UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREEWHEEL MEDIA, INC.,
Petitioner,

v.

ALMONDNET, INC.,
Patent Owner.

Patent No. 11,564,015
Filing Date: April 6, 2022
Issue Date: January 24, 2023
Title: TARGETED TELEVISION ADVERTISEMENTS BASED ON ONLINE BEHAVIOR

Inter Partes Review No.: IPR2024-00419

DECLARATION OF DAVID B. LETT IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,564,015

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I, David B. Lett, declare that I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of the Petitioner, FreeWheel Media, Inc., for the above-referenced *inter partes* review proceeding.

2. I have been asked to provide a declaration with my opinions regarding certain matters pertaining to the patentability of U.S. Patent No. 11,564,015 ("the '015 Patent"). I understand that the '015 patent is owned by AlmondNet, Inc. ("Patent Owner").

3. I am being compensated at my usual consulting rate for my work on this matter. My compensation is in no way dependent upon my opinions or testimony or the outcome of this proceeding. I have no financial interest in the parties or in the outcome of this proceeding.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

4. I am a technical consultant and product development industry veteran with expertise in electronics, software, hardware, video, audio, and data communications, having led product development organizations in cable, satellite, consumer electronics, asset tracking, remote tank logistics, and alarm industries. My current curriculum vitae is attached as Exhibit 1003 and some highlights follow.

5. I earned my B.S. in Electrical Engineering (1982) with high honors from the University of Tennessee in Knoxville, Tennessee. I also attended the Georgia Institute of Technology from 1986 to 1987, completing 40% of the required degree hours for the M.S. Electrical Engineering program.

6. From 1982 to 1985, I worked at Scientific Atlanta as an Electrical Engineer designing video, audio, and data communications equipment for the cable television industry. I designed software and hardware including addressable data transmitters, video sync suppression scramblers, transaction format converters, and data channel monitors for addressable Cable Television systems and Set Top Boxes.

7. From 1983 to 1985, while working at Scientific Atlanta, I also worked as an Assistant Professor at DeVry Institute of Technology, teaching courses in electronics and microprocessor hardware/software.

8. From 1985 to 1990, I worked at Wegener Communications as a Senior Electrical Engineer, designing satellite communications equipment including forward error correction (FEC) coding systems, PSK modems, and analog control systems for RF modulators and PSK demodulators. I was promoted to the Hardware Engineering Manager, where I managed product development of video, audio, and data satellite receivers, modulators, graphics display systems, DSP-based compandors, FSK and PSK satellite modems, multiplexers, forward error correction

(FEC) codecs, RF upconverters and downconverters, and baseband analog and digital processing components.

9. In 1990, I returned to Scientific Atlanta, which was acquired by Cisco in 2006. I worked as Engineering Manager running the set top box engineering group where I was promoted to Director and Vice President during my tenure until 2011. I led the design of many cable set top boxes and systems through the evolution of analog video, addressability, downloadable software, electronic program guides, digital video, VOD, software applications, high-definition TV, DVR, DOCSIS, full spectrum tuners, and multiroom DVR. These systems implemented various technologies including DOCSIS 1/2/3 and hybrid gateways, 802.11, IPTV, DVR, cable modems, ADSL, VDSL, DVB-T/C/S, bootloaders, factory diagnostics, application frameworks, Nagra, DRMs, conditional access, secure microprocessors, device management, Android, Adobe Flash, Linux, DVD play/record, MPEG-4, MPEG-2, H.264, NTSC, PAL, DAVIC, MoCA, high-performance CPUs, cablecards, network processors, HDMI, multiple video/audio display interfaces, 2D/3D graphics, multiple RF tuners, and full spectrum tuners.

10. From 2011 to 2016, I worked for EchoStar Technologies, which served as the product development organization for sister company DISH Network. I served as Vice President of Engineering and was the Head of the Atlanta research and development center. I led the development of satellite set top boxes, consumer

electronic equipment, and a home automation and security system. Technologies used included video/audio, IoT, H.265, HEVC, 3D, Satellite, wireless, MoCA, transcoding, embedded C Linux applications, mobile applications (IOS and Android), SaaS, web applications (JavaScript, HTML), BSS/OSS, AWS cloud storage, 2-way video/audio streaming, authentication, and VoIP.

11. In 2016, I started an independent consulting business in technology and intellectual property projects. I have consulted in various technology areas and industries including consumer electronics, cable, satellite, television, and cryptocurrency.

12. From 2019 to 2022, I worked as Chief Technology Officer for Telular, an Ametek company. I was responsible for the development of Industrial Internet of Things (IIoT) recurring revenue solutions, combining wireless technologies, purpose-built hardware, and SaaS in the commercial telematics, security and home automation markets and sold under the SkyBitz and Telguard brands.

13. My record of professional service includes awards on products I designed and developed from several organizations in my field of expertise, including Best of Show, Technology Emmy, and Best of Innovations.

14. I am a named inventor on at least 87 issued patents and published patent applications corresponding to the areas of my professional work. The patents and

published applications involving television distribution systems, STBs, EPGs, Video on Demand (VOD), and content delivery systems include:

- U.S. Patent No. 9,615,139 titled "Determining Device That Performs Processing of Output Pictures"
- U.S. Patent No. 8,549,567 titled "Media Content Sharing Over a Home Network"
- U.S. Patent No. 8,161,388 titled "Interactive Discovery of Display Device Characteristics"
- U.S. Patent Nos. 8,120,924, 7,240,217, 6,785,817, 6,564,324, 6,212,278 and 5,440,632 titled "Reprogrammable subscriber terminal"
- U.S. Patent No. 7,908,625 titled "Networked Multimedia System"
- U.S. Patent Nos. 7,861,272 and 7,849,486 titled "Networked subscriber television distribution"
- U.S. Patent Nos. 7,774,820 and 7,069,578 titled "Settop cable television control device and method including bootloader software and code version table for maintaining and updating settop receiver operating system software"
- U.S. Patent No. 5,771,064 titled "Home communications terminal having an applications module"
- U.S. Patent No. 5,715,515 titled "Method and apparatus for downloading on-screen graphics and captions to a television terminal"
- U.S. Patent No. 5,657,414 titled "Auxiliary device control for a subscriber terminal"
- U.S. Patent No. 5,592,551 titled "Method and apparatus for providing interactive electronic programming guide"

- U.S. Patent No. 5,539,822 titled "System and Method for Subscriber Interactivity in a Television System"
- U.S. Patent No. 5,367,571 titled "Subscriber terminal with plug in expansion card"
- U.S. Patent No. 5,357,276 titled "Method of Providing Video On Demand with VCR Like Functions"
- U.S. Patent Application Publication No. 2004/0133911 titled "Subscriber network in a satellite system"
- U.S. Patent Application Publication Nos. 2004/0068753 and 2008/0072272 titled "Video Transmission Systems and Methods for a Home Network"
- U.S. Patent Application Publication No. 2003/0192047 titled "Exporting data from a digital home communication terminal to a client device"

15. I have a general understanding of the U.S. patent prosecution process and of the novelty and non-obviousness requirements for patentability.

16. I believe that my extensive industry experience and educational background qualify me as an expert in the relevant field of data communications topologies, including those topologies specifically used for targeted advertising in a data communications topology. I am knowledgeable of the relevant skill set that would have been possessed by a hypothetical person of ordinary skill in the art ("POSA") at the time of the claimed invention of the '015 patent, which I have treated as April 17, 2007 for purposes of this proceeding.

III. MATERIALS REVIEWED

17. In connection with my study of this matter and reaching the opinions stated herein, I have reviewed a number of documents including the exhibits listed in Appendix A.

IV. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS

18. Although I am not an attorney, I have a general understanding of the applicable legal standards pertaining to the patentability issues presented in this proceeding.

19. I understand that, in this *inter partes* review (IPR), Petitioner is challenging the patentability of the claims of the ’015 patent. I understand that Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence.

20. I understand that to be valid, a patent claim must be “novel,” and is invalid if “anticipated” by a single prior art reference. I further understand that a reference anticipates if it discloses each and every element as arranged in the claim, so as to enable a person of ordinary skill in the art (“POSA”) to make and use the claimed invention without undue experimentation.

21. I understand that a patent claim is unpatentable if, at the time of the invention, it would have been obvious to a POSA to combine the teachings of the prior art to yield the patent claim. I also understand that it is not required (although

it is acceptable) that each element/limitation of a patent claim be found in a single reference in order to find a patent claim obvious. For a patent claim to be found obvious, all the elements/limitations of the patent claim may be found in a combination of references at which a person of ordinary skill in the art would have been reasonably expected to arrive. I understand that a proper analysis of whether an invention is unpatentable for obviousness includes a review of the scope and content of the prior art, the differences between the patent claims at issue and the prior art, the level of ordinary skill in the field of the invention at the time of the invention, and other objective considerations identified below.

22. It is my understanding that the prior art and claimed invention should be viewed through the knowledge and understanding of a person of ordinary skill in the art—one should not use his or her own insight or hindsight in deciding whether a claim is obvious. I further understand that a claim may be rendered obvious if a person of ordinary skill in the art can implement the claimed invention as a predictable variation of a known product. I also understand that a person of ordinary skill in the art is presumed to have knowledge of the relevant prior art at the time of the claimed invention, which comprises any prior art that was reasonably pertinent to the particular problems the inventor faced.

23. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references.

I understand that in consideration of the issue of obviousness it is important to identify whether a reason existed at the time of the invention that would have led a POSA to combine elements of the references in a way that yields the claimed invention.

