Time-based Cheating in Online Spectrum Auctions](#)," *IEEE Infocom*, Shanghai, CHINA, April 2011.
80. M. Wittie, V. Pejovic, L. Deek, K. Almeroth, and B. Zhao, "[Exploiting Locality of Interest in Online Social Networks](#)," *ACM CoNEXT*, Philadelphia, Pennsylvania, USA, November 2010.
79. R. Chertov and K. Almeroth, "[Using BGP in a Satellite-Based Challenged Network Environment](#)," *IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, Boston, Massachusetts, USA, June 2010.
78. R. Chertov, D. Havey and K. Almeroth, "[MSET: A Mobility Satellite Emulation Testbed](#)," *IEEE*

77. B. Stone-Gross, A. Moser, C. Kruegel, E. Kirda, and K. Almeroth, "[FIRE: Finding Rogue nEtworks](#)," *Annual Computer Security Applications Conference (ACSAC)*, Honolulu, Hawaii, USA, December 2009.
76. M. Wittie, K. Almeroth, E. Belding, I. Rimal, and V. Hilt, "[Internet Service in Developing Regions Through Network Coding](#)," *IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, Rome, ITALY, June 2009.
75. R. Chertov and K. Almeroth, "[High-Fidelity Link Shaping](#)," *International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TRIDENTCOM)*, Washington DC, USA, April 2009.
74. L. Deek, K. Almeroth, M. Wittie, and K. Harras, "[Exploiting Parallel Networks Using Dynamic Channel Scheduling](#)," *International Wireless Internet Conference (WICON)*, Maui, Hawaii, USA, November 2008.
73. D. Havey, E. Barlas, R. Chertov, K. Almeroth, and E. Belding, "[A Satellite Mobility Model for QUALNET Network Simulations](#)," *IEEE Military Communications Conference (MILCOM)*, San Diego, California, USA, November 2008.
72. J. Kayfetz and K. Almeroth, "[Creating Innovative Writing Instruction for Computer Science Graduate Students](#)," *ASEE/IEEE Frontiers in Education (FIE) Conference*, Saratoga Springs, New York, USA, October 2008.
71. G. Swamynathan, B. Zhao, K. Almeroth, and S. Rao, "[Towards Reliable Reputations for Dynamic Networked Systems](#)," *IEEE International Symposium on Reliable Distributed Systems (SRDS)*, Napoli, ITALY, October 2008.
70. B. Stone-Gross, D. Sigal, R. Cohn, J. Morse, K. Almeroth, and C. Krugel, "[VeriKey: A Dynamic Certificate Verification System for Public Key Exchanges](#)," *Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA)*, Paris, FRANCE, July 2008.
69. P. Acharya, A. Sharma, E. Belding, K. Almeroth, K. Papagiannaki, "[Congestion-Aware Rate Adaptation in Wireless Networks: A Measurement-Driven Approach](#)," *IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, San Francisco, California, USA, June 2008.
68. A. Jardosh, P. Suwannat, T. Hollerer, E. Belding, and K. Almeroth, "[SCUBA: Focus and Context for Real-time Mesh Network Health Diagnosis](#)," *Passive and Active Measurement Conference (PAM)*, Cleveland, Ohio, USA, April 2008.
67. B. Stone-Gross, C. Wilson, K. Almeroth, E. Belding, H. Zheng, K. Papagiannaki, "[Malware in IEEE 802.11 Wireless Networks](#)," *Passive and Active Measurement Conference (PAM)*, Cleveland, Ohio, USA, April 2008.
66. R. Raghavendra, E. Belding, K. Papagiannaki, and K. Almeroth, "[Understanding Handoffs in Large IEEE 802.11 Wireless Networks](#)," *Internet Measurement Conference (IMC)*, San Diego, California, USA, October 2007.
65. M. Wittie, B. Stone-Gross, K. Almeroth and E. Belding, "[MIST: Cellular Data Network Measurement for Mobile Applications](#)," *IEEE International Conference on Broadband Communications, Networks,*

and Systems (BroadNets), Raleigh, North Carolina, USA, September 2007.

64. S. Karpinski, E. Belding, K. Almeroth, "[Wireless Traffic: The Failure of CBR Modeling](#)," *IEEE International Conference on Broadband Communications, Networks, and Systems (BroadNets)*, Raleigh, North Carolina, USA, September 2007.
63. A. Knight, K. Almeroth, H. Zhang, R. Mayer, and K. DeLeeuw, "[Data Cafe: A Dining Car Approach to Educational Research Data Management and Distribution](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Vancouver, CANADA, June 2007.
62. H. Zhang, K. Almeroth, A. Knight, M. Bulger, and R. Mayer, "[Moodog: Tracking Students' Online Learning Activities](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Vancouver, CANADA, June 2007.
61. M. Bulger, K. Almeroth, R. Mayer, D. Chun, A. Knight, H. Collins, "[Effects of Instructor Engagement on Student Use of a Course Management System](#)," Association for Psychological Science (APS) Annual Conference, Washington DC, USA, May 2007.
60. R. Mayer, A. Stull, K. Almeroth, B. Bimber, D. Chun, M. Bulger, J. Campbell, Allan Knight, and H. Zhang, "[Using Technology-Based Methods to Foster Learning in Large Lecture Classes: Evidence for the Pedagogic Value of Clickers](#)," *American Educational Research Association (AERA) Annual Conference*, Chicago, Illinois, USA, April 2007.
59. K. Ramachandran, I. Sheriff, E. Belding, and K. Almeroth, "[Routing Stability in Static Wireless Mesh Networks](#)," *Passive and Active Measurement Conference (PAM)*, Louvain-la-neuve, BELGIUM, April 2007.
58. G. Swamynathan, T. Close, S. Banerjee, R. McGeer, B. Zhao, and K. Almeroth, "[Scalable Access Control For Web Services](#)," *International Conference on Creating, Connecting and Collaborating through Computing (C5)*, Kyoto, JAPAN, January 2007.
57. A. Knight, M. Bulger, K. Almeroth, and H. Zhang, "[Is Learning Really a Phone Call Away? Knowledge Transfer in Mobile Learning](#)," *World Conference on Mobile Learning (mLearn)*, Banff, Alberta, CANADA, October 2006.
56. J. Kurian, K. Sarac, and K. Almeroth, "[Defending Network-Based Services Against Denial of Service Attacks](#)," *International Conference on Computer Communication and Networks (IC3N)*, Arlington, Virginia, USA, October 2006.
55. A. Jardosh, K. Sanzgiri, E. Belding and K. Almeroth, "[IQU: Practical Queue-Based User Association Management for WLANs--Case Studies, Architecture, and Implementation](#)," *ACM Mobicom*, Marina del Rey, California, USA, September 2006.
54. C. Holman, K. Harras, and K. Almeroth, "[A Proactive Data Bundling System for Intermittent Mobile Connections](#)," *IEEE International Conference on Sensor and Ad Hoc Communications and Networks (SECON)*, Reston, Virginia, USA, September 2006.
53. G. Banks, M. Cova, V. Felmetzger, K. Almeroth, R. Kemmerer and G. Vigna, "[SNOOZE: toward a Stateful NetwOrk prOtocol fuzZE](#)," *Information Security Conference (ISC)*, Samos Island, GREECE, September 2006.
52. K. Harras and K. Almeroth, "[Inter-Regional Messenger Scheduling in Delay Tolerant Mobile Networks](#)," *IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks*

(WoWMoM), Niagara Falls, New York, USA, June 2006.

51. M. Bulger, R. Mayer, and K. Almeroth, "[Engaged By Design: Using Simulation to Promote Active Learning](#)," **Outstanding Paper** at the *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Orlando, Florida, USA, June 2006.
50. A. Knight, K. Almeroth, R. Mayer, D. Chun, and B. Bimber, "[Observations and Recommendations for Using Technology to Extend Interaction](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Orlando, Florida, USA, June 2006.
49. H. Zhang, and K. Almeroth, "[A Simple Classroom Network Access Control System](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Orlando, Florida, USA, June 2006.
48. K. Harras and K. Almeroth, "[Transport Layer Issues in Delay Tolerant Mobile Networks](#)," *IFIP Networking Conference*, Coimbra, PORTUGAL, May 2006.
47. R. Mayer, A. Stull, J. Campbell, K. Almeroth, B. Bimber, D. Chun and A. Knight, "[Some Shortcomings of Soliciting Students' Self-Reported SAT Scores](#)," *American Educational Research Association (AERA) Annual Conference*, San Francisco, California, USA, April 2006.
46. K. Ramachandran, E. Belding, K. Almeroth, and M. Buddhikot, "[Interference-Aware Channel Assignment in Multi-Radio Wireless Mesh Networks](#)," *IEEE Infocom*, Barcelona, SPAIN, April 2006.
45. A. Jardosh, K. Ramachandran, K. Almeroth, and E. Belding, "[Understanding Congestion in IEEE 802.11b Wireless Networks](#)," *ACM/USENIX Internet Measurement Conference (IMC)*, Berkeley, California, USA, October 2005.
44. H. Zhang, K. Almeroth and M. Bulger, "[An Activity Monitoring System to Support Classroom Research](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Montreal, Quebec, CANADA, pp. 1444-1449, June 2005.
43. Z. Xiang, H. Zhang, J. Huang, S. Song and K. Almeroth, "[A Hidden Environment Model for Constructing Indoor Radio Maps](#)," *IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, Taormina, ITALY, June 2005.
42. K. Harras, K. Almeroth and E. Belding, "[Delay Tolerant Mobile Networks \(DTMNs\): Controlled Flooding in Sparse Mobile Networks](#)," *IFIP Networking Conference*, Waterloo, Ontario, CANADA, May 2005.
41. A. Garyfalos and K. Almeroth, "[Coupons: Wide Scale Information Distribution for Wireless Ad Hoc Networks](#)," *IEEE Global Telecommunications Conference (Globecom) Global Internet and Next Generation Networks Symposium*, Dallas, Texas, USA, pp. 1655-1659, December 2004.
40. A. Knight and K. Almeroth, "[DeCAF: A Digital Classroom Application Framework](#)," *IASTED International Conference on Communications, Internet and Information Technology (CIIT)*, St. Thomas, US Virgin Islands, November 2004.
39. P. Namburi, K. Sarac and K. Almeroth, "[SSM-Ping: A Ping Utility for Source Specific Multicast](#)," *IASTED International Conference on Communications, Internet and Information Technology (CIIT)*, St. Thomas, US Virgin Islands, November 2004.
38. K. Ramachandran, E. Belding and K. Almeroth, "[DAMON: A Distributed Architecture for Monitoring](#)