24. I understand that a claim may be considered unpatentable for obviousness for various reasons. I have been informed that the following exemplary rationales may support a finding of obviousness:

(A) combining prior art elements according to known methods to yield predictable results;

(B) simply substituting one known element for another to obtain predictable results;

(C) use of a known technique to improve similar devices in the same way;

(D) applying a known technique to a known device or method ready for improvement to yield predictable results;

(E) choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;

(F) known work in a field that prompts variations in the work in the same or a different field that leads to predictable results; and

(G) some teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify a prior art reference or

combine multiple prior art references or teachings to arrive at the claimed invention.

25. I understand that various objective or "real world" factors, also referred to as secondary considerations, may be indicative of non-obviousness. I understand that such factors/considerations include:

(A) the commercial success of the claimed invention;

(B) the existence of a long-felt, unresolved need for a solution to the problem solved by the claimed invention;

(C) failed attempts to solve the problem solved by the claimed invention;

(D) copying of the claimed invention;

(E) unexpected results of the claimed invention;

(F) praise for the claimed invention by others in the relevant field; and

(G) willingness of others to accept a license under the patent because of the merits of the claimed invention.

26. It is my understanding that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the link may be common sense. I further understand that the obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that is sufficient motivation to combine references.

27. It is my understanding that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, common sense is a good reason for a person of ordinary skill to pursue known options when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions.

28. I further understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, it is my understanding that any need or problem known in the field at the time of invention and addressed by the patent can provide a reason for combining the limitations in the manner claimed.

V. OVERVIEW OF THE '015 PATENT

29. The '015 Patent relates to online access and targeted delivery of advertisements "without employing personally identifiable information." Ex. 1001, 1:27-31, Abstract. As the prior art demonstrates, the claims recite basic, well-known technology for carrying out this obvious business method.

30. The '015 Patent describes "a method for delivering targeted television advertisements based on online behavior," where "[u]sing user profile information derived from online activity from one of the online access IP addresses, a television advertisement is selected." *Id.*, Abstract, 8:17-23; *see also id.*, 1:27-31. The '015 Patent does not limit a "user" to a single individual, but rather broadly defines the

term as "one or more persons receiving online access or television services at a delivery end-point within a household, office, business, or other site or establishment served by an online access provider or television service provider." *Id.*, 8:56-61. The user—which may be multiple individuals—may receive the online access or television services in various types of locations, such as in a home via a home network or in a business or other site, e.g., via a wireless hotspot or other access point providing online access. *Id.*, 8:56-9:12, 17:54-61.

31. The '015 Patent admits that its method is implemented using a variety of well-known devices and technologies. *See, e.g.*, *id.*, 1:32-6:64. For example, the '015 Patent describes existing devices and technologies such as a set-top box (STB) ("a device that connects a television and a signal source"), a central ad server (CAS) ("a computer server that manages delivery of online advertisements to visitors of online sites"), and profiles or partial profiles that "can contain any quantity of profile information, such as, in one example, just an online access IP address used by a person at the time his profile was collected and the identity of the profile provided," as part of the background for the alleged invention. *Id.*, 1:49-2:7, 4:61-5:17, 6:3-24.

32. Although the '015 Patent broadly describes "a method for delivering targeted television advertisements based on online behavior," much of the specification specifically relates to obvious methods of associating internet protocol (IP) addresses of user devices and/or associating identifiers with user devices to

facilitate delivery of said targeted television advertisements. *See, e.g.*, *id.*, 9:13-34, 9:61-11:5, 12:57-13:4, 15:30-16:12. For example, the '015 Patent describes those known devices, such as a computer (i.e. "user online access device") and a STB, may both correspond to a user and connect to the Internet via a common modem. *Id.*, 1:49-2:7, 9:54-58, 9:61-10:9, 10:42-55.

33. The '015 Patent describes associating the Internet Protocol (IP) address of a user online access device with the IP address of a STB based on both devices having a common IP address based on a common IP address of a shared/common modem. *Id.*, 1:49-2:7, 3:14-23, 9:54-58, 9:61-10:9, 10:42-55, 13:18-47. The '015 Patent explains that when a user online access device accesses the Internet through a modem, a dynamic IP address (i.e. "online access IP address") "is allocated to the user's modem 32 for online access, typically through DHCP." *Id.*, 9:61-65. The online access IP address is then reported to a known device, such as a CAS, that manages delivery of online ads. *Id.*, 10:11-24. The '015 Patent confirms in the background section of the specification that CASs, such as third-party ad servers, were known in the prior art. *Id.*, 4:61-5:17 ("Examples of third-party ad servers include DoubleClick's DART for Publishers central ad server (also known as DFP) and DoubleClick's DART for Advertisers central ad server (also known as DFA)").

34. The '015 Patent explains that "[w]hen the user's STB 36 is used to access a web-based server (for accessing an online programming guide, for example,

through the cable television transmission system or through a connection to the Internet)" the IP address of the STB is transmitted to the CAS as well. *Id.*, 10:46-49. Because the STB accesses the Internet through the same modem as the user online access device, the CAS associates the STB's IP address "with the pseudonym previously associated with the user's modem 32," where the pseudonym was assigned to the user's online access IP address (i.e., modem IP address) when the user connected to the Internet via their online access device. *Id.*, 10:42-11:5.

35. The '015 Patent discusses utilizing the above-described associations to deliver targeted television advertisements to the user's STB based on user profiles. For example, indications of the user's online activity from a particular IP address can be electronically communicated to the CAS. *Id.*, 11:6-15. The '015 Patent describes that this, in turn, "can cause a television advertisement to be directed to the STB IP address that is associated with [the] online IP address" of the user. *Id.*, 11:15-17.

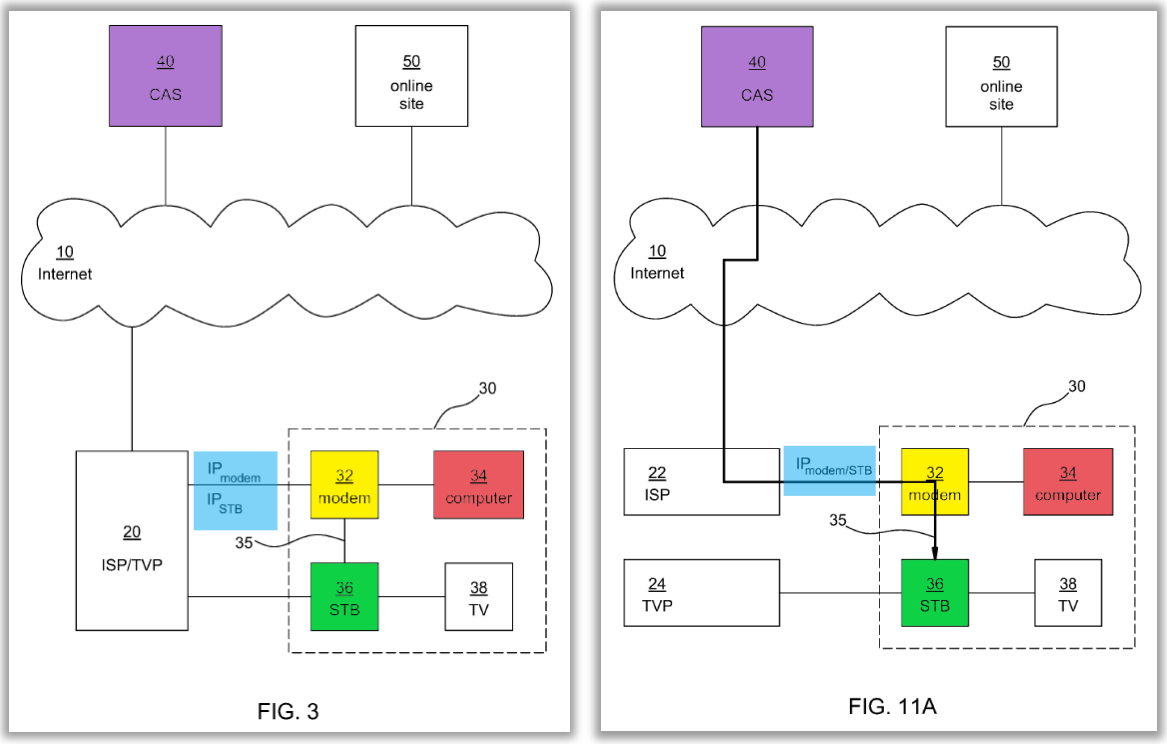
36. The '015 Patent explains that the targeted ads are "selected for delivery to the user's STB 36 based on the user's online behavior (e.g., merely accessing the online site 50, viewing a particular web page, performing a particular search, clicking on a particular link or ad, online shopping or purchases, or other activity). Information about observed online behavior (i.e., indications or indicia of online activity) or collected demographic information can be used by the CAS or by the

profile provider to direct a targeted TV ad." *Id.*, 11:47-56. The user's online behavior can be gathered from profile providers that send electronic communications to the CAS which contain "information derived from the interaction of the user with an online site." *Id.*, 11:65-12:9.

37. The '015 Patent further explains that, once an ad has been selected or requested, "the television advertisement can be transmitted to the user's STB in a variety of ways." *Id.*, 12:34-35. For example, the ad can be transmitted to the user directly from the CAS based on the CAS previously storing the ad, received by the CAS "from the accessed online site, from another online site, or from another ad server and stored on the CAS as part of the transmission request from the accessed online site, and then transmitted to the user's STB." *Id.*, 12:34-42, FIG. 6A. Additionally, or alternatively, the ad "can be transmitted directly to the user's STB from the accessed online site" or "from another online site or ad server." *Id.*, 12:42-45, FIGS. 6B-6C.

38. The '015 Patent describes its methods as being used in configurations where online access and television services are provided by a common provider, and in configurations where online access and television services are provided by different providers. *See, e.g.*, *Id.*, 8:38-45. As shown in Figures 3 and 11A (below, annotated), the '015 Patent describes both configurations as including a CAS (**purple**), a modem (**yellow**), a computer (i.e., user online access device) (**red**), and

a STB (**green**). *Id.*, FIGS. 3, 11A, 9:35-60, 10:64-11:2, 13:8-13. In both configurations, the user online access device and the STB access the Internet through the same modem and the modem IP address is shared with both devices (**blue**) as described above. *Id.* Nothing about this topology/system is new; nor does the '015 Patent purport to provide any new hardware or connection within the overall system/topology. *Id.*; *see also* Ex. 1001, 12:35-13:4.



Ex. 1001, FIGS. 3, 11A (annotated)

39. As shown in the annotated figures above, the only structural difference between the two configurations is that the internet service provider (ISP) and television provider (TVP) are separate devices in the arrangement of FIG. 11A. *Id.*, FIGS. 3, 11A, 8:38-45. The '015 Patent explains that regardless of which

configuration is used, the online access IP address is assigned to the modem as described above, the STB obtains online access via the same IP address as the user's online access device, and user profile information is gathered based on the user's online activity. *Id.*, 13:5-47, 14:23-15:18. Even if the ISP and TVP are separate devices, said user profile information is used to deliver targeted television ads to the STB based on an association between the STB IP address and the modem/user online access IP address (i.e., a "common IP address") as described above. *Id.*, 12:64-13:8.

40. The '015 Patent also describes an example implementation of the methods described above where "the user's STB 36 can be assigned an identifier," that the CAS may place "on the STB the first time it is in contact with the STB and read or amend the identifier every time afterwards the STB and the CAS are in contact." *Id.*, 15:30-40. The '015 Patent explains that the identifiers can be used "[w]hen an online site 50 is accessed from the common IP address, [and] online site 50 requests that a television advertisement be transmitted to the STB having the common IP address," in order to identify whether the television advertisement was correctly directed. *Id.*, 15:59-16:2. The '015 Patent admits that "[s]uch an identifier is an analogy of a 'cookie' used by online servers to recognize visitors' computers." *Id.*, 15:40-42. Cookies were known in the prior art, as described in the background of the '015 Patent. *Id.*, 6:45-60.

41. In summary, the ’015 Patent claims a method of using well-known devices and technologies to gather user information of user online activity by obvious methods and subsequently use the gathered user information to deliver targeted ads to STBs, based on similarly obvious methods of associating IP addresses of devices used to perform the online activity and of the STB.

VI. PROSECUTION HISTORY

42. The ’015 Patent was filed as U.S. App. No. 17/714,965 (“the ’965 Application”) on April 6, 2022. The ’015 Patent is part of a larger patent family as shown in the family tree attached to this Declaration as Appendix B.

43. The ’965 Application is eighth in a line of continuation/divisional applications that ultimately claim priority to application Serial No. 11/736,544, filed April 17, 2007, now U.S. Patent 7,861,260. Specifically, the ’965 Application is a continuation of application Serial No. 16/925,655, filed July 10, 2020, now U.S. Patent 11,303,973, which is a continuation of application Serial No. 16/228,479, filed December 20, 2018, now U.S. Patent 10,715,878, which is a continuation of application Serial No. 15/803,631, filed November 3, 2017, now U.S. Patent 10,178,442, which is a continuation of application Serial No. 15/179,356, filed June 10, 2016, now U.S. Patent 9,813,778, which is a continuation of application Serial No. 14/246,525, filed April 7, 2014, now U.S. Patent 9,369,779, which is a division of application Serial No. 13/097,885, filed April 29, 2011, now U.S. Patent

8,695,032, which is a division of application Serial No. 12/860,666, filed August 20, 2010, now U.S. Patent 8,281,336, which is a continuation of application Serial No. 11/736,544, filed April 17, 2007, now U.S. Patent 7,861,260. Ex. 1001, pp. 1-2, item 60.

44. On April 12, 2022, the USPTO issued a Notice to File Missing Parts, requiring the payment of fees omitted in the original filing of the application. Ex. 1004, pp. 111-112.

45. The applicant responded to the Notice on July 29, 2022. *Id.*, pp. 116-130. In the response, the applicant canceled all fifty-one pending claims originally presented, and added twenty-six new claims, 52-77, including two independent claims (claims 52 and 65). *Id.*, pp. 123-129. The applicant stated that new claims 52-77 are "variants of claims of U.S. Patents 11,[303],973 (parent), 10,715,878 (grandparent), and 8,677,398 (ancestor)." *Id.*, p. 130.

46. On December 1, 2022, the Examiner telephoned the applicant, requesting the applicant file a terminal disclaimer over U.S. Patent 10,715,878. *Id.*, pp. 904-906.

47. The same day, the applicant filed an electronic terminal disclaimer over U.S. Patent 10,715,878. *Id.*, pp. 897-898. The USPTO issued a contemporaneous approval of the terminal disclaimer. *Id.*, p. 901.

48. On December 15, 2022, the Examiner issued a Notice of Allowance that allowed all twenty-six of the pending claims. *Id.*, pp. 909-918. The examiner's stated reasons for allowance appeared to quote the entirety of pending independent claim 52 (issued independent claim 1). *Id.*, pp. 915-16.

49. The '015 Patent issued on January 24, 2023. Ex. 1001, p. 1.

50. Although the Examiner's stated reasons for allowing the claims of the '015 Patent did not identify what was missing from the prior art (*id.*, pp. 915-916), the Examiner did explain what claim elements were believed to be missing from the prior art in patents that the applicant admitted included "variants of" the claims that issued in the '015 Patent. *Id.*, p. 130.

51. For example, in U.S. Pat. No. 8,677,398 (ancestor of the '015 Patent), the Examiner stated that the references applied during prosecution (Ertugrul and Howcroft) did not disclose or suggest:

> requiring that a computer recognizes an association between two devices, with the association being derived from the computer observing that two devices are connected to a common LAN and with the computer system, based on the electronic indicia of the association between the first and second device identifiers, automatically sending an electronic transmission that causes another programmed hardware computer system to take an action, based on first electronic profile data

> associated with the first device identifier, with respect to the second device, which is indicated at the time of the action by the second device identifier.

Ex. 1052, 8-9.

52. As another example, in U.S. Patent 11,303,973 (parent of the '015 Patent), the examiner stated that the references applied during prosecution (Haeuser, Calamera, Bhatt) failed to disclose:

> (b) wherein determining the association in part (a) is done by using the stored association-detection information to determine that a first device of the two or more Internet-accessing electronic devices has accessed the Internet through a router of the LAN at a time between two of the timestamps that specify that a second of the two or more Internet accessing devices has accessed the Internet via the router of the LAN via an IP address in common with the first device; and (d) with the computer system, using the association determined in part (a) to utilize user profile information associated with the device identifier of the first device, the user profile information comprising behavioral or demographic data collected via the first device, to take an automatic action with respect to the second device using the device identifier of the second device.

Ex. 1053, 6-7.

53. During prosecution of the patent family that includes the ’015 Patent, the Examiner appeared to believe that the prior art did not disclose or render obvious associating computing devices that connect to a common LAN/router in order to access the Internet and automatically take some action with respect to one of the devices based on profile/behavioral/demographic data associated with another, associated device. As I show below, however, the teachings of Baig, Satapati, Zwicky, Damick, Banga507, Banga690, McFarland, Costa, and Ashbaugh demonstrate that such concepts were known in the prior art.

VII. RELATED LITIGATION

54. I understand that the ’015 Patent is the subject of pending litigation: *AlmondNet, Inc. and Intent IQ, LLC v. Freewheel Media, Inc. and Beeswax.io Corp.*, Case No. 1:23-cv-00220 (D. Del.). Ex. 1021. I understand that Patent Owner sued Petitioner for alleged infringement of the ’015 Patent. Ex. 1051.

55. I understand that the ’015 Patent has or its related patents have been involved or is currently involved in other litigations:

- *AlmondNet, Inc. v. Viant Technology Inc.*, 1-23-cv-00174 (D. Del.)
    - I understand that this case is currently pending and that claim construction briefing has not occurred and that a claim construction ruling has not been issued.

- *AlmondNet, Inc. v. Samsung Electronics Co., Ltd.*, 4-22-cv-07515 (N.D. Cal.) ("7515 N.D. Cal. case")
    - I understand that this case is currently pending, but stayed, and that claim construction briefing has not occurred and that a claim construction ruling has not been issued.
- *AlmondNet, Inc. v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, 6-22-cv-01205 (W.D. Tex.)
    - I understand that this case was transferred to the 8911 N.D. Cal. case.
- *AlmondNet, Inc. v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, 4-22-cv-08911 (N.D. Cal.) ("8911 N.D. Cal. case")
    - I understand that this case was reassigned to the 7515 N.D. Cal. case.
- *AlmondNet, Inc. v. Amazon.com, Inc.*, 6-22-cv-01204 (W.D. Tex.)
    - I understand that this case was terminated on June 1, 2023 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *AlmondNet, Inc. v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, 6-22-cv-01205 (W.D. Tex.)

- I understand that this case was transferred to the 8911 N.D. Cal. case.