- [Multi-hop Mobile Networks](#)," *IEEE International Conference on Sensor and Ad Hoc Communications and Networks (SECON)*, Santa Clara, California, USA, October 2004.
37. A. Garyfalos and K. Almeroth, "[Coupon Based Incentive Systems and the Implications of Equilibrium Theory](#)," *IEEE Conference on Electronic Commerce (CEC)*, San Diego, California, USA, pp. 213-220, July 2004.
 36. A. Knight, K. Almeroth and B. Bimber, "[An Automated System for Plagiarism Detection Using the Internet](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Lugano, Switzerland, pp. 3619-3625, June 2004.
 35. H. Zhang and K. Almeroth, "[Supplement to Distance Learning: Design for a Remote TA Support System](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Lugano, Switzerland, pp. 2821-2830, June 2004.
 34. U. Mohan, K. Almeroth and E. Belding, "[Scalable Service Discovery in Mobile Ad hoc Networks](#)," *IFIP Networking Conference*, Athens, Greece, pp. 137-149, May 2004.
 33. V. Thanedar, K. Almeroth and E. Belding, "[A Lightweight Content Replication Scheme for Mobile Ad hoc Environments](#)," *IFIP Networking Conference*, Athens, Greece, pp. 125-136, May 2004.
 32. R. Chalmers and K. Almeroth, "[A Mobility Gateway for Small-Device Networks](#)," *IEEE International Conference on Pervasive Computing and Communications (PerCom)*, Orlando, Florida, USA, March 2004.
 31. A. Jardosh, E. Belding, K. Almeroth and S. Suri, "[Towards Realistic Mobility Models For Mobile Ad hoc Networks](#)," *ACM Mobicom*, San Diego, California, USA, September 2003.
 30. K. Sarac, P. Namburi and K. Almeroth, "[SSM Extensions: Network Layer Support for Multiple Senders in SSM](#)," *International Conference on Computer Communication and Networks (IC3N)*, Dallas, Texas, USA, October 2003.
 29. K. Ramachandran and K. Almeroth, "[MAFIA: A Multicast Management Solution for Access Control and Traffic Filtering](#)," *IEEE/IFIP Conference on Management of Multimedia Networks and Services (MMNS)*, Belfast, Northern Ireland, September 2003.
 28. J. Humfrey, S. Rollins, K. Almeroth, and B. Bimber, "[Managing Complexity in a Networked Learning Environment](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Honolulu, Hawaii, USA, pp. 60-63, June 2003.
 27. K. Almeroth, S. Rollins, Z. Shen, and B. Bimber, "[Creating a Demarcation Point Between Content Production and Encoding in a Digital Classroom](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Honolulu, Hawaii, USA, pp. 2-5, June 2003.
 26. M. Kolsch, K. Kvilekval, and K. Almeroth, "[Improving Speaker Training with Interactive Lectures](#)," *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Honolulu, Hawaii, USA, June 2003.
 25. P. Rajvaidya and K. Almeroth, "[Analysis of Routing Characteristics in the Multicast Infrastructure](#)," *IEEE Infocom*, San Francisco, California, USA, April 2003.
 24. S. Rollins and K. Almeroth, "[Pixie: A Jukebox Architecture to Support Efficient Peer Content Exchange](#)," *ACM Multimedia*, Juan Les Pins, FRANCE, December 2002.

23. S. Rollins, R. Chalmers, J. Blanquer, and K. Almeroth, "[The Active Information System\(AIS\): A Model for Developing Scalable Web Services](#)," *IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA)*, Kauai, Hawaii, USA, August 2002.
22. S. Rollins and K. Almeroth, "[Seminal: Additive Semantic Content for Multimedia Streams](#)," *IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA)*, Kauai, Hawaii, USA, August 2002.
21. B. Stiller, K. Almeroth, J. Altmann, L. McKnight, and M. Ott, "[Content Pricing in the Internet](#)," *SPIE ITCOM Conference on Internet Performance and Control of Network Systems (IPCNS)*, Boston, Massachusetts, USA, July 2002.
20. S. Jagannathan, J. Nayek, K. Almeroth and M. Hofmann, "[A Model for Discovering Customer Value for E-Content](#)," *ACM International Conference on Knowledge Discovery and Data Mining (SIGKDD)*, Edmonton, Alberta, CANADA, July 2002.
19. S. Rollins and K. Almeroth, "[Deploying and Infrastructure for Technologically Enhanced Learning](#)," **Outstanding Paper** at the *World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA)*, Denver, Colorado, USA, pp. 1651-1656, June 2002.
18. P. Rajvaidya and K. Almeroth, "[Building the Case for Distributed Global Multicast Monitoring](#)," *Multimedia Computing and Networking (MMCN)*, San Jose, California, USA, January 2002.
17. S. Jagannathan and K. Almeroth, "[An Adaptive Pricing Scheme for Content Delivery Systems](#)," *IEEE Global Internet*, San Antonio, Texas, USA, November 2001.
16. K. Sarac and K. Almeroth, "[Providing Scalable Many-to-One Feedback in Multicast Reachability Monitoring Systems](#)," *IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS)*, Chicago, Illinois, USA, October 2001.
15. S. Jagannathan and K. Almeroth, "[The Dynamics of Price, Revenue and System Utilization](#)," *IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS)*, Chicago, Illinois, USA, October 2001.
14. A. Kanwar, K. Almeroth, S. Bhattacharyya, and M. Davy, "[Enabling End-User Network Monitoring via the Multicast Consolidated Proxy Monitor](#)," *SPIE ITCOM Conference on Scalability and Traffic Control in IP Networks (STCIPN)*, Denver, Colorado, USA, August 2001.
13. S. Jagannathan and K. Almeroth, "[Using Tree Topology for Multicast Congestion Control](#)," *International Conference on Parallel Processing (ICPP)*, Valencia, SPAIN, September 2001.
12. P. Rajvaidya and K. Almeroth, "[A Router-Based Technique for Monitoring the Next-Generation of Internet Multicast Protocols](#)," *International Conference on Parallel Processing (ICPP)*, Valencia, SPAIN, September 2001.
11. R. Chalmers and K. Almeroth, "[Modeling the Branching Characteristics and Efficiency Gains of Global Multicast Trees](#)," *IEEE Infocom*, Anchorage, Alaska, USA, April 2001.
10. R. Chalmers and K. Almeroth, "[Developing a Multicast Metric](#)," *Global Internet*, San Francisco, California, USA, December 2000.
9. K. Sarac and K. Almeroth, "[Monitoring Reachability in the Global Multicast Infrastructure](#)," *IEEE International Conference on Network Protocols (ICNP)*, Osaka, JAPAN, November 2000.

8. K. Almeroth, "[A Long-Term Analysis of Growth and Usage Patterns in the Multicast Backbone \(MBone\)](#)," *IEEE INFOCOM*, Tel Aviv, ISRAEL, March 2000.
7. K. Almeroth, K. Obraczka and D. De Lucia, "[A Lightweight Protocol for Interconnecting Heterogeneous Devices in Dynamic Environments](#)," *IEEE International Conference on Multimedia Computing and Systems (ICMCS)*, Florence, ITALY, June 1999.
6. K. Almeroth and M. Ammar, "[The Interactive Multimedia Jukebox \(IMJ\): A New Paradigm for the On-Demand Delivery of Audio/Video](#)," **Best Paper** at the *Seventh International World Wide Web Conference (WWW)*, Brisbane, AUSTRALIA, April 1998.
5. K. Almeroth, M. Ammar and Z. Fei, "[Scalable Delivery of Web Pages Using Cyclic Best-Effort \(UDP\) Multicast](#)," *IEEE INFOCOM*, San Francisco, California, USA, June 1998.
4. K. Almeroth and M. Ammar, "[Delivering Popular Web Pages Using Cyclic Unreliable Multicast \(Extended Abstract\)](#)," *SPIE Conference on Voice, Video and Data Communications*, Dallas, Texas, USA, November 1997.
3. K. Almeroth, A. Dan, D. Sitaram and W. Tetzlaff, "[Long Term Resource Allocation in Video Delivery Systems](#)," *IEEE INFOCOM*, Kobe, JAPAN, April 1997.
2. K. Almeroth and M. Ammar, "[On the Performance of a Multicast Delivery Video-On-Demand Service with Discontinuous VCR Actions](#)," *International Conference on Communications (ICC)*, Seattle, Washington, USA, June 1995.
1. K. Almeroth and M. Ammar, "[A Scalable, Interactive Video-On-Demand Service Using Multicast Communication](#)," *International Conference on Computer Communication and Networks (IC3N)*, San Francisco, California, USA, September 1994.

C. Workshop Papers (refereed)

34. M. Tavakolifard, J. Gulla, K. Almeroth, F. Hopfgartner, B. Kille, T. Plumbaum, A. Lommatzsch, T. Brodt, A. Bucko, and T. Heintz, "[Workshop and Challenge on News Recommender Systems](#)," *ACM RecSys News Recommender Systems (NRS) Workshop and Challenge*, Hong Kong, CHINA, October 2013.
33. M. Tavakolifard, K. Almeroth, and J. Gulla, "[Does Social Contact Matter? Modelling the Hidden Web of Trust Underlying Twitter](#)," *ACM International Workshop on Social Recommender Systems (SRS)*, Rio de Janeiro, BRAZIL, May 2013.
32. D. Johnson, E. Belding, K. Almeroth and G. van Stam, "[Internet Usage and Performance Analysis of a Rural Wireless Network in Macha, Zambia](#)," *ACM Networked Systems for Developing Regions (NSDR) Workshop*, San Francisco, California, USA, June 2010.
31. D. Havey, R. Chertov, and K. Almeroth, "[Wired Wireless Broadcast Emulation](#)," *International Workshop on Wireless Network Measurement (WiNMee)*, Seoul, Korea, June 2009.
30. R. Raghavendra, P. Acharya, E. Belding, and K. Almeroth, "[MeshMon: A Multi-Tiered Framework for Wireless Mesh Network Monitoring](#)," *ACM Mobihoc Wireless of the Students, by the Students, for the Students Workshop (S3)*, New Orleans, Louisiana, USA, May 2009.

29. G. Swamynathan, C. Wilson, B. Boe, B. Zhao, and K. Almeroth, "[Do Social Networks Improve e-Commerce: A Study on Social Marketplaces](#)," *ACM Sigcomm Workshop on Online Social Networks (WOSN)*, Seattle, Washington, USA, August 2008.
28. R. Raghavendra, E. Belding, and K. Almeroth, "[Antler: A Multi-Tiered Approach to Automated Wireless Network Management](#)," *IEEE Workshop on Automated Network Management (ANM)*, Phoenix, Arizona, USA, April 2008.
27. S. Karpinski, E. Belding, and K. Almeroth, "[Towards Realistic Models of Wireless Workload](#)," *International Workshop on Wireless Network Measurement (WiNMee)*, Limassol, CYPRUS, April 2007.
26. K. Harras, M. Wittie, K. Almeroth, and E. Belding, "[ParaNets: A Parallel Network Architecture for Challenged Networks](#)," *IEEE Workshop on Mobile Computing Systems and Applications (HotMobile)*, Tucson, Arizona, USA, February 2007.
25. H. Caituiro-Monge, K. Almeroth, M. del Mar Alvarez-Rohena, "[Friend Relay: A Resource Sharing Framework for Mobile Wireless Devices](#)," *ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots (WMASH)*, Los Angeles, California, September 2006.
24. G. Swamynathan, Ben Y. Zhao and K. Almeroth, "[Exploring the Feasibility of Proactive Reputations](#)," *International Workshop on Peer-to-Peer Systems (IPTPS)*, Santa Barbara, California, USA, February 2006.
23. G. Swamynathan, Ben Y. Zhao and K. Almeroth, "[Decoupling Service and Feedback Trust in a Peer-to-Peer Reputation System](#)," *International Workshop on Applications and Economics of Peer-to-Peer Systems (AEPP)*, Nanjing, CHINA, November 2005.
22. K. Ramachandran, M. Buddhikot, G. Chandranmenon, S. Miller, E. Belding, and K. Almeroth, "[On the Design and Implementation of Infrastructure Mesh Networks](#)," *IEEE Workshop on Wireless Mesh Networks (WiMesh)*, Santa Clara, California, USA, September 2005.
21. A. Jardosh, K. Ramachandran, K. Almeroth and E. Belding, "[Understanding Link-Layer Behavior in Highly Congested IEEE 802.11b Wireless Networks](#)," *Sigcomm Workshop on Experimental Approaches to Wireless Network Design and Analysis (EWIND)*, Philadelphia, Pennsylvania, USA, August 2005.
20. A. Sen Mazumder, K. Almeroth and K. Sarac, "[Facilitating Robust Multicast Group Management](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Skamania, Washington, USA, June 2005.
19. Y. Sun, I. Sheriff, E. Belding and K. Almeroth, "[An Experimental Study of Multimedia Traffic Performance in Mesh Networks](#)," *MobiSys International Workshop on Wireless Traffic Measurements and Modeling (WitMeMo)*, Seattle, Washington, USA, June 2005.
18. K. Ramachandran, K. Almeroth and E. Belding, "[A Framework for the Management of Large-Scale Wireless Network Testbeds](#)," *International Workshop on Wireless Network Measurement (WiNMee)*, Trentino, ITALY, April 2005.
17. A. Garyfalos, K. Almeroth and K. Sanzgiri, "[Deployment Complexity Versus Performance Efficiency in Mobile Multicast](#)," *International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWiM)*, San Jose, California, USA, October 2004.

16. C. Ho, K. Ramachandran, K. Almeroth and E. Belding, "[A Scalable Framework for Wireless Network Monitoring](#)," *ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots (WMASH)*, Philadelphia, Pennsylvania, USA, October 2004.
15. A. Garyfalos, K. Almeroth and J. Finney, "[A Hybrid of Network and Application Layer Multicast for Mobile IPv6 Networks](#)," *International Workshop on Large-Scale Group Communication (LSGC)*, Florence, ITALY, October 2003.
14. A. Garyfalos, K. Almeroth and J. Finney, "[A Comparison of Network and Application Layer Multicast for Mobile IPv6 Networks](#)," *ACM Workshop on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, San Diego, California, USA, September 2003.
13. S. Jagannathan, and K. Almeroth, "[Pricing and Resource Provisioning for Delivering E-Content On-Demand with Multiple Levels-of-Service](#)," *International Workshop on Internet Charging and QoS Technologies (ICQT)*, Zurich, SWITZERLAND, October 2002.
12. S. Rollins, K. Almeroth, D. Milojevic, and K. Nagaraja, "[Power-Aware Data Management for Small Devices](#)," *Workshop on Wireless Mobile Multimedia (WoWMoM)*, Atlanta, GA, USA, September 2002.
11. K. Almeroth, S. Bhattacharyya, and C. Diot, "[Challenges of Integrating ASM and SSM IP Multicast Protocol Architectures](#)," *International Workshop on Digital Communications: Evolutionary Trends of the Internet (IWDC)*, Taormina, ITALY, September 2001.
10. K. Sarac and K. Almeroth, "[Scalable Techniques for Discovering Multicast Tree Topology](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Port Jefferson, New York, USA, June 2001.
9. P. Rajvaidya, K. Almeroth and K. Claffy, "[A Scalable Architecture for Monitoring and Visualizing Multicast Statistics](#)," *IFIP/IEEE International Workshop on Distributed Systems: Operations & Management (DSOM)*, Austin, Texas, USA, December 2000.
8. S. Jagannathan, K. Almeroth and A. Acharya, "[Topology Sensitive Congestion Control for Real-Time Multicast](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Chapel Hill, North Carolina, USA, June 2000.
7. K. Sarac and K. Almeroth, "[Supporting the Need for Inter-Domain Multicast Reachability](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Chapel Hill, North Carolina, USA, June 2000.
6. D. Makofske and K. Almeroth, "[MHealth: A Real-Time Multicast Tree Visualization and Monitoring Tool](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Basking Ridge New Jersey, USA, June 1999.
5. K. Almeroth and Y. Zhang, "[Using Satellite Links as Delivery Paths in the Multicast Backbone \(MBone\)](#)," *ACM/IEEE International Workshop on Satellite-Based Information Services (WOSBIS)*, Dallas, Texas, USA, October 1998.
4. M. Ammar, K. Almeroth, R. Clark and Z. Fei, "[Multicast Delivery of Web Pages OR How to Make Web Servers Pushy](#)," *Workshop on Internet Server Performance (WISP)*, Madison, Wisconsin, USA, June 1998.
3. K. Almeroth and M. Ammar, "[Prototyping the Interactive Multimedia Jukebox](#)," *Mini-conference on Multimedia Appliances, Interfaces, and Trials--International Conference on Communications (ICC)*,

Montreal, Quebec, CANADA, June 1997.

2. K. Almeroth and M. Ammar, "[Collection and Modeling of the Join/Leave Behavior of Multicast Group Members in the MBone](#)," *High Performance Distributed Computing Focus Workshop (HPDC)*, Syracuse, New York, USA, August 1996.
1. K. Almeroth and M. Ammar, "[The Role of Multicast Communication in the Provision of Scalable and Interactive Video-On-Demand Service](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Durham, New Hampshire, USA, April 1995.

D. Non-Refereed Publications

8. K. Almeroth, E. Belding, M. Buddhikot, G. Chandranmenon, S. Miller, and K. Ramachandran, "[Infrastructure Mesh Networks](#)," *U.S. Patent Application US20070070959 A1*, September 2005.
7. K. Almeroth, R. Caceres, A. Clark, R. Cole, N. Duffield, T. Friedman, K. Hedayat, K. Sarac, M. Westerlund, "[RTP Control Protocol Extended Reports \(RTCP XR\)](#)," *Internet Engineering Task Force (IETF) Request for Comments (RFC) 3611*, November 2003.
6. Z. Albanna, K. Almeroth, D. Meyer, and M. Schipper, "[IANA Guidelines for IPv4 Multicast Address Allocation](#)," *Internet Engineering Task Force (IETF) Request for Comments (RFC) 3171*, August 2001.
5. B. Quinn and K. Almeroth, "[IP Multicast Applications: Challenges and Solutions](#)," *Internet Engineering Task Force (IETF), Request for Comments (RFC) 3170*, September 2001.
4. K. Almeroth, L. Wei and D. Farinacci, "[Multicast Reachability Monitor \(MRM\) Protocol](#)," *Internet Engineering Task Force Internet Draft*, July 2000.
3. K. Almeroth and L. Wei, "[Justification for and use of the Multicast Reachability Monitor \(MRM\) Protocol](#)," *Internet Engineering Task Force Internet Draft*, March 1999.
2. K. Almeroth, "[Managing IP Multicast Traffic: A First Look at the Issues, Tools, and Challenges](#)," IP Multicast Initiative White Paper, San Jose, California, USA, February 1999.
1. K. Almeroth, K. Obraczka and D. De Lucia, "[Pseudo-IP: Providing a Thin Network Protocol for Semi-Intelligent Wireless Devices](#)," *DARPA/NIST Smart Spaces Workshop*, Gaithersburg, Maryland, USA, July 1998.

E. Released Software Systems

19. *A Multi-radio Wireless Mesh Network Architecture* -- <http://moment.cs.ucsb.edu/tic/>. Released December 1, 2006 (with K. Ramachandran, I. Sheriff, and E. Belding). The software as part of a multi-radio wireless mesh network that includes a Split Wireless Router that alleviates the interference that can occur between commodity radios within a single piece of hardware. The second is server software to perform channel assignment and communicate the assignments throughout the mesh network.
18. *AODV-Spanning Tree (AODV-ST)* -- <http://www.cs.ucsb.edu/~krishna/aodv-st/>. Released September 1, 2006 (with K. Ramachandran and E. Belding). AODV-ST is an extension of the well-known AODV

protocol specifically designed for wireless mesh networks. The advantages of AODV-ST over AODV include support for high throughput routing metrics, automatic route maintenance for common-case traffic, and low route discovery latency.

17. ***The Multicast Detective*** -- http://www.nmsl.cs.ucsb.edu/mcast_detective/. Released September 1, 2005 (with A. Sen Mazumder). The multicast detective is a robust solution to determine the existence and nature of multicast service for a particular user. By performing a series of tests, a user can determine whether there is network support for multicast, and consequently, whether a multicast group join is likely to succeed.
16. ***AutoCap: Automatic and Accurate Captioning*** -- <http://www.nmsl.cs.ucsb.edu/autocap/>. Released August 1, 2005 (with A. Knight). AutoCap is a software system that takes as input an audio/video file and a text transcript. AutoCap creates captions by aligning the utterances in the audio/video file to the transcript. For those words that are not recognized, AutoCap estimates when the words were spoken along with an error bound that gives the content creator an idea of caption accuracy. The result is a collection of accurately time-stamped captions that can be displayed with the video.
15. ***PAIRwise Plagiarism Detection System*** -- <http://cits.ucsb.edu/pair/>. Released July 1, 2005 (with A. Knight). PAIRwise is a plagiarism detection system with: (1) an easy-to-use interface for submitting papers, (2) a flexible comparison engine that allows intra-class, inter-class, and Internet-based comparisons, and (3) an intuitive graphical presentation of results.
14. ***DAMON Multi-Hop Wireless Network Monitoring*** -- <http://moment.cs.ucsb.edu/damon/>. Released October 1, 2004 (with K. Ramachandran and E. Belding). DAMON is a distributed system for monitoring multi-hop mobile networks. DAMON uses agents within the network to monitor network behavior and send collected measurements to data repositories. DAMON's generic architecture supports the monitoring of a wide range of protocol, device, or network parameters.
13. ***Multicast Firewall*** -- <http://www.nmsl.cs.ucsb.edu/mafia/>. Released June 1, 2004 (with K. Ramachandran). MAFIA, a multicast firewall and traffic management solution, has the specific aim of strengthening multicast security through multicast access control, multicast traffic filtering, and DoS attack prevention.
12. ***AODV@IETF Peer Routing Software*** -- <http://moment.cs.ucsb.edu/aodv-ietf/>. Released November 1, 2003 (with K. Ramachandran and E. Belding). One of the first large-scale efforts to run the Ad hoc On demand Distance Vector (AODV) routing protocol in a public space (at the Internet Engineering Task Force (IETF)). The implementation includes a daemon that runs on both the Linux and Windows operating systems.
11. ***Mobility Obstacles*** -- <http://moment.cs.ucsb.edu/mobility/>. Released September 1, 2003 (with A. Jardosh, E. Belding, and S. Suri). The topology and movement of nodes in ad hoc protocol simulation are key factors in protocol performance. In this project, we have developed ns-2 simulation plug-ins that create more realistic movement models through the incorporation of obstacles. These obstacles are utilized to restrict both node movement and wireless transmissions.
10. ***mwalk*** -- <http://www.nmsl.cs.ucsb.edu/mwalk/>. Released December 1, 2000 (with R. Chalmers). Mwalk is a collection of Java applications and Perl scripts which re-create a global view of a multicast session from mtrace and RTCP logs. Users to the site can download mwalk, examine the results of our analysis, or download data sets for use in simulations dependent on multicast tree characteristics.
9. ***MANTRA2*** -- <http://www.nmsl.cs.ucsb.edu/mantra/>. Released December 1, 1999 (with P. Rajvaidya). This new version of MANTRA focuses on the visualization of inter-domain routing statistics. Working

in conjunction with the Cooperative Association for Internet Data Analysis (CAIDA) we have developed advanced collection and visualization techniques.