- *AlmondNet, Inc. v. Microsoft Corp.*, 6-22-cv-01206 (W.D. Tex.),
    - I understand that this case was consolidated into the 897 W.D. Tex. case identified below and that the 897 W.D. Tex. case was designated as the lead case.
- *AlmondNet, Inc. et al v. Microsoft Corporation*, 6-21-cv-00897 (W.D. Tex.) ("897 W.D. Tex. case")
    - I understand that this case is currently pending and that a claim construction order was issued. I further understand that the claim construction briefing in this case was jointly submitted in the 898 W.D. Tex. case identified below. I also understand that the claim construction order in this case was also entered into the 898 W.D. Tex. case.
- *AlmondNet, Inc. et al v. Amazon.com, Inc. et al.*, 6-21-cv-00898 (W.D. Tex.) ("898 W.D. Tex. case")
    - I understand that this case is currently pending. I further understand that the claim construction briefing and the claim construction order issued in this case and the 897 W.D. Tex. case are the same.

- *AlmondNet, Inc. et al. v. Samsung Electronics Co., Ltd. et al.*, 6-21-cv-00891 (W.D. Tex.)
    - I understand that this case was transferred to the 7515 N.D. Cal. case.
- *Roku, Inc. v. AlmondNet, Inc. et al.*, 1-21-cv-01035 (D. Del.)
    - I understand that this case is currently pending. I further understand that the claim construction briefing was submitted, but that a claim construction order has not issued.
- *AlmondNet, Inc. et al v. Oath Holdings Inc.*, 1-19-cv-00247 (D. Del.)
    - I understand that this case was terminated on Mar. 4, 2019 and that prior to termination a claim construction ruling was not issued.
- *AlmondNet, Inc. et al v. Yahoo! Inc.*, 1-16-cv-01557 (E. D. N.Y.)
    - I understand that this case was transferred to the 247 D. Del. case.

56. I understand that the ’015 Patent has no litigation history before the PTAB. The ’015 Patent is part of a larger patent family as shown in the family tree in Appendix B. I understand that, as shown in the family tree, the ’015 Patent is related to US Patent No. 8,677,398 (“the ’398 Patent”), US Patent No. 10,715,878 (“the ’878 Patent”), US Patent No. 8,566,164 (“the ’164 Patent”), US Patent No. 8,595,069 (“the ’069 Patent”), and US Patent No. 10,321,198 (“the ’198 Patent”), and US Patent No. 7,861,260 (“the ’260 Patent”).

57. As discussed in more detail below, I understand that the '398 patent was the subject of a petition for IPR filed by third parties Amazon.com, Inc., Amazon Web Services, Inc., and Amazon.com Services LLC, *Amazon.com, Inc. et al. v. Intent IQ, LLC, et al.*, Case No. IPR2023-00227, in which institution was denied as time-barred. I understand that Petitioner had no involvement in the Amazon petition, and I had no involvement in that proceeding.

58. As discussed in more detail below, I understand that the '398 patent was the subject of a petition for IPR filed by third party Meta Platforms, Inc. ("Meta Petition"), *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, Case No. IPR2022-00773 ("Meta IPR"), which was jointly terminated after institution was granted. Ex. 1005, pp. 84, 115, 117-120. I understand that Petitioner had no involvement in the Meta petition, and I had no involvement in that proceeding.

59. As discussed in more detail below, I understand that the '398 patent was the subject of a petition for IPR filed by third parties Microsoft Corporation, Samsung Electronics America, Inc., and Samsung Electronics Co., Ltd., *Microsoft Corporation et al. v. Intent IQ, LLC*, Case No. IPR2022-01420, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Microsoft petition, and I had no involvement in that proceeding.

60. As discussed in more detail below, I understand that the ’398 patent was the subject of a petition for IPR filed by third party Roku, Inc., *Roku, Inc. v. Intent IQ, LLC et al.*, Case No. IPR2022-01236, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim and in which Director Review was denied. I understand that Petitioner had no involvement in the Roku petition, and I had no involvement in that proceeding.

61. As discussed in more detail below, I understand that the ’398 patent was the subject of a petition for IPR filed by third party Yahoo! Inc., *Yahoo! Inc. v. Intent IQ, LLC et al.*, Case No. IPR2017-01299, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Yahoo petition, and I had no involvement in that proceeding.

62. As discussed in more detail below, I understand that the ’878 patent was the subject of a petition for IPR filed by third party Roku, Inc., *Roku, Inc. v. Intent IQ, LLC*, Case No. IPR2022-01315, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Roku petition, and I had no involvement in that proceeding.

63. As discussed in more detail below, I understand that the ’878 patent was the subject of a petition for IPR filed by third party Samsung Electronics Co., Ltd., *Samsung Electronics Co., Ltd. v. AlmondNet, Inc. et al.*, Case No. IPR2022-01505, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Samsung petition, and I had no involvement in that proceeding.

64. As discussed in more detail below, I understand that the ’878 patent is the subject of a petition for IPR filed by third party Meta Platforms, Inc., *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, Case No. IPR2023-01281, which was filed on August 4, 2023, in which institution was granted. Ex. 1058. I understand that Petitioner had no involvement in the Meta petition, and I had no involvement in that proceeding.

65. As discussed in more detail below, I understand that the ’164 patent was the subject of a petition for IPR filed by third party Samsung Electronics Co., Ltd., *Samsung Electronics Co., Ltd. v. Intent IQ, LLC*, Case No. IPR2022-01506, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Samsung petition, and I had no involvement in that proceeding.

66. As discussed in more detail below, I understand that the ’164 patent was the subject of a petition for IPR filed by third party Roku, Inc., *Roku, Inc. v. Intent IQ, LLC*, Case No. IPR2022-00953, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Roku petition, and I had no involvement in that proceeding.

67. As discussed in more detail below, I understand that the ’069 patent was the subject of a petition for IPR filed by third party Roku, Inc., *Roku, Inc. v. Intent IQ, LLC*, Case No. IPR2022-00959, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Roku petition, and I had no involvement in that proceeding.

68. As discussed in more detail below, I understand that the ’198 patent was the subject of a petition for IPR filed by third party Roku, Inc., *Roku, Inc. v. Intent IQ, LLC*, Case No. IPR2022-00960, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand Petitioner had no involvement in the Roku petition, and I had no involvement in that proceeding.

69. As discussed in more detail below, I understand that the ’198 patent was the subject of a petition for IPR filed by third party Samsung Electronics Co.,

Ltd., *Samsung Electronics Co., Ltd. v. Intent IQ, LLC*, Case No. IPR2022-01507, in which institution was denied because the petitioner in that case did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that Petitioner had no involvement in the Samsung petition, and I had no involvement in that proceeding.

A. '398 IPRs

70. I understand that Meta Platforms, Inc. ("Meta") filed a petition for IPR on March 28, 2022 challenging claims 36 and 37 of the '398 patent. Ex. 1005, pp. 1-82. I understand that, in a first ground, claims 36 and 37 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over U.S. Patent App. Pub. No. 2008/0113674A1 to Baig ("Baig"), *Building Internet Firewalls* (2d ed. 2000) by Elizabeth D. Zwicky *et al.* ("Zwicky"), U.S. Patent No. 7,356,045 to Satapati *et al.* ("Satapati"), and *The Internet Complete Reference* (2d ed. 1996) by Harley Hahn ("Hahn"). *Id.*, p. 9. I understand that, in a second ground, claims 36 and 37 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Baig, Zwicky, Satapati, and Hahn, further in view of Appelman. *Id*. I understand that, in a third ground, claims 36 and 37 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Baal-Haness in view of Appelman. *Id*. I understand that, in a fourth ground, claim 37 was alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Baal-Haness and

Appelman, further in view of Zwicky and Satapati. *Id*. I understand that Meta did not propose any constructions for any claim terms. *Id.*, p. 13. Patent Owner did not file a Preliminary Response and thus also did not propose any constructions for any claim terms. *Id.*, p. 8.

71. I understand that the PTAB initially granted institution in a decision issued on October 21, 2022, but later issued a decision on June 2, 2023, terminating IPR due to settlement after institution of trial. *Id.*, pp. 84, 115, 117-120.

72. I understand that Amazon.com, Inc., Amazon Web Services, Inc., and Amazon.com Services LLC (collectively "Amazon") filed a petition for IPR on November 18, 2022 challenging claims 36 and 37 of the '398 patent. I understand that Amazon asserted substantially the same grounds as the Meta '398 IPR. I understand that the PTAB issued a decision denying institution of IPR on June 5, 2023, because the petition was time-barred. I understand that the PTAB did not reach the merits of petitioner's substantive arguments, but rather denied institution because the Petition was not filed within the time period set forth in 35 U.S.C. § 315(b).

73. I understand that the Microsoft, Roku, and Yahoo! IPRs for the '398 patent were all denied institution. I understand that the Yahoo! IPR for the '398 patent asserted grounds involving U.S. Patent App. Pub. No. 2006/0271690 to Banga *et al.* ("Banga690"), used in the current Petition supported by this Declaration. I

understand that no other references used in the current Petition were applied during the Microsoft, Roku, or Yahoo! IPRs for the ’398 patent. I understand that Petitioner was not involved in the petitions for IPR of the ’398 patent.

B. ’878 IPRs

74. I understand that the petition for the Meta ’878 IPR was filed on August 4, 2023, challenging claims 1-4 and 6-23 of the ’878 patent. I understand that the Meta ’878 IPR alleged that each of the challenged claims was unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Baig and a combination of other references not used in the current Petition. I understand that the Patent Owner filed a Preliminary Response on November 24, 2023, and the PTAB issued an Institution Decision granting institution on February 21, 2024. I understand that Petitioner is not involved in the Meta ’878 IPR.