8. **MRM** -- <http://www.nmsl.cs.ucsb.edu/mrm/>. Released October 1, 1999 (with K. Sarac). MRM is the Multicast Reachability Protocol. We have implemented an end-host agent that responds to MRM Manager commands. Our end-host agent works in conjunction with Cisco routers to detect and isolate multicast faults.
7. **MANTRA** -- <http://www.nmsl.cs.ucsb.edu/mantra/>. Released January 1, 1999 (with P. Rajvaidya). MANTRA is the Monitoring and Analysis of Traffic in Multicast Routers. It uses scripts to collect and display data from backbone multicast routers.
6. **SDR Monitor** -- <http://www.nmsl.cs.ucsb.edu/sdr-monitor/>. Released January 1, 1999 (with K. Sarac). The SDR Monitor receives e-mail updates from participants containing information about observed sessions in the MBone. A global view of multicast reachability is then constructed.
5. **The MHealth tool** -- <http://www.nmsl.cs.ucsb.edu/mhealth/>. Released September 1, 1998 (with D. Makofske). The mhealth tool graphically visualizes MBone multicast group trees and provides 'health' information including end-to-end losses per receiver and losses on a per hop basis. The implementation required expertise in Java, the MBone tools, and Unix.
4. **The MControl tool** -- <http://www.nmsl.cs.ucsb.edu/mcontrol/>. Released August 1, 1998 (with D. Makofske). Mcontrol is a tool to provide VCR-based interactivity for live MBone sessions. The implementation required expertise in Java, the MBone tools, and Unix.
3. **Interactive Multimedia Jukebox (IMJ)** -- <http://imj.ucsb.edu/>. Released October 1, 1996. The IMJ combines the WWW and the MBone conferencing tools to provide a multi-channel video jukebox offering both instructional and entertainment programming on a wide scale. The implementation required expertise in HTML, Perl, C, the MBone tools, and Unix.
2. **Mlisten** -- <http://www.cc.gatech.edu/computing/Telecomm/mbone/>. Released September 1, 1995. A tool to continuously collect MBone multicast group membership information including number and location of members, membership duration, and inter-arrival time for all audio and video sessions. The implementation required expertise in C, Tcl/Tk, the MBone tools, and UNIX socket programming.
1. **Audio-on-Demand (AoD)**. March 1, 1995. A server/client prototype to demonstrate interactivity in near VoD systems. The AoD server provides songs-on-demand and VCR-like functions via multicast IP over Ethernet. The implementation required expertise in C, OpenWindows programming, UNIX socket programming, and network programming.

F. Tutorials, Panels and Invited Talks

- "25th Anniversary Panel," Network and Operating System Support for Digital Audio and Video (NOSSDAV), Portland, Oregon, USA, March 2015.
- "Sensing and Opportunistic Delivery of Ubiquitous Video in Health Monitoring, On-Campus and Social Network Applications," Workshop on Mobile Video Delivery (MoViD), Chapel Hill North Carolina, USA, February 2012.
- "Medium Access in New Contexts: Reinventing the Wheel?," USC Invited Workshop on Theory and

Practice in Wireless Networks, Los Angeles, California, USA, May 2008.

- "The Wild, Wild West: Wireless Networks Need a New Sheriff," University of Florida CISE Department Lecture Series, Gainesville, Florida, USA, February 2008.
- "Distinguishing Between Connectivity, Intermittent Connectivity, and Intermittent Disconnectivity," Keynote at the ACM MobiCom Workshop on Challenged Networks (CHANTS), Montreal, CANADA, September 2007.
- "The Three Ghosts of Multicast: Past, Present, and Future," Keynote at the Trans-European Research and Education Networking Association (TERENA) Networking Conference, Lynby, DENMARK, May 2007.
- "Multicast Help Wanted: From Where and How Much?," Keynote at the Workshop on Peer-to-Peer Multicasting (P2PM), Las Vegas, Nevada, USA, January 2007.
- "The Confluence of Wi-Fi and Apps: What to Expect Next," Engineering Insights, UC-Santa Barbara, Santa Barbara, California, USA, October 2006.
- "Challenges, Opportunities, and Implications for the Future Internet," University of Minnesota Digital Technology Center, Minneapolis, Minnesota, USA, September 2006.
- "Wireless Technology as a Catalyst: Possibilities for Next-Generation Interaction," Santa Barbara Forum on Digital Transitions, Santa Barbara, California, USA, April 2006.
- "Challenges and Opportunities in an Internet with Pervasive Wireless Access," University of Texas--Dallas Computer Science Colloquium, Dallas, Texas, USA, March 2006.
- "Challenges and Opportunities with Pervasive Wireless in the Internet," Duke University Computer Science Colloquium, Durham, North Carolina, USA, February 2006.
- "The Span From Wireless Protocols to Social Applications," Intel Research Labs, Cambridge, United Kingdom, December 2005.
- "The Internet Dot.Com Bomb and Beyond the Dot.Com Calm," CSE IGERT and Cal Poly Lecture Series, San Luis Obispo, California, USA, October 2005.
- "Panel: Directions in Networking Research," IEEE Computer Communications Workshop (CCW), Irvine, California, USA, October 2005.
- "Economic Incentives for Ad Hoc Networks," KAIST New Applications Seminar, Seoul, South Korea, March 2004.
- "New Applications for the Next Generation Internet," Citrix Systems, Santa Barbara, California, USA, March 2004.
- "PI: The Imperfect Pursuit of Pure Pattern," CITS Visions in Technology Series, Santa Barbara, California, USA, January 2004.
- "Panel: Core Networking Issues and Protocols for the Internet," National Science Foundation (NSF) Division of Advanced Networking Infrastructure and Research (ANIR) Principal Investigators Workshop, Washington DC, USA, March 2003.

- "Panel: Pricing for Content in the Internet," SPIE ITCom Internet Performance and Control of Network Systems, Boston, Massachusetts, USA, July 2002.
- "The Technology Behind Wireless LANs," Central Coast MIT Enterprise Forum, Santa Barbara, California, USA, March 2002.
- "Lessons Learned in the Digital Classroom," Center for Information and Technology Brown Bag Symposium, Santa Barbara, California, USA, March 2002.
- "The Evolution of Advanced Networking Services: From the ARPAnet to Internet2," California State University--San Luis Obispo CS Centennial Colloquium Series, San Luis Obispo, California, USA, February 2002.
- "Deployment of IP Multicast in Campus Infrastructures," Internet2 Campus Deployment Workshop, Atlanta, Georgia, USA, May 2001.
- "Multicast: Is There Anything Else to Do?," Sprint Research Retreat, Miami, Florida, USA, May 2001.
- "The Evolution of Next-Generation Internet Services and Applications," Government Technology Conference 2001 (GTC) for the Western Region, Sacramento, California, USA, May 2001.
- "I2 Multicast: Not WIDE-scale Deployment, FULL-scale Deployment," Closing Plenary, Internet2 Member Meetings, Washington, D.C., USA, March 2001.
- "Panel: Beyond IP Multicast," Content Delivery Networks (CDN), New York, New York, USA, February 2001.
- "Viable Multicast Pricing & Business Models for Wider-Scale Deployment," Content Delivery Networks (CDN), New York, New York, USA, February 2001.
- "IP Multicast: Modern Protocols, Deployment, and Management," Content Delivery Networks (CDN), New York, New York, USA, February 2001 & San Jose, California, USA, December 2001.
- "Under the Hood of the Internet," Technology 101: Technology for Investors, Center for Entrepreneurship & Engineering Management, November 2000.
- "Understanding Multicast Traffic in the Internet," (1) University of Virginia, (2) University of Maryland, and (3) Columbia University, September 2000.
- "The Bad, The Ugly, and The Good: The Past, Present, and Future of Multicast," Digital Fountain, San Francisco, California, USA, August 2000.
- "Implications of Source-Specific Multicast (SSM) on the Future of Internet Content Delivery," Occam Networks, Santa Barbara, California, USA, August 2000.
- "Introduction to Multicast Routing Protocols," UC-Berkeley Open Mash Multicast Workshop, Berkeley, California, USA, July 2000.
- "Efforts to Understand Traffic and Tree Characteristics," University of Massachusetts--Amherst Colloquia, Amherst, Massachusetts, USA, May 2000.
- "Monitoring Multicast Traffic," Sprint Research Retreat, Half Moon Bay, California, USA, April 2000.