75. I understand that institution was denied for the Roku and Samsung IPRs of the ’878 patent. I understand that no references used in the current Petition were applied during the Roku or Samsung IPRs of the ’878 patent. I understand that Petitioner was not involved in the petitions for IPR of the ’878 patent.

C. ’164, ’069, and ’198 IPRs

76. I understand that each of the respective IPRs for the ’164, ’069, and ’198 patents were denied institution because the petitioners in those cases did not establish a reasonable likelihood of prevailing on at least one challenged claim. I

understand that no references used in the current Petition were applied during the IPRs of the ’164, ’069, or ’198 patents. I understand that Petitioner was not involved in the petitions for IPR of the ’164, ’069, or ’198 patents.

VIII. TECHNICAL BACKGROUND

77. As discussed in more detail below, all technical aspects of the claims were well-known, including targeting of advertisements, information sharing between devices in a network, and network address translation.

A. TARGETED DIGITAL ADVERTISING

78. Targeted digital advertising was well known prior to the ‘015 Patent. The concept of providing targeted advertisements to users (e.g., via the Internet-connected devices and/or other devices providing digital advertisements) was known at least by the 1990s. In 1999, Robbin Zeff and Brad Aronson authored *Advertising on the Internet* (“Zeff,” Ex. 1037), which describes method of providing digital advertisements over the Internet, including targeted advertisements. Ex. 1037, pp. 144-162. As the authors noted, advertisers “dreamed of delivering the right ad to the right person at the right time” (i.e., providing targeted advertisements) since the inception of the Internet. *Id.*, p. 144. The authors further provide an example of the benefits of targeted digital advertising when compared to earlier advertising methods, describing that:

> In a broadcast television campaign, advertisers can target by geographic location, time of day, and the audience watching a particular show. With a direct mail campaign, marketers can target as finely as Fortune 500 employees who have attended safety and health conferences. **Internet advertising can offer an advertiser all the targeting capabilities of other media plus a lot more. Indeed, on the Internet an advertiser can finally target every ad so that it goes out to just the right prospective customer at precisely the right time**.

Id., p. 144 (emphasis added).

79. It is my opinion that a POSA would have been aware of the technologies and techniques required to perform targeted digital advertising as described by Zeff. Specifically, it was well known that products and/or services could be advertised to users based on user preferences, derived from user's online activities, habits, purchase histories, and other interactions over the Internet. For example, Burner (U.S. Pat. No. 6,282,548; Ex. 1031) discloses that online advertisers would select web pages that they believe their target audience is likely to visit and discusses issues relating to determining on which sites an advertiser should place their advertisements to maximize user views/interactions. Ex. 1031, 1:42-58. Burner describes methods of determining where to provide targeted

advertisements, such as developing a user profile. *Id.*, 1:59-61. Burner gives an example of such a process, disclosing:

> [W]hen the user first visits a web site running [targeted advertising] software, the server requests that the user's browser software permanently record an identifying string of characters (called a 'cookie') in a file local to the user's computer. The server then records each web page visited on that site by the user and associates this usage trail with the cookie. The server software **can then customize content (including advertising content) according to the interests evinced by the user's habits**.

Id., 1:62-2:4 (emphasis added). Heckel (U.S. Pat. No. 6,036,601; Ex. 1032) describes a similar method, "for advertising over a computer network utilizing virtual environments of games." Ex. 1032, Abstract. Heckel's method includes implementing user/visitor profiles, achieved by retrieving a "demographic profile…of the user" from an ad server database or a user database to "locate appropriate advertising for the [user]." *Id.*, 4:2-9, 4:43-58. Petitioner itself disclosed methods of targeted digital advertising before the priority date of the '015 Patent. Black (U.S. Pat. App. Pub. No. 2005/0096978; Ex. 1033) describes a method of providing digital advertisements (e.g., via video distribution systems for video-on-demand (VOD)) that "match[] content and target audience," which "solves the problem of advertising effort being wasted on uninterested viewers … by providing

selected advertisements to VOD viewers." Ex. 1033, [0015]. Black discloses that advertisers can set rules that identify which targeted digital ads should be presented to users based on various parameters, including demographics, geographic location, timing, and other parameters. *Id.*, [0025], [0036].

80. It was also known that one aspect of targeted digital advertising is the ability for platforms displaying targeted advertisements to receive revenue based on providing the targeted advertisements. Ex. 1037, pp. 163-188. As Zeff recognized, Internet advertising was focused on generating revenue for websites that display digital advertisements from its inception. *Id.*, p. 163 ("[w]hen advertising on the Web first began, no one knew how to price. The only known figure was a fee HotWired decided to charge for its first ads in 1994: $30,000 for banner advertising that ran for 12 weeks."). In John Hagel and Marc Singer's *Net Worth* (Ex. 1035), the authors show that as early as 1999 it was known that advertisers would pay for the opportunity to specifically provide targeted advertisements to users (e.g., "as they're considering a purchase"). Ex. 1035, pp. 54-56, 62-63, 164-166. *Net Worth* notes that the revenue for providing targeted advertisements can go to the platform displaying the targeted advertisement, or even to the users who provided the information used to provide the targeted advertisements. *Id.*, pp. 54-56, 59, 62-63, 164-166. It was known that advertisers and entities receiving revenue for displaying targeted advertisements could use various pricing models to generate and receive

revenue, such as models that "range from flat-fee to paying for the number of times an ad is seen . . . to paying on a cost-per-lead or cost-per-purchase basis." Ex. 1037, p. 164; *see also id.*, pp. 163-188.

81. Therefore, it was well known to use technologies such as those described above to identify advertisements of interest to specific user/visitors, provide those advertisements as targeted ads, and receive revenue as a result of providing the targeted advertisements.

B. Methods for Delivery of Targeted Advertisements

82. As I discussed above at Section VIII.A, providing targeted digital advertising was well-known prior to the alleged invention of the '015 Patent. In addition to the general concepts of identifying advertisements of interest to specific user/visitors, providing those advertisements as targeted ads, and receiving revenue as a result of providing the targeted advertisements, specific methods of delivering targeted advertisements from one device to another were also well-known. Ex. 1063, [0002], [0006], [0017]-[0019]; Ex. 1066, pp. 188-189, Ex. 1068, [0041], [0046], [0074]; Ex. 1070, Abstract, 6:37-39, 6:50-57, 7:10-15, 9:2-10, 13:10-25; Ex. 1068, p. 2; Ex. 1065, p. 3. In delivering targeted advertisements, advertisers essentially had two common-sense options: either sending the advertisements to a device in response to a request for the ad or sending the advertisements to a device without a prior request. Methods and techniques for performing either option were

well-understood by a POSA by at least the late 1990s and early 2000s. Serving targeted ads to a device without a request by the device was well-known by the early 2000s. Traditional television ad delivery involved broadcasting commercials during scheduled programming, without any input from the viewer. Ex. 1063, [0002]. Collecting characteristics of viewers in order to refine and "target" ads was also well-understood (*see* Section VIII.A, above); Jennings (Ex. 1068), for example, describes targeting media based on "sex, age, hobbies, historical viewing habits, and other data the viewer would provide." Ex. 1068, [0041]; *see also* Ex. 1063, [0027] ("formation of groups for targeted advertising … subgroups may be based (1) geographic segmentation, (2) demographic segmentation, (3) psychological segmentation," etc.); Ex. 1064, [0016]-[0017] (building subscriber profiles based on information "collected from subscribers during the subscription registration process" and "behavioral data" for subscribers comprising "website viewing behaviors, emails, electronic purchases over the internet" and selecting subscribers for ads based on the profile information). Putting the concepts together and delivering targeted advertisements based on viewer characteristics without a specific device or user request was also known in the art as of at least 2006. *See* Ex. 1068, [0006] (describing delivery of "targeted advertisements to the set-top boxes (STB)"); Ex. 1064, Abstract (describing system and method for sending "inserting the targeted advertisement data into video data; sending the video data from the IPTV

server to … selected segment of the IPTV subscriber population"); Ex. 1069, [0024], [0030] (application for "targeting advertisements" to consumers by sending targeted ads to a STB or PVR over cable TV networks based on consumer profiles). For example, Flickinger (Ex. 1063) describes a "a method for delivering targeted advertisements to a set-top boxes (STBs)," where the ad could be served over analog cable or digital television networks. Ex. 1063, [0006], [0017]-[0019]. Howcroft (Ex. 1064) further describes a method for determining a subscriber group send a targeted advertisement to, inserting the targeted advertisement into video data, and sending the "video data from the IPTV server to client devices associated with members of the selected segment." Ex. 1064, [0013]. These advertisements were delivered to the client device by inserting the targeted advertisement into the video data sent to the client device, without a user or device request for that targeted advertisement.