- "What is the Next Generation of Multicast in the Internet?," HRL Laboratories, Malibu, California, USA, January 2000.
- "Mission and Status of the Center for Information Technology and Society (CITS)," Intel Research Council, Portland, Oregon, USA, September 1999.
- "Multicast at a Crossroads," IP Multicast Initiative Summits and Bandwidth Management Workshops, San Francisco, CA, USA, (1) October 1999; (2) February 2000; and (3) June 2000.
- "IP Multicast: Modern Protocols, Deployment, and Management," Network+Interop: (1) Las Vegas, Nevada, USA--May 2000; (2) Tokyo, JAPAN--June 2000; (3) Atlanta, Georgia, USA--September 2000; (4) Las Vegas, Nevada, USA--May 2001; (5) Las Vegas, Nevada, USA--May 2002.
- "IP Multicast: Practice and Theory" (w/ Steve Deering), Network+Interop: (1) Las Vegas, Nevada, USA--May 1999; (2) Tokyo, JAPAN--June 1999; and (3) Atlanta, Georgia, USA--September 1999.
- "Internet2 Multicast Testbeds and Applications," Workshop on Protocols for High Speed Networks (PfHSN), Salem, Massachusetts, USA, August 1999.
- "IP Multicast: Protocols for the Intra- and Inter-Domain," Lucent Technologies, Westford, Massachusetts, USA, August 1999.
- "Internet2 Multicast Testbeds and Applications," NASA Workshop: Bridging the Gap, Moffett Field, California, USA, August 1999.
- "The Evolution of Next-Generation Services and Applications in the Internet," Tektronix Distinguished Lecture Series, Portland, Oregon, USA, May 1999.
- "Multicast Applications and Infrastructure in the Next Generation Internet," CENIC 99 Workshop on Achieving Critical Mass for Advanced Applications, Monterey, California, USA, May 1999.
- "Multicast Traffic Monitoring and Analysis Work at UCSB" (w/ P. Rajvaidya), Workshop on Internet Statistics and Metrics Analysis (ISMA), San Diego, California, USA, April 1999.
- "How the Internet Works: Following Bits Around the World," Science Lite, Santa Barbara General Affiliates and Office of Community Relations, California, USA, February 1999.
- "Managing Multicast: Challenges, Tools, and the Future," IP Multicast Initiative Summit, San Jose, California, USA, February 1999.
- "The Future of Multicast Communication and Protocols," Internet Bandwidth Management Summit (iBAND), San Jose, California, USA, November 1998.
- "An Overview of IP Multicast: Applications and Deployment," (1) Workshop on Evaluating IP Multicast as the Solution for Webcasting Real-Time Networked Multimedia Applications, New York, New York, USA, July 1998; and (2) Satellites and the Internet Conference, Washington, D.C., USA, July 1998.
- "IETF Developments in IP Multicast," IP Multicast Initiative Summit, San Jose, California, USA, February 1998.
- "An Introduction to IP Multicast and the Multicast Backbone (MBone)" vBNS Technical Meeting

sponsored by the National Center for Network Engineering (NLNR), San Diego, California, USA, February 1998.

- "Using Multicast Communication to Deliver WWW Pages" Computer Communications Workshop (CCW '97), Phoenix, Arizona, USA, September 1997.

G. Research Funding

- K. Almeroth, "Packet Scheduling Using IP Embedded Transport Instrumentation," Cisco Systems Inc., \$100,000, 3/1/13-8/31/14.
- K. Almeroth, E. Belding and S.J. Lee, "GOALI: Maximizing Available Bandwidth in Next Generation WLANs", National Science Foundation (NSF), \$101,088, 10/1/13-9/30/14.
- K. Almeroth and E. Belding, "GOALI: Intelligent Channel Management in 802.11n Networks," National Science Foundation (NSF), \$51,000, 10/1/10-9/30/11.
- B. Zhao, K. Almeroth, H. Zheng, and E. Belding, "NeTS: Medium: Airlab: Distributed Infrastructure for Wireless Measurements," National Science Foundation (NSF), \$700,000, 9/1/09-8/13/13.
- K. Almeroth, E. Belding and T. Hollerer, "NeTS-WN: Wireless Network Health: Real-Time Diagnosis, Adaptation, and Management," National Science Foundation (NSF), \$600,000, 10/1/07-9/30/10.
- K. Almeroth, "Next-Generation Service Engineering in Internet2," University Consortium for Advanced Internet Development (UCAID), \$1,254,000, 7/1/04-6/30/09 (reviewed and renewed each year).
- B. Manjunath, K. Almeroth, F. Bullo, J. Hespanha, T. Hollerer, C. Krintz, U. Madhow, K. Rose, A. Singh, and M. Turk, "Large-Scale Multimodal Wireless Sensor Network," Office of Naval Research Defense University Research Instrumentation Program (DURIP), \$655,174, 4/14/08-4/14/09.
- K. Almeroth and E. Belding, "Improving Robustness in Evolving Wireless Infrastructures," Intel Corporation, \$135,000, 7/1/06-6/30/09 (reviewed and renewed for second and third year).
- K. Almeroth and K. Sarac, "Bridging Support in Mixed Deployment Multicast Environments," Cisco Systems Inc., \$100,000, 9/1/07-8/31/08.
- K. Sarac and K. Almeroth, "Building the Final Piece in One-to-Many Content Distribution," Cisco Systems Inc., \$95,000, 9/1/06-8/31/07.
- E. Belding, K. Almeroth and J. Gibson, "Real-Time Communication Support in a Ubiquitous Next-Generation Internet," National Science Foundation (NSF), \$900,000, 10/1/04-9/30/07.
- K. Almeroth and K. Sarac, "Improving the Robustness of Multicast in the Internet," Cisco Systems Inc., \$80,000, 9/1/04-8/31/05.
- R. Mayer, B. Bimber, K. Almeroth and D. Chun, "Assessing the Pedagogical Implications of Technology in College Courses," Mellon Foundation, \$350,000, 7/1/04-6/30/07.
- B. Bimber, A. Flanagan and C. Stol, "Technological Change and Collective Association: Changing

Relationships Among Technology, Organizations, Society and the Citizenry," National Science Foundation (NSF), \$329,175, 7/1/04-6/30/07.

- K. Almeroth and B. Bimber, "Plagiarism Detection Techniques and Software," UCSB Instructional Development, \$22,000, 7/1/04-6/30/05.
- K. Almeroth, "Student Travel Support for the 14th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV)," National Science Foundation (NSF), \$10,000, 5/1/04-8/31/04.
- K. Almeroth, "An Automated Indexing System for Remote, Archived Presentations," QAD Inc., \$25,000, 5/1/04-6/30/05.
- K. Almeroth and M. Turk, "A Remote Teaching Assistant Support System," Microsoft, \$40,000, 1/1/04-6/30/05.
- K. Almeroth, "Supporting Multicast Service Functionality in Helix," Real Networks, \$30,000, 9/1/03-6/30/04.
- K. Almeroth and E. Belding, "Service Discovery in Mobile Networks," Nokia Summer Research Grant (U. Mohan), \$10,240, 7/1/03-9/30/03.
- K. Almeroth, D. Zappala, "Building a Global Multicast Service," Cisco Systems Inc., \$100,000, 1/1/03-6/30/04.
- K. Almeroth, "Developing A Dynamic Protocol for Candidate Access Router Discovery," Nokia Graduate Student Fellowship (R. Chalmers), \$26,110, 9/01/02-6/30/03.
- B. Bimber and K. Almeroth, "The Role of Collaborative Groupware in Organizations," Toole Family Foundation, \$182,500 (\$20,000 cash plus \$162,500 in software), 9/1/02-8/30/07.
- B. Manjunath, et al., "Digital Multimedia: Graduate Training Program in Interactive Digital Multimedia," National Science Foundation (NSF), \$2,629,373, 4/1/02-3/31/07.
- J. Green, K. Almeroth, et al., "Inquiry in the Online Context: Learning from the Past, Informing the Future," UCSB Research Across Disciplines, \$10,000, 9/1/01-8/31/02.
- K. Almeroth, "Monitoring and Maintaining the Global Multicast Infrastructure," Cisco Systems Inc., \$54,600, 7/1/01-6/30/02.
- R. Kemmerer, K. Almeroth, et al., "Hi-DRA High-speed, Wide-area Network Detection, Response, and Analysis," Department of Defense (DoD), \$4,283,500, 5/1/01-4/30/06.
- A. Singh, K. Almeroth, et al., "Digital Campus: Scalable Information Services on a Campus-wide Wireless Network," National Science Foundation (NSF), 1,450,000, 9/15/00-12/31/04.
- K. Almeroth, "Visualizing the Global Multicast Infrastructure," UC MICRO w/ Cisco Systems Inc., \$85,438, 7/1/00-6/30/02.
- H. Lee, K. Almeroth, et al., "Dynamic Sensing Systems," International Telemetering Foundation, \$260,000, 07/01/00-06/30/04.
- B. Bimber and K. Almeroth, "Funding for the Center on Information Technology and Society,"

\$250,000 from Dialogic (an Intel Company) and \$250,000 from Canadian Pacific.

- K. Almeroth, "CAREER: From Protocol Support to Applications: Elevating Multicast to a Ubiquitous Network Service," National Science Foundation (NSF), \$200,000, 9/1/00-8/31/04.
- K. Almeroth, "Characterizing Multicast Use and Efficiency in the Inter-Domain," Sprint Advanced Technology Laboratories, \$62,500, 3/1/00-6/30/01.
- K. Almeroth, "Producing the Next Generation of Multicast Monitoring and Management Protocols and Tools," UC MICRO w/ Cisco Systems Inc., \$124,500, 7/1/99 - 6/30/01.
- K. Almeroth, "Utilizing Satellite Links in the Provision of an Inter-Wide Multicast Service," HRL Laboratories, \$20,000, 7/1/99 - 6/30/00.
- T. Smith, K. Almeroth, et al., "Alexandria Digital Earth Prototype," National Science Foundation, \$5,400,000, 4/1/99-3/31/04.
- V. Vesna, K. Almeroth, et al., "Online Public Spaces: Multidisciplinary Explorations in Multi-User Environments (OPS:MEME), Phase II," UCSB Research Across Disciplines, \$50,000, 9/1/98-8/31/99.
- K. Almeroth, "Techniques and Analysis for the Provision of Multicast Route Management," UC MICRO w/ Cisco Systems Inc., \$97,610, 7/1/98 - 6/30/00.
- K. Almeroth, "Capturing and Modeling Multicast Group Membership in the Multicast Backbone (MBone)," UC MICRO w/ Hughes Research Labs, \$19,146, 7/1/98 - 12/31/99.
- K. Almeroth, "Building a Content Server for the Next Generation Digital Classroom," UCSB Faculty Research Grant, \$5,000, 7/1/98-6/31/99.

H. Research Honors and Awards

- IEEE Fellow Status, 2014
- Finalist for Best Paper Award, IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON), June 2008
- Best Paper Award, Passive and Active Measurement (PAM) Conference, April 2007
- Outstanding Paper Award, World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA), June 2006
- IEEE Senior Member Status, 2003
- Finalist for Best Student Paper Award, ACM Multimedia, December 2002
- Outstanding Paper Award, World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA), June 2002
- Computing Research Association (CRA) Digital Government Fellowship, 2001
- National Science Foundation CAREER Award, 2000
- Best Paper Award, 7th International World Wide Web Conference, April 1998

III. Service

A. Professional Activities

1. Society Memberships

Member, Association for Computing Machinery (ACM): 1993-present
Member, ACM Special Interest Group on Communications (SIGComm): 1993-present
Fellow, Institute of Electrical and Electronics Engineers (IEEE): 1993-present
Member, IEEE Communications Society (IEEE ComSoc): 1993-present
Member, American Society for Engineering Education (ASEE): 2003-2006

2. Review Work for Technical Journals and Publishers

NSF CISE research proposals, IEEE/ACM Transactions on Networking, IEEE/ACM Transactions on Computers, IEEE/ACM Transactions on Communications, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Multimedia, IEEE Communications, IEEE Communications Letters, IEEE Network, IEEE Internet Computing, IEEE Multimedia, IEEE Aerospace & Electronics Systems Magazine, ACM Transactions on Internet Technology, ACM Transactions on Multimedia Computing, Communications and Applications, ACM Computing Surveys, ACM Computer Communications Review, ACM Computeres in Entertainment, ACM/Springer Multimedia Systems Journal, AACE Journal of Interactive Learning (JILR), International Journal of Computer Mathematics, Journal of Communications and Networks, Journal of Parallel and Distributed Computing, Journal of Network and Systems Management, Journal of High Speed Networking, Journal of Communications and Networks, Journal on Selected Areas in Communications, Journal of Wireless Personal Communications, Personal Mobile Communications, Annals of Telecommunications, International Journal of Wireless and Mobile Computing, Pervasive and Mobile Computing (PMC), Wireless Networks Journal, Computer Networks Journal, Cluster Computing, Computer Communications, Mobile Computing and Communications Review, Performance Evaluation, Software--Practice & Experience, Information Processing Letters, ACM Sigcomm, ACM Multimedia, ACM Network and System Support for Digital Audio and Video Workshop (NOSSDAV), ACM Sigcomm Workshop on the Economics of Peer-to-Peer Systems (P2PEcon), ACM Sigcomm Workshop on Challenged Networks (CHANTS), IEEE Infocom, IEEE Globecom, IEEE Global Internet (GI) Symposium, IEEE Globecom Automatic Internet Symposium, IEEE Globecom Internet Services and Enabling Technologies (IS&ET) Symposium, IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), IEEE International Conference on Network Protocols (ICNP), IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON), IEEE International Conference on Multimedia and Exposition (ICME), IEEE International Conference on Communications (ICC), IEEE International Conference on Parallel and Distributed Systems (ICPADS) IEEE International Symposium on High-Performance Distributed Computing (HPDC), IEEE International Conference on Distributed Computing Systems (ICDCS), IEEE International Workshop on Quality of Service (IWQoS), IEEE/IFIP Network Operations and Management Symposium (NOMS), IFIP/IEEE International Symposium on Integrated Network Management (IM), IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS), IEEE Aerospace & Electronics Systems Magazine, SPIE Conference on Multimedia Computing and Networking (MMCN), IFIP

Networking, IASTED International Conference on Information Systems and Databases (ISD), IASTED International Conference on Communications, Internet, and Information Technology, IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA), IASTED International Conference on European Internet and Multimedia Systems and Applications (EuroIMSA), IASTED International Conference on Communications and Computer Networks (CCN), IASTED International Conference on Software Engineering and Applications (SEA), International Conference on Computer and Information Science (ICIS), International Association for Development of the Information Society (IADIS) International Conference on the WWW/Internet, Workshop on Network Group Communication (NGC), International Conference on Next Generation Communication (CoNEXT), International Conference on Parallel Processing (ICPP), International Conference on Computer Communications and Networks (IC3N), International Workshop on Hot Topics in Peer-to-Peer Systems (Hot-P2P), International Workshop on Wireless Network Measurements (WinMee), International Workshop on Incentive-Based Computing (IBC), International Workshop on Multi-hop Ad Hoc Networks (REALMAN), International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWIM), International Packet Video (PV) Workshop, High Performance Networking Conference (HPN), International Parallel Processing Symposium (IPPS), International Symposium on Innovation in Information & Communication Technology (ISIICT), Workshop on Coordinated Quality of Service in Distributed Systems (COQODS), Pearson Education (Cisco Press) Publishers, Macmillan Technical Publishing, and Prentice Hall Publishers.

3. Conference Committee Activities

Journal/Magazine Editorial Board

IEEE Transactions on Mobile Computing (TMC): 2006-2011, 2017-2020 (Associate Editor-in-Chief)
 IEEE Networking Letters: 2018-2021
 IEEE Transactions on Network and Service Management (TNSM): 2015-2021
 Journal of Network and Systems Management (JNSM): 2011-present
 IEEE/ACM Transactions on Networking (ToN): 2003-2009, 2013-2017
 ACM Computers in Entertainment: 2002-2015
 IEEE Network: 1999-2012
 AACE Journal of Interactive Learning Research (JILR): 2003-2012
 IEEE Transactions on Mobile Computing (TMC): 2006-2011
 ACM Computer Communications Review (CCR): 2006-2010

Journal/Magazine Guest Editorship

IEEE Journal on Selected Areas in Communications (JSAC) Special Issue on "Delay and Disruption Tolerant Wireless Communication", June 2008
 Computer Communications Special Issue on "Monitoring and Measuring IP Networks", Summer 2005
 Computer Communications Special Issue on "Integrating Multicast into the Internet", March 2001

Conference/Workshop Steering Committee

IEEE International Conference on Network Protocols (ICNP): 2007-present
 ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006-present

IEEE Global Internet (GI) Symposium: 2005-2013, 2018-present
International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV): 2001-2020, 2005-2011 (chair), 2012-2020 (co-chair)
IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2005-2009

Conference/Workshop Chair

International Conference on Communication Systems and Networks (COMSNETS): 2014 (co-chair)
ACM International Conference on Next Generation Communication (CoNext): 2013 (co-chair)
ACM RecSys News Recommender Systems (NRS) Workshop and Challenge: 2013 (co-chair)
ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006 (co-chair)
IEEE International Conference on Network Protocols (ICNP): 2003 (co-chair), 2006
International Workshop on Wireless Network Measurements (WiNMee): 2006 (co-chair)
IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2002 (co-chair)
International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV): 2002 (co-chair), 2003 (co-chair)
IEEE Global Internet (GI) Symposium: 2001 (co-chair), 2018 (co-chair)
International Workshop on Networked Group Communication (NGC): 2000 (co-chair)

Program Chair

International Conference on Computer Communication and Networks (ICCCN): 2015 (Track co-chair)
International Conference on Communication Systems and Networks (COMSNETS): 2010
IEEE International Conference on Network Protocols (ICNP): 2008 (co-chair)
IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON): 2007 (co-chair)
IFIP Networking: 2005 (co-chair)

Posters/Demonstrations Chair

ACM Sigcomm: 2012 (co-chair)

Student Travel Grants Chair

ACM Sigcomm: 2010 (co-chair)

Publicity Chair

IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2004 (co-chair)

Keynote Chair

IEEE Infocom: 2005 (co-chair)

Local Arrangements Chair

Tutorial Chair

ACM Multimedia: 2000

IEEE International Conference on Network Protocols (ICNP): 1999

Panel/Session Organizer

NSF ANIR PI 2003 Panel on "Core Networking Issues and Protocols for the Internet"

CCW 2001 Session on "Multicast/Peer-to-Peer Networking"

NOSSDAV 2001 Panel on "Multimedia After a Decade of Research"

NGC 2000 Panel on "Multicast Pricing"

Technical Program Committee

IEEE International Conference on Network Protocols (ICNP): 1999, 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009 (Area Chair), 2010 (Area Chair), 2011 (Area Chair), 2012 (Area Chair), 2013, 2014 (Area Chair), 2015 (Area Chair), 2016 (Area Chair), 2017 (Area Chair), 2018 (Area Chair), 2019 (Area Chair), 2020 (Area Chair), 2021 (Area Chair)

International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV): 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019

ACM Multimedia (MM): 2001, 2003, 2004, 2005 (short paper), 2006, 2007, 2008, 2008 (short paper), 2010, 2011, 2012, 2013, 2015, 2016, 2017, 2018, 2019, 2023, 2024

IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON): 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 (Area Chair), 2012 (Area Chair), 2013, 2014 (Area Chair), 2015, 2016 (Area Chair), 2017, 2018, 2019

IEEE/IFIP Network Operations and Management Symposium (NOMS): 2004, 2006, 2010

IEEE Infocom: 2004, 2005, 2006, 2008, 2009, 2010 (Area Chair), 2011 (Area Chair), 2012 (Area Chair)

IFIP Networking: 2004, 2005, 2006, 2007, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2022

IEEE International Conference on Communications (ICC) Next Generation Networking and Internet Symposium (NGNI): 2018, 2019

ACM Workshop on Mobile Video (MoVid): 2014, 2015, 2016, 2017

ACM Student Research Competition (SRC) Grand Finals: 2014

Mobile and Social Computing for Collaborative Interactions (MSC): 2014

IEEE Conference on Communications and Network Security (CNS): 2013

IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM): 2005, 2006, 2007, 2008, 2009, 2010

ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006, 2008, 2009, 2010, 2011, 2012, 2016, 2017, 2018, 2019

IEEE International Conference on Distributed Computing Systems (ICDCS): 2006, 2010, 2011, 2012, 2013

International Workshop on Wireless Network Measurements (WiNMee): 2006, 2008, 2010

ACM Sigcomm: 2004 (poster), 2008 (poster), 2010

IEEE International Conference on Computer Communication and Networks (IC3N): 2008, 2009, 2010, 2011, 2012

International Conference on Communication Systems and Networks (COMSNETS): 2009, 2010, 2011, 2012, 2013

International Conference on Sensor Networks (SENSORNETS): 2012

International Workshop on Social and Mobile Computing for Collaborative Environments (SOMOCO): 2012
 Workshop on Scenarios for Network Evaluation Studies (SCENES): 2009, 2010, 2011
 ACM Multimedia Systems (MMSys): 2010, 2011, 2012, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022
 IEEE International Symposium on Multimedia (ISM): 2016
 IEEE International Conference on Pervasive Computing and Communications (PerCom): 2010
 IEEE Wireless Communications and Networking Conference (WCNC): 2010, 2011
 ACM International Symposium on Mobility Management and Wireless Access (MobiWac): 2010, 2011
 International Conference on Computing, Networking and Communications, Internet Services and Applications Symposium (ICNC-ISA): 2012, 2013
 IEEE WoWMoM Workshop on Hot Topics in Mesh Networking (HotMesh): 2010, 2011, 2012, 2013
 IEEE Workshop on Pervasive Group Communication (PerGroup): 2010
 ACM International Conference on Next Generation Communication (CoNEXT): 2005, 2006, 2007, 2009, 2012
 IEEE International Conference on Broadband Communications, Networks, and Systems (BroadNets) Wireless Communications, Networks and Systems Symposium: 2007, 2008, 2009
 IEEE International Conference on Broadband Communications, Networks, and Systems (BroadNets) Internet Technologies Symposium: 2007, 2008, 2009
 International Workshop on Mobile and Networking Technologies for Social Applications (MONET): 2008, 2009
 Extreme Workshop on Communication-The Midnight Sun Expedition (ExtremeCom): 2009
 IEEE International Workshop on Cooperation in Pervasive Environments (CoPE): 2009
 International Workshop on the Network of the Future (FutureNet): 2009, 2010, 2011, 2012
 IEEE International Conference on Multimedia and Exposition (ICME): 2010
 SPIE Conference on Multimedia Computing and Networking (MMCN): 2004, 2008
 ACM Sigcomm Workshop on the Economics of Networks, Systems, and Computation (NetEcon): 2008
 IEEE International Conference on Communications (ICC): 2008
 IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS): 2008
 IFIP/IEEE International Symposium on Integrated Network Management (IM): 2005, 2007
 Global Internet (GI) Symposium: 2001, 2002, 2004, 2006, 2007, 2022, 2023
 IEEE/ACM International Conference on High Performance Computing (HiPC): 2007
 ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc): 2007
 IEEE Workshop on Embedded Systems for Real-Time Multimedia (ESTIMedia): 2007
 IEEE/IFIP Wireless On Demand Network Systems and Services (WONS): 2007
 IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2001, 2002, 2003, 2004, 2005, 2006
 IASTED International Conference on European Internet and Multimedia Systems and Applications (EuroIMSA): 2004, 2006
 IEEE International Conference on Parallel and Distributed Systems (ICPADS): 2005, 2006
 IEEE Globecom Internet Services and Enabling Technologies (IS&ET) Symposium: 2006
 International Workshop on Incentive-Based Computing (IBC): 2006
 IEEE International Workshop on Quality of Service (IWQoS): 2006, 2014, 2015