83. Similarly, targeted advertising was also a well-known strategy in Internet and web-based environments. Fabos (Ex. 1066), for example, describes that banner ads were common examples of targeted ads displayed to a device, oftentimes without a user specifically choosing and requesting an advertisement. Ex. 1066, p. 189. By 1998, content-rich pages supporting banner advertising had become the primary sources of revenue in the internet industry, and this method of delivering advertisements would have been well-known to a POSA. Ex. 1066, p. 189. Search

engine sponsored links were another example of a targeted ad delivered without a user/user's device selecting and asking for a specific advertisement. Ex. 1066, p. 188. As Fabos explains, "the advertiser pays the search engine to be affiliated with certain key words; the search company provides the sponsored links." Ex. 1066, p. 188. Serving targeted ads to a device based on a request from the device was similarly well-known. For example, a POSA would have known that users may interact (e.g., via a device) with displayed advertisements to receive further information about the ad and/or additional advertisements. If an advertisement was delivered to a television (e.g., via a set-top box) the television could display ads which users could choose to click on and interact with, receiving more information (*i.e.*, advertisements) about the advertised product. Ex. 1070, Abstract, 6:37-39, 6:50-57, 7:10-15, 9:2-10, 13:10-25. In the context of web-based delivery of targeted advertisements, client devices could similarly request ads by a user interacting with (e.g., clicking on) a displayed advertisement, or by simply loading a webpage in which a targeted advertisement link is embedded. Ex. 1071, [0002], [0032]. Clients could also answer surveys providing information to a content provider indicating the types of advertisements that match the client's demographics, activities, and/or other characteristics. Ex. 1069, [0026], [0132], [0141]; Ex. 1016, [0063]-[0064], Ex. 1064, (noting that Amazon.com supports the ability for users to request email notifications when new books by an author are

available for purchase). This allows the advertiser to tailor ads according to the client's preferences and deliver the ad to the client's device, as requested. Various system architectures for implementing targeted advertisement delivery were also common knowledge by the mid-2000s. For example, a POSA at that time would have recognized that targeted advertisements could be delivered to devices by a content provider's system (*e.g.*, a provider of the content through which the advertisement would be displayed), or by an independent (*i.e.*, third-party) system. As discussed above, content providers may deliver targeted advertisements directly to a set-top box, IPTV, and/or other television systems. Ex. 1068, [0045]-0046] (noting that the network owner may "stream media to its employees or customers directly"); Ex. 1064, Abstract, [0011], [0013]-[0014], [0024]-[0025] (receiving, at the IPTV provider's server, the targeted advertisement, inserting the targeted advertisement data into video data, and sending the video data to subscribers); Ex. 1065, [0017], [0019]-[0020], [0030] (serving targeted advertisements to subscribers from a "head end or central office 22 via a cable network 23," where a subscriber's STB receives the cable stream).

84. It was also well-known that targeted advertisements could be delivered—as web-based and/or television advertisements—by third party providers. In May of 2000, Susan Young authored Getting the Message: How the Internet is Changing Advertising (Ex. 1067), where she discussed how technology

called "DART (for dynamic advertising reporting and targeting) … tracks 26 criteria—from keywords in searches, to purchases, to time-of-day surfing, to domain name—in order to develop a user profile." Ex. 1067, p. 2. One early ad serving firm, Doubleclick, built a business matching Web users with advertisers and "sell[ing] ad space on the Web sites it represents" to deliver targeted ads on these sites, based on the user profiles. *Id.* Leigh (Ex. 1071) describes the use of an "Ad Content Server" to request and insert targeted advertisements from third parties at specified locations on web pages. Ex. 1071, [0022]-[0024]; *see also* Ex. 1032, col. 3, ln. 37-44, 52-53, col. 4, ln. 50-58 (third-party advertisement server delivering targeted advertisements via code plug-ins in Internet-enabled games). Therefore, methods of delivering targeted advertisements from one device to another, with or without a prior request, were well-known prior to the priority date of the '015 Patent.

C. Network Address Translation

85. Network Address Translation (NAT) was a well-known method of mapping multiple IP addresses inside a network (e.g., private addresses) to a common public IP address at least as of May 1994, when the first Request for Comments (RFC) detailing NAT was published by the Internet Engineering Task Force (IETF). *See* Ex. 1036. NAT was created to solve the problems of IP address depletion and scaling in routing by reusing IP addresses in a network for multiple devices (e.g., stub routers using NAT). *Id.*, pp. 1-2. IP addresses are divided into

reusable addresses, that can be used by multiple devices, and globally unique addresses that no other devices (e.g., other routers) can use. *Id.*, pp. 2-4. By utilizing reusable addresses and globally unique addresses, systems such as a local network conserve resources by assigning reusable IP addresses to devices and/or domains within a local network and translating the reusable IP address into a globally unique address when communications need to be sent outside of the network. *Id.*, pp. 1-4. Various methods of performing NAT were known prior to the '015 Patent. For example, and as described in further detail below, Zwicky (Ex. 1012) discloses methods of performing network address translation (NAT), allowing a network to use one set of network addresses (such as IP addresses) internally and a different set when dealing with external networks, as outlined by the RFC 1631. Ex. 1012, p. 33. Specifically, Zwicky discloses an implementation of NAT that translates both router ports and IP addresses to allow multiple clients connected to a router to share a single (i.e., common) IP address. *Id.*, Figure 5-4, pp. 33-35. Zwicky also discloses an implementation of NAT where the source and destination port numbers may be modified, which is referred to as port and address translation (PAT). *Id*.

86. Therefore, it was well-known to use technologies and methods such as NAT/PAT to cause multiple devices and/or domains to share a common IP address for some communications while using different IP addresses for other communications.

IX. OVERVIEW OF THE RELIED UPON PRIOR ART

A. U.S. Patent App. Pub. No. 2008/0113674 ("Baig")

87. Baig (Ex. 1007) is a U.S. Patent Application Publication filed on October 31, 2007. Ex. 1007, cover. This date is after the '015 Patent priority date, but Baig claims priority to and incorporates-by-reference an earlier provisional (Ex. 1008, "Provisional") filed on November 10, 2006. Ex. 1007, [0001]. Baig qualifies as prior art under 35 U.S.C. § 102(e) as of its provisional filing date.[1] Baig is prior art under § 102(e) as of the filing date of its provisional because (1) the invalidating disclosures from Baig are supported by the Provisional and (2) the Provisional provides written description support for at least one claim appearing in Baig. Ex. 1009.

88. I understand that claims originally filed with an application can be relied upon for written description purposes, and here the Provisional's claims 1-3, 8-16, and 18-22 are identical to claims in Baig. These originally-filed claims thus provide sufficient written description support for their corresponding claims in Baig. Additionally, as has been explained to me, this supporting description must be "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the

[1] Citations to 35 U.S.C. §§ 102 and 103 refer to the pre-AIA versions.

same." 35 U.S.C. § 112. As I explain in the below table showing an element-by-element analysis for Baig claim 1, it is my opinion that a POSA would have found the Baig Provisional satisfies this standard as it pertains to at least claim 1.

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
1.pre	A method for providing vicinity-based community services at a wireless access location by a public network service provider, comprising the steps of:	Baig describes a method and apparatus for "providing a vicinity-based community at a wireless access location, such as a hotspot," including "creating a vicinity-based community in real time allowing end-users accessing the public network service provider from the wireless access point to connect to other users in their vicinity." Ex. 1007, [0006], [0038]-[0040].	The provisional describes a method and apparatus for "providing vicinity-based community services at a wireless access location, such as a hotspot, by a public network service provider," including "providing the vicinity-based community services in real time to end-users accessing the public network service provider from the wireless access point." Ex. 1008, p. 2, ll. 3-11. "In particular, the present invention is directed to a method and apparatus for providing vicinity-based community services over the Internet by a vicinity-based community service provider (VCSP) to wireless mobile devices of end-users that have accessed the VCSP via a wireless access point at a wireless hotspot. A vicinity-based community service is a

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
			service provided by the VCSP which discovers (i.e., identifies) and connects wireless users within physical vicinity (i.e., proximity) of each other at a hotspot. Once a "vicinity-based community" at a physical location (i.e., a hotspot) is created, the users can potentially interact physically or non-physically with each other. The VCSP identifies a group of users at a wireless hotspot based upon their common public IP address and interconnect them, thereby creating a vicinity-based user group. The VCSP can then requests end-user profile information and the physical location of the hotspot to correlate the vicinity-based group to a specific geographical location. For example, end-users connected to a hotspot provided by a coffee shop (e.g., STARBUCKS), illustratively located at 100 Madison Avenue, NY, NY, are asked to provide such location information, and optionally other profiling data.

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
			As the public IP addresses of each hotspot are unique, the VCSP is able to build a database that associates the unique public IP addresses of each hotspot with a physical location. Once the end-users at a particular access point log into the website of the VCSP, they are able to view other members of the VCSP who have also logged in from the same access point associated with a particular wireless hotspot. The VCSP can offer a variety of services to the logged-in end users, all of whom now form the vicinity-based community at the wireless access 25 point." Ex. 1008, p. 5, ll. 5-25.
1.A	receiving over a public network, at least one request for vicinity-based community services from at least one end-user accessing said wireless access point;	Baig describes a VCSP server 224 receiving a login request from a user connected to a public network, such as a hotspot, for accessing services hosted by the server. For example, Baig discloses a method 300 that "starts at step 301,	Baig's provisional application also describes a VCSP system receiving, through a hotspot, a request from a user device to access vicinity-based services. *See* Ex. 1008, pp. 8-10. Baig describes a VCSP server 224 receiving a login request from a user connected to a hotspot. For example, Baig discloses that "[t]he method 300

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		where at least one user located at each of one or more hotspots have established wireless 25 connectivity with the Internet. That is, the users at each hotspot are provided with Internet connectivity via an associated access point 106 as discussed above. ***At step 302, the at least one server 224 of the VCSP 202 receives a login request from a user that is connected to a particular WiFi access point (hotspot)***." Ex. 1007, [0055]. Baig further teaches that by logging in, users may access various web pages for various services offered by the VCSP. For example, Baig states "At step 312, the server 224 forms a	starts at step 301, where at least one user located at each of one or more hotspots have established wireless connectivity with the Internet. That is, the users at each hotspot are provided with Internet connectivity via an associated access point 106 as discussed above. At step 302, the at least one server 224 of the VCSP 202 receives a login request from a user that is connected to a particular WiFi access point (hotspot)." Ex. 1008, p. 8, ll. 22-28; *see also id.*, p. 8, ll. 13-21. Baig also states "[i]n particular, when a user at a hotspot logs into the website of the VCSP 202, the user automatically becomes part of the vicinity-based user group. The user can then access various web pages from the VCSP website to participate or receive particular service offered by the VCSP 202. The services include receiving particular advertisements, a goods and services exchange program, sharing of files (e.g., music) as permissible under law, a chat

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		vicinity-based user group at each hotspot 110. ***A vicinity-based user group allows the VCSP 202 to provide services to the member users of the group. In particular, when a user at a hotspot logs into the website of the VCSP 202, the user automatically becomes part of the vicinity-based user group. The user can then access various web pages from the VCSP website to participate or receive particular service offered by the VCSP 202***. The services include receiving particular advertisements, a goods and services exchange program, sharing of files (e.g., music) as permissible under law, a chat room, a message	room, a message board for blogs and the like, among other services, as discussed below with respect to FIGS. 4-23. Thus, users accessing a hotspot and who have logged into the website of the VCSP 202 can receive and participate in the services offered by the VCSP 202, as well as communicate with each other (e.g., chat room)." Ex. 1008, p. 9, ll. 20-28. *See also id.,* p. 19, l. 19-p. 20, l. 26.