International Workshop on Multi-hop Ad Hoc Networks (REALMAN): 2006
 IEEE Globecom Automatic Internet Symposium: 2005
 ACM Sigcomm Workshop on the Economics of Peer-to-Peer Systems (P2PEcon): 2005
 International Conference on Parallel Processing (ICPP): 2001, 2003, 2004
 International Packet Video (PV) Workshop: 2002, 2003, 2004
 IEEE International Symposium on High-Performance Distributed Computing (HPDC): 2004
 International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWIM): 2004
 International Symposium on Innovation in Information & Communication Technology (ISIICT): 2004
 Workshop on Coordinated Quality of Service in Distributed Systems (COQODS): 2004
 IASTED International Conference on Networks and Communication Systems (NCS): 2004
 IASTED International Conference on Communications, Internet, and Information Technology (CIIT): 2004
 IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA): 2003, 2004
 International Workshop on Networked Group Communication (NGC): 1999, 2000, 2001, 2002, 2003
 International Association for Development of the Information Society (IADIS)
 International Conference on the WWW/Internet: 2003
 International Conference on Computer and Information Science (ICIS): 2003
 Human.Society@Internet: 2003
 IASTED International Conference on Communications and Computer Networks (CCN): 2002
 The Content Delivery Networks (CDN) Event: 2001
 IP Multicast Initiative Summit: 1998, 1999, 2000
 Corporation for Education Network Initiatives in California (CENIC): 1999
 Internet Bandwidth Management Summit (iBAND): 1998, 1999

B. Technical Activities

1. Working Groups

Internet2 Working Group on Multicast, Chair: 1998-2005
 IEEE Communications Society Internet Technical Committee (ITC), Conference Coordinator: 2000-2004
 IETF Multicast Directorate (MADDOGS), Member: 1999-2001
 IASTED Technical Committee on the Web, Internet and Multimedia, Member: 2002-2005
 Internet Engineering Task Force (IETF), various working groups: 1995-present

2. Meeting Support Work

Internet Engineering Task Force MBone broadcasts: 1995-2005
 Conference MBone broadcasts: Sigcomm '99, and '00
 Interop+Networld Network Operations Center (NOC) Team Member: 1995-1997

C. University of California Committees

1. Department of Computer Science Committees

Public Relations: 2005-2006 (chair 2005-2006), 2009-2011 (chair 2009-2011)
Strategic Planning: 2000-2002, 2003-2006, 2009-2011
Undergraduate Advising and Affairs: 2006-2007, 2014-2015
Vice Chair: 2000-2005
Graduate Admissions: 2000-2005 (chair 2000-2005), 2011-2012
Graduate Affairs: 2000-2005 (co-chair 2000-2005)
Teaching Administration: 2000-2005
Facilities: 1997-2001 (chair 1999-2000), 2006-2007
External Relations: 1999-2002
Computer Engineering Public Relations: 2011-2012
Computer Engineering Awards: 2011-2012
Computer Engineering Administration/Recruiting: 1998-2001
Computer Engineering Lab and Computer Support: 1998-2001
Faculty Recruiting: 1999-2002
Graduate Advising: 1998-1999, 2000-2005

2. University Committees

Member, Campus Budget and Planning: 2013-2015
Faculty, Cognitive Science Program: 2006-2020
Faculty, Technology Management Program (TMP): 2003-2014
Faculty, Media Arts and Technology (MAT) Program: 1998-2014
Faculty, Computer Engineering Degree Program: 1998-2020
Steering Committee, Center for Information Technology and Society (CITS): 2012-2020
Associate Director, Center for Information Technology and Society (CITS): 1999-2012
Member, Campus Committee on Committees: 2010-2013
Member, Campus Income and Recharge Committee: 2010-2013
Member, College of Engineering Executive Committee: 2010-2012 (chair 2011-2012), 2014-2015 (chair 2014-2015)
Member, Distinguished Teaching Award Committee: 2009, 2010, 2011
Member, Campus Classroom Design and Renovation Committee: 2003-2010
Member, ISBER Advisory Committee: 2008-2011
Member, Fulbright Campus Review Committee: 2007
Member, Faculty Outreach Grant Program Review Committee: 2007
Executive Vice Chancellor's Information Technology Fee Committee: 2005-2006
Council on Research and Instructional Resources: 2003-2006
Executive Vice Chancellor's Working Group on Graduate Diversity: 2004-2005
Member, Engineering Pavillion Planning Committee: 2003-2005
Information Technology Board: 2001-2004
Executive Committee, Center for Entrepreneurship & Engineering Management (CEEM): 2001-2004

3. System Wide Committees

UCSB Representative to the Committee on Information Technology and Telecommunications
Policy (ITTP): 2003-2005

UCSB Representative to the Executive Committee, Digital Media Innovation (DiMI): 1998-2003

D. Georgia Tech Committees and Service (while a graduate student)

Graduate Student Body President: 1994-1995

Georgia Tech Executive Board: 1994-1995

Georgia Tech Alumni Association Executive Committee: 1994-1995

Dean of Students National Search Committee: 1995

Institute Strategic Planning Committee: 1994-1996

Cases in last 4 years I have been deposed or testified at hearing/trial:

- Trial testimony in Two Way Media LTD v. Telefonica (517/2017-X, Barcelona, Spain). 12/2015-05/2022.
- A deposition and claim construction hearing testimony in Peloton Interactive, Inc. v. Icon Health and Fitness, Inc. (1:20-cv-00662-RGA, D. Del.). 10/2020-05/2022.
- Depositions in Icon Health and Fitness, Inc. v. Peloton Interactive, Inc. (20-1386-RGA, D. Del.). 10/2020-05/2022.
- A deposition and hearing testimony in UMG Recordings, Inc., et al. v. Bright House Networks, LLC (8:19-cv-00710-MSS-TGW, M. D. Fla.). 11/2019-05/2022.
- A deposition in Inter Partes Review of U.S. Patent Nos. 9,860,198 (IPR2021-00882) and 10,728,192 (IPR2021-00883) [Meta Platforms, Inc. v. Wrinkl, Inc.]. 12/2021-06/2022.
- Depositions in TQ Delta, LLC v. AdTran, Inc. (14-cv-954-RGA, 15-cv-121-RGA, D. Del). 03/2017-06/2022.
- Depositions in Inter Partes Review of U.S. Patent Nos. 8,166,081 (IPR2021-01267), 8,688,028 (IPR2021-01303), 8,903,307 (IPR2021-01305), and 8,200,203 (IPR2021-01371) [Hyundai Motor America v. StratosAudio, Inc.]. 06/2021-08/2022.
- A deposition and trial testimony in Shopify, Inc. v. Express Mobile, Inc. (1:19-cv-00439-RGA, D. Del.). 05/2020-08/2022.
- A deposition in FirstFace Co, LTD v. Apple, Inc (3:18-cv-02245-JD, N. D. Cal.). 05/2022-11/2022.
- Depositions in Inter Partes Review of U.S. Patent Nos. 9,291,475 (IPR2022-00708 and IPR2023-00031); 9,602,608 (IPR2022-00709); 7,484,008 (IPR2022-00857); and 6,832,283 (IPR2022-0970) [Toyota Motor Corp. and American Honda Motor Co, Inc. v. Intellectual Ventures II LLC]. 01/2022-02/2023.
- A deposition in Inter Partes Review of U.S. Patent No. 9,182,231 (IPR2022-00586) [Qualcomm Inc. v. FedEx Corporate Services, Inc.]. 09/2021-04/2023.
- A deposition in WebRoot, Inc. and Open Text, Inc. v. Trend Micro, Inc. (22-cv-00239-ADA-DTG, W. D. Tex.). 06/2022-04/2023.
- Depositions and trial testimony in Sonos, Inc. v. Google, LLC (6:20-cv-881-ADA, W. D. Tex.; 3:20-cv-06754-WHA, N. D. Cal.; and 3:21-cv-07559-WHA, N. D. Cal.). 11/2019-05/2023.
- A deposition in Inter Partes Review of U.S. Patent No. 8,072,968 (IPR2022-00890) [IBM Corp. v. Ebates Performance Marketing, Inc.]. 06/2022-05/2023.
- Depositions and trial testimony in Personal Audio, LLC v. Google, Inc. (1:17-cv-01751-VAC-CJB, D. Del). 03/2018-06/2023.
- A deposition and trial testimony in Centripetal Networks, Inc. v. Cisco Systems, Inc. (2:18-cv-00094, E. D. Va.). 01/2019-06/2023.
- A deposition in Orckit Corp v. Cisco Systems, Inc. (2:22-cv-276, E. D. Tex.). 05/2023-06/2023.

- A deposition and trial testimony in Touchstream Technologies, Inc. v. Google, LLC (6:21-cv-00569-ADA, W. D. Tex.). 08/2022-07/2023.
- A deposition in Inter Partes Review of U.S. Patent No. 8,784,113 (IPR2022-01439) [Go1 Pty, Ltd. v. OpenSesame, Inc.]. 01/2022-09/2023.
- A deposition and trial testimony in SB IP Holdings, LLC v. Vivint Smart Home, Inc. (4:20-cv-00886-ALM, E. D. Tex.). 12/2021-10/2023.
- Depositions and trial testimony in Alacritech, Inc. v. Centurylink Communications LLC; Winston Corporation, Dell, Inc. (2:16-cv-693-RWS, 2:16-cv-692-RWS, 2:16-cv-695-RWS, E. D. Tex.). 04/2016-10/2023.
- A deposition in Inter Partes Review of U.S. Patent Nos. 9,503,498 (IPR2023-00185); 9,516,091 (IPR2023-00186); and 8,924,457 (IPR2023-00187) [Bright Data LTD v. Oxylabs, UAB]. 06/2020-11/2023.
- Trial testimony in GoodRx, Inc. v. Famulus Health LLC (AAA Ref. No. 01-23-000-5919). 06/2023-11/2023.
- A deposition in Entropic Communications LLC v. Charter Communications, Inc. (2:22-cv-00125-JRG, E. D. Tex.). 03/2023-12/2023.
- Depositions in Post-Grant Review of U.S. Patent No. 10,782,951 (PGR2021-00096) and 11,157,256 (PGR2022-00053) [IronSource Ltd. v. Digital Turbine, Inc.]. 05/2021-12/2023.
- Trial testimony in Certain Wi-Fi Routers, Wi-Fi Devices, Mesh Wi-Fi Network Devices, and Hardware and Software Components Thereof (US ITC Inv. No. 337-TA-1361) [Netgear v. TP-Link]. 05/2023-01/2024.
- A deposition in Antonio McKinney et al. v. Corsair Gaming, Inc. (3:22-cv-00312-CRB, N. D. Cal.). 07/2023-01/2024.
- A deposition in Certain Fitness Devices, Streaming Components Thereof, and Systems Containing Same (US ITC Inv. No. 337-TA-1265E) [iFit Inc., FreeMotion Fitness, Inc. and NordicTrack, Inc. v. DISH DBS Corporation, DISH Technologies LLC, and Sling TV LLC]. 10/2023-02/2024.
- A deposition in Marble VOIP Partners LLC v. Zoom Video Communications, Inc. 4:23-cv-03619-JSW, N. D. Cal.). 12/2023-04/2024.
- Depositions in IBM Corp. v. Rakuten, Inc. and Ebates Performance Marketing, Inc. (21-461-VAC, D. Del.). 06/2022-06/2024.
- A deposition and trial testimony in Omnitracs, LLC v. Platform Science, Inc. (3:20-cv-0958-CAB-DDL, S. D. Cal.). 05/2023-07/2024.
- A deposition in NetSocket, Inc. v. Cisco Systems, Inc. (2:22-cv-00172-JRG, E. D. Tex.). 09/2022-08/2024.
- Depositions in Partes Review of U.S. Patent Nos. 7,230,931 (IPR2023-00098) and 9,426,794 (IPR2023-01147) [Verizon Wireless v. General Access Solutions, Ltd.]. 03/2023-08/2024.
- A deposition and trial testimony in International Business Machines Corp v. Zynga, Inc. (22-590-GBW, D. Del.). 08/2023-09/2024.

- A deposition in Lionra Technologies Limited v. Fortinet, Inc. (2:22-cv-00322-JRG-RSP, E. D. Tex.). 02/2023-09/2024.
- Depositions in STA Group LLC v. Motorola Solutions, Inc. (2:23-cv-00030-JRG-RSP, E. D. Tex.). 04/2024-01/2025.
- A deposition and trial testimony in WSOU Investments, LLC v. Cisco Systems, Inc. (6:20-cv-00128-ADA, W. D. Tex.). 03/2021-02/2025.
- A deposition and trial testimony in Touchstream Technologies, Inc. v. Comcast Cable Communications, LLC (2:23-cv-00062-JRG, E. D. Tex.). 01/2024-03/2025.
- A deposition and trial testimony in VidStream, LLC v. X, formerly Twitter, Inc. (3:16-cv-0764-N, N. D. Tex.). 07/2016-04/2025.
- Depositions in Western Digital Technologies, Inc. v. Viasat, Inc. (4:22-cv-4376-HSG, N. D. Cal.). 08/2022-05/2025.
- Depositions in Video Solutions PTE. LTD. v. Cisco Systems, Inc. (2:23-cv-222-JRG, E. D. Tex.). 08/2023-05/2025.
- Trial testimony in Adeia Guides, Inc. v. Bell Canada, Inc. (T-1184-21, Canada Federal Court). 01/2022-05/2025.
- A deposition in Certain Smart Televisions (ITC Inv. No. 337-TA-1420). [Maxell, Ltd. v. TCL Multimedia Technology Holdings, Ltd.]. 12/2024-06/2025.
- Trial testimony in The Nielsen Company (US), LLC v. Hyphametrics, Inc. (23-126-GBW-CJB, D. Del.). 10/2023-07/2025.
- A deposition in Plus One, LCC v. Capital Relocation Services, LLC (23-cv-2016-KMM-JFD, D. Minn.). 06/2024-07/2025.
- A deposition in Inter Partes Review of U.S. Patent No. 7,924,802 (IPR2024-01336) [Qualcomm, Inc. v. Cobblestone Wireless LLC]. 08/2024-09/2025.
- A deposition in Beijing Meishe Network Technology Co. LTD. v. TikTok, Inc. (5:23-cv-6012-SI, N. D. Cal.). 05/2023-08/2025.
- Trial testimony in Contour IP Holding, LLC v. GoPro, Inc. (17-cv-04738-WHO, N. D. Cal.). 10/2019-10/2025.
- Depositions in Inter Partes Review of U.S. Patent Nos. 8,875,185 (IPR2024-01338), 9,317,597 (IPR2024-01339), 8,145,704 (IPR2024-01340), 9,215,261 (IPR2024-01341), 8,886,753 (IPR2024-01342), and 9,923,947 (IPR2024-01343) [TikTok, Inc. v. NTECH Properties, Inc.]. 04/2024-10/2025.
- A deposition and trial testimony in Express Mobile, Inc. v. GoDaddy.com, LLC (1:19-cv-01937-RGA, D. Del.). 05/2020-11/2025.
- A deposition in Inter Partes Review of U.S. Patent No. 11,973,731 (IPR2024-01489 and IPR2024-01490) [Slack Technologies, LLC and Salesforce, Inc. v. Wrinkl, Inc.]. 01/2025-11/2025.
- A deposition and trial testimony in BARCO, Inc. v. YeaLink Network Technology Co., LTD (2:23-cv-00521-JRG-RSP, E. D. Tex.). 06/2024-11/2025.

- A deposition and trial testimony in SmartSky Networks, LLC v. Gogo Business Aviation, LLC (22-266-VAC, D. Del.). 12/2023-11/2025.
- Trial testimony in MyChoice, LLC and BarBoards, LLC v Taiv, Inc. (2:23-cv-00507-JRG-RSP, E. D. Tex.). 04/2025-12/2025.
- A deposition in Certain Wi-Fi Routers, Wi-Fi Devices, Mesh Wi-Fi Network Devices and Components Thereof (US ITC Inv. No. 337-TA-1454) [Estelgia, LLC v. Plume Design Inc.]. 07/2025-03/2026.
- A deposition in Motorola Solutions, Inc. v. Hytera Communications Corp. LTD (1:17-cv-01972, N. D. Ill.). 04/2017-present.
- Depositions and trial testimony in Luminati Networks Ltd. v. UAB Tesonet and UAB Metacluster LT (2:18-cv-00299-JRG, E. D. Tex.); Luminati Networks Ltd. v. Teso LT, UAB; Oxysales, UAB; and Metacluster LT, UAB, (2:19-cv-00395-JRG, E. D. Tex.); Luminati Networks Ltd. v. Code 200, UAB; Oxysales, UAB; and Metacluster LT, UAB (2:19-cv-00396-JRG, E. D. Tex.); Bright Data Networks Ltd. v. Tefincom S.A. (2:19-cv-00414-JRG, E. D. Tex.); Metacluster LT, UAB v. Bright Data Ltd. (2:23-cv-00011-JRG-RSP, E. D. Tex.); Bright Data Ltd. v. Oxylabs, UAB (2:23-cv-00171-JRG-RSP, E. D. Tex.). 06/2020-present.
- A deposition in Zilkr Cloud Technologies, LLC v. Cisco Systems, Inc. (2:22-cv-00166-JRG-RSP, E. D. Tex.). 02/2023-present.
- A deposition in STA Group, LLC v. Motorola Solutions, Inc. (2:22-cv-00381-JRG-RSP, E. D. Tex.). 05/2023-present.
- A deposition in NEC Corporation v. Peloton Interactive, Inc. (1-22-cv-00987-CJB, D. Del.). 08/2023-present.
- A deposition in Robocast, Inc. v. Netflix, Inc. (1:22-cv-00305-RGA, D. Del.). 07/2022-present.
- Depositions in Time Warner Cable Enterprises, LLC v. Nokia of America Corp. (650748/2022, IAS Part 43, N. Y. and 654900/2022, IAS Part 43, N. Y.). 01/2024-present.
- A deposition in Charter Communications, LLC v. Sonus Networks, Inc. and Ribbon Communications Operating Company, Inc. (N22C-09-529-EMD-CCLD, DE and 653435/2022, Part 49, N. Y.). 01/2024-present.
- A deposition in Stellar LLC v. Motorola Solutions, Inc. and Watchguard Video, Inc. (4:23-cv-750-SDJ, E. D. Tex.). 01/2024-present.
- A deposition in Inter Partes Review of U.S. Patent Nos. 10,407,026 (IPR2024-00785), 9,171,268 (IPR2024-00786), 11,396,244 (IPR2024-00814), 9,365,188 (IPR2024-00981), 11,738,659 (IPR2024-001167), 11,104,245 (IPR2026-00059), 12,337,716 (IPR2026-00070), and 12,337,715 (PGR2026-00008) [Toyota Motor Corp and Kia Corp v. Emerging Automotive LLC]. 11/2023-present.
- A deposition in Warner Records, Inc. et al. v. Altice USA, Inc. (2:23-cv-00576-JRG-RSP, E. D. Tex.). 09/2024-present.
- A deposition in Cal Bridge, Inc. v. OneCal (1:24-cv-22361, S. D. Fla.). 03/2025-present.

- Depositions in Inter Partes Review of U.S. Patent Nos. 10,762,002 (IPR2024-01436), 11,403,237 (IPR2024-01437), 11,258,676 (IPR2024-01438), 11,422,951 (IPR2024-01439), 10,684,972 (IPR2025-00491), 11,966,346 (IPR2025-00597) and 11,966,347 (IPR2025-00598) [YeaLink Network Technology Co., LTD v. BARCO N. V.]. 06/2024-present.
- A deposition in Audio Pod IP, LLC v Amazon.com, Inc. (3:24-cv-00406-RCY, E. D. Va.). 05/2025-present.
- A deposition in Voxtur Analytics Corp v AutomationRE, Inc. (1:25-cv-742-GBW, D. Del.). 07/2025-present.
- A deposition in Sonos, Inc. v. Google, LLC (2:20-cv-00169-JAK, C. D. Cal.). 03/2025-present.
- A deposition in SoftEx, LLC v Absolute Software Corp (1:22-cv-1308-DAE, W. D. Tex.). 10/2022-present.
- A deposition in Adaptive Spectrum and Signal Alignment, Inc. v. Charter Communications, Inc. et al. (2:24-cv-00124-JRG-RSP, E. D. Tex.). 04/2024-present.
- A deposition in AutoConnect Holdings, LLC v. Toyota Motor Corp and General Motors, LLC (2:24-cv-00802-JRG-RSP and 2:24-cv-00877-JRG-RSP, E. D. Tex.). 04/2025-present.