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		board for blogs and the like, among other services, as discussed below with respect to FIGS. 4-23. Thus, users accessing a hotspot and who have logged into the website of the VCSP 202 can receive and participate in the services offered by the VCSP 202, as well as communicate with each other (e.g., chat room)." Ex. 1007, [0059]. *See also* Ex. 1007, [0107]-[0113] (describing various services such as online games, searching, and blogging services that a user may request form the VCSP site)	
1.B	grouping end-users accessing common wireless access points; and	Baig describes VCSP server 224 grouping users based on the hotspot through which	Baig's provisional application further discloses a VCSP system and method that groups users based on vicinity by determining whether the users are connected

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		the user accesses the VCSP. "The server 224 includes at least one processor, memory and support circuitry for running programs that, for example, identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110. Accordingly, since each hotspot 110 has a unique static IP address, and the range of wireless communications for any given hotspot is limited, any users accessing the hotspot are deemed to be in vicinity of each other. For example, any users of mobile devices accessing a hotspot 110	to the network through a common access point. *See, e.g.,* "The network 200 of FIG. 2 further includes a vicinity-based community service provider (VCSP) 202 having at least one content server 224 coupled to the Internet 122 in a conventional manner. The server 224 includes at least one processor, memory and support circuitry for running programs that, for example, identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110. Accordingly, since the each hotspot 110 has a unique static IP address, and the range of wireless communications for any given hotspot is limited, any users accessing the hotspot are deemed to be in vicinity of each other. For example, any users of mobile devices accessing a hotspot 110 illustratively provided by a public library are deemed to be, and are in fact, in vicinity to each other." Ex. 1008, p. 7, line 29-p. 8, line 7.

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		illustratively provided by a public library are deemed to be, and are in fact, in vicinity to each other." Ex. 1007, [0052]. "At step 312, the server 224 forms a vicinity-based user group at each hotspot 110. A vicinity-based user group allows the VCSP 202 to provide services to the member users of the group. In particular, when a user at a hotspot logs into the website of the VCSP 202, the user automatically becomes part of the vicinity-based user group." Ex. 1007, [0059]. "The server 224 of the VCSP 202 includes programming which determines that WiFi	"A vicinity-based community service is a service provided by the VCSP which discovers (i.e., identifies) and connects wireless users within physical vicinity (i.e., proximity) of each other at a hotspot. Once a "vicinity-based community" at a physical location (i.e., a hotspot) is created, the users can potentially interact physically or non-physically with each other. The VCSP identifies a group of users at a wireless hotspot based upon their common public IP address and interconnect them, thereby creating a vicinity-based user group." Ex. 1008, p. 5, ll. 8-14. "At step 312, the server 224 forms a vicinity-based user group at each hotspot 110. A vicinity-based user group allows the VCSP 202 to provide services to the member users of the group. In particular, when a user at a hotspot logs into the website of the VCSP 202, the user automatically becomes part of the

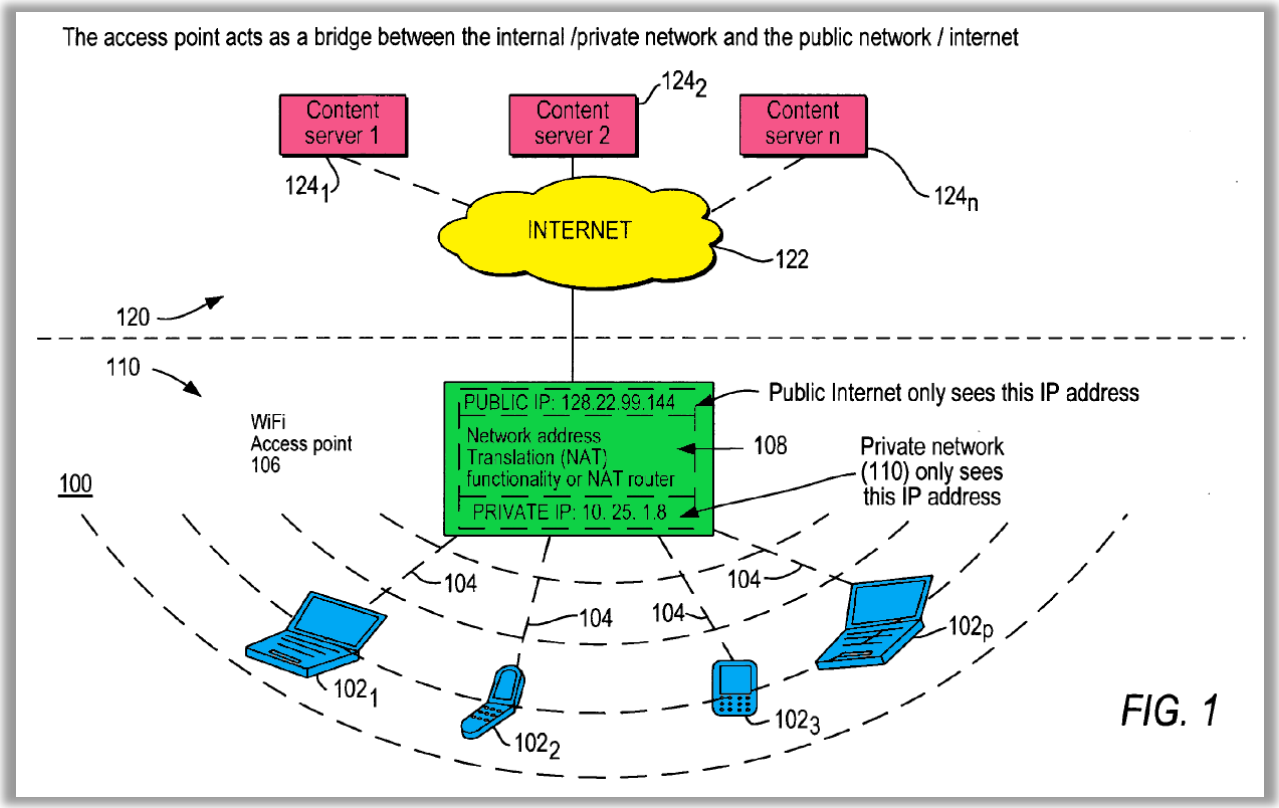
	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		mobile devices accessing a single hotspot are connected to the same WiFi access point, and therefore must be in close vicinity to one-another. Accordingly, all devices 102 originating from the same WiFi access point are clustered in the same vicinity-based group." Ex. 1007, [0063].	vicinity-based user group." Ex. 1008, p. 9, ll. 18-21. "The server 224 of the VCSP 202 includes programming which determines that WiFi mobile devices accessing a single hotspot are connected to the same WiFi access point, and therefore must be in close vicinity to one-another. Accordingly, all devices 102 originating from the same WiFi access point are clustered in the same vicinity-based group." Ex. 1008, p. 10, ll. 19-22.
1.C	providing said vicinity-based community services in real time to end-users accessing said public network service provider from said wireless access point.	Baig describes VCSP server 224 providing, in real-time, services such as advertising, online gaming, and searching to users connected to a hotspot. "In another embodiment, real-time advertising is provided at one or more physical locations (e.g., billboard at Times	Baig's provisional application further discloses a method including "providing the vicinity-based community services in real time to end-users accessing the public network service provider from the wireless access point." Ex. 1008, p. 2, ll. 6-11; *see also* p. 2, ll. 16-31 (describing various type of vicinity-based services that may be provided in real time). "In another embodiment, the vicinity-based community

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		Square, NY) based on real-time bidding between advertising entities. In particular, advertisement entities, e.g., businesses competing for the right to exclusively advertise in real-time at a particular location, send bids to the VCSP for such rights. The winner of the bidding can then advertise, for example, on the billboard at Times Square in real time, for a predetermined time period (e.g., 1 hour). For example, if advertisers competing for business from young adults between the age of 21 and 27 at Times Square, multiple advertisers could compete by bidding against each other for the right to	services comprise an advertising service. One or more advertising entities can bid to provide advertising to the at least one enduser based on end-user profiling." Ex. 1008, p. 2, ll. 25-27. "In another embodiment, real-time advertising is provided at one or more physical locations (e.g., billboard at Times Square, NY) based on real-time bidding between advertising entities. In particular, advertisement entities, e.g., businesses competing for the right to exclusively advertise in real-time at a particular location, send bids to the VCSP for such rights. The winner of the bidding can then advertise, for example, on the billboard at Times Square in real time, for a predetermined time period (e.g., 1 hour). For example, if advertisers competing for business from young adults between the age of 21 and 27 at Times Square, multiple advertisers could

	PG Pub. Claim Language	Baig (2008/0113674)	Baig Provisional (App. No. 60/858,204)
		advertise in real time on one of the billboards for an hour duration, illustratively between 8-9 pm." Ex. 1007, [0105]-[0106].	compete by bidding against each other for the right to advertise in real time on one of the billboards for an hour duration, illustratively between 8-9 pm." Ex. 1008, p. 19, ll. 9-18.

89. For at least the reasons shown in the above table, it is my opinion that the Baig Provisional describes the elements of Baig's claim 1.

90. Baig discloses an apparatus and method for providing vicinity-based communication services to devices (**blue**) connected to content servers (**pink**) over the Internet (**yellow**) via the same wireless access point (**green**), such as an access point providing a WiFi hotspot. Ex. 1007, FIGs. 1-3, [0042]-[0043], [0052], [0055]-[0060].

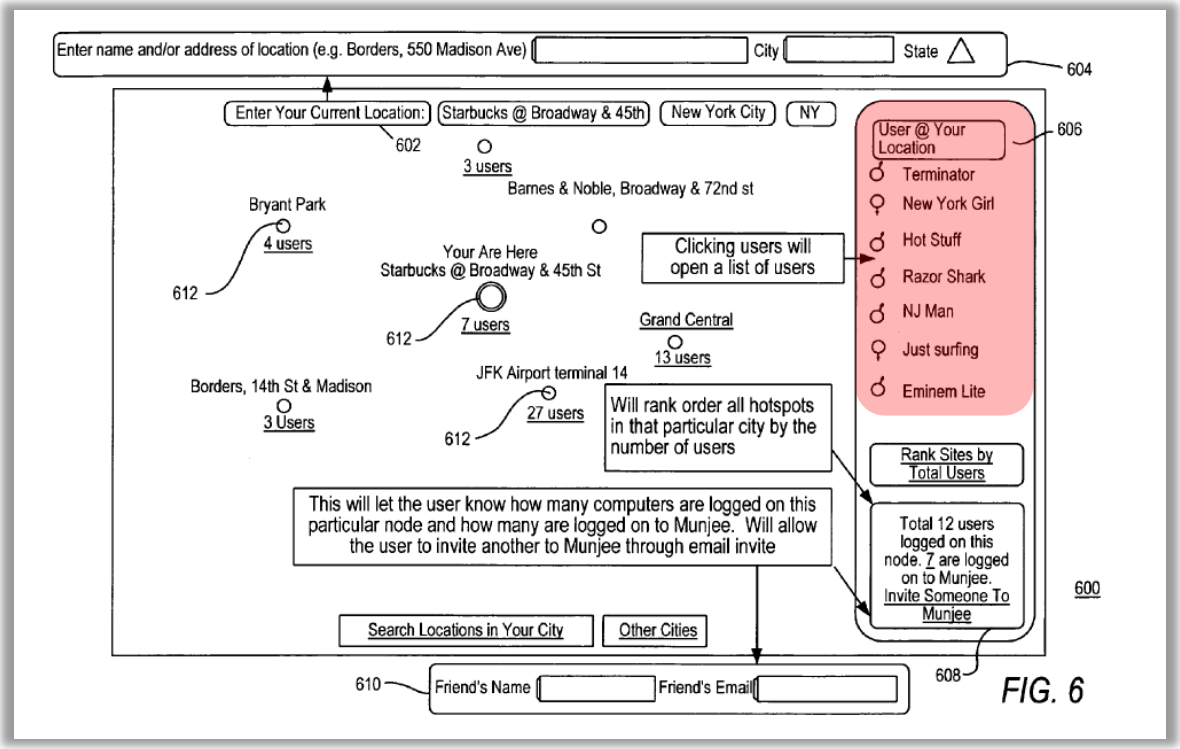


Ex. 1007, FIG. 1 (annotated)

91. I note that Baig discusses both an access point 106 and a hotspot 110 and explains that an access point (AP) provides the hotspot that wireless devices use to connect to an external network (e.g., the Internet). *See* Ex. 1007, [0003] ("Wireless "hotspots" are locations with wireless connectivity where users having mobile devices, such as laptops, PDA, mobile phones and the like, can connect to a public network (e.g., the Internet) using standard WiFi technology (often referred to as Wireless LAN or WLAN technology)."), [0004] ("A WiFi hotspot is enabled by a wireless device known as an "access point" (AP), which emits a wireless signal in a limited geographical area, and connects mobile devices to the public network."),

[0042] ("Referring to FIG. 1, a block diagram is shown illustrating how one or more mobile devices 102 at **a public WiFi hotspot 110** interact with the public network 120. In particular, a communications network 100 includes **a public WiFi hotspot 110** communicably coupled to a public network 120 via **an access point 106**."), [0043] ("the mobile devices 102 at **the hotspot 110** form a local network 104 with the **access point 106**"), [0045], [0047], [0049]-[0052], FIGs. 1-2; Ex. 1008, 1, 5-8, FIGs. 1-2. I also note, as seen from certain excerpts from Baig that I provide below, that Baig appears to use the term, "access point," and "hotspot" interchangeably.

92. Baig provides the communication services through a vicinity-based service provider (VCSP), hosted by a server, that provides web pages for users of the devices to access information and services on the Internet. Ex. 1007, [0053], [0055]-[0060], [0063]-[0064], [0074]. Baig allows users to access the VCSP through a common public internet protocol (IP) address, at the access point, using a NAT router to send information from the Internet to the appropriate device. Ex. 1007, [0044]-[0046], [0049]-[0052], FIG. 2. In doing so, Baig's VCSP identifies all the users logging in via that common AP hotspot, forms a user group for the AP hotspot, and stores a list of the users that have logged into the VCSP (**red**). Ex. 1007, [0038], [0056], [0059], [0075]-[0076], FIG. 6.



Ex. 1007, FIG. 6 (annotated)

93. Baig's VCSP maintains user profiles of users that access the Internet through a common public IP address based on the users' online activity, such as their responses to survey questions as well as their traffic patterns on the Internet. Ex. 1007, FIGs. 5, 6, 14-18, [0061], [0066], [0076], [0081], [0093]. Among the services Baig provides through the VCSP is the ability to supply targeted vicinity-based advertisements to an audience at a particular AP hotspot based on the user profiles maintained by the VCSP. Ex. 1007, [0058]-[0059], [0093]-[0094]. Specifically, Baig shares user information stored in the user profiles to advertisers on an anonymous basis, and targeted advertisements are provided to the users sharing the

common public IP address through their user devices. Ex. 1007, FIG. 22, [0096]-[0101].

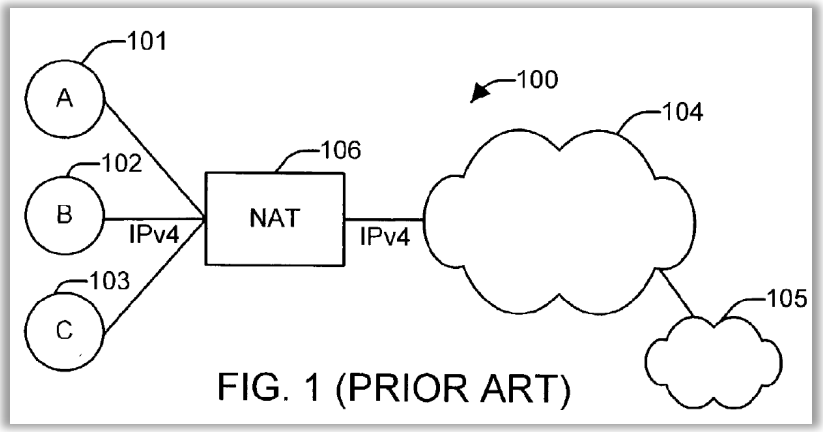
94. Therefore, it is my opinion that Baig is analogous art to the '015 Patent. It also is my opinion that a POSA would have found that various combinations of Baig's teachings, particularly Baig's teachings of various vicinity-based community services, were predictable variations of such teachings notwithstanding Baig's description of each service as an "embodiment." *See*, e.g., Ex. 1007, [0007]-[0012], [0041]; *see also id.* [0076]-[0077] (referring to "embodiment[s]" with reference to Figure 6), [0079]-[0080] (referring to "embodiment[s]" with reference to Chat service shown in Figure 7), [0085] (referring to "embodiment" with reference to Barter service shown in Figure 8), [0090] (referring to "embodiment[s]" with reference to Share service shown in Figure 9), [0091] (referring to "embodiment" with reference to Blog service shown in Figure 10), [0092] (referring to "embodiment" with reference to Location Forum service shown in Figure 11), [0093] (referring to "embodiment" with reference to Lost & Found service shown in Figure 12), [0107]-[0108] (referring to "embodiment[s]" with reference to Gaming service), [0111]-[0112] (referring to "embodiment[s]" with reference to Search service shown in Figure 13). In view of Baig's reference to these multiple "embodiments," the fact that such features are disclosed adjacent to one another, as well as in different tabs of Baig's VCSP website (*see* e.g., Ex. 1007, [0079], FIGs.

6-13), in my opinion, a POSA would have recognized that a leap of inventiveness was not required to combine them with each other as I explain below. *See* Ex. 1007, [0131] (suggesting a POSA would recognize variations to the disclosed embodiments). I will provide more detail about Baig in my discussion of the claim limitations below.

B. U.S. Patent App. Pub. No. 2004/0076180 ("Satapati")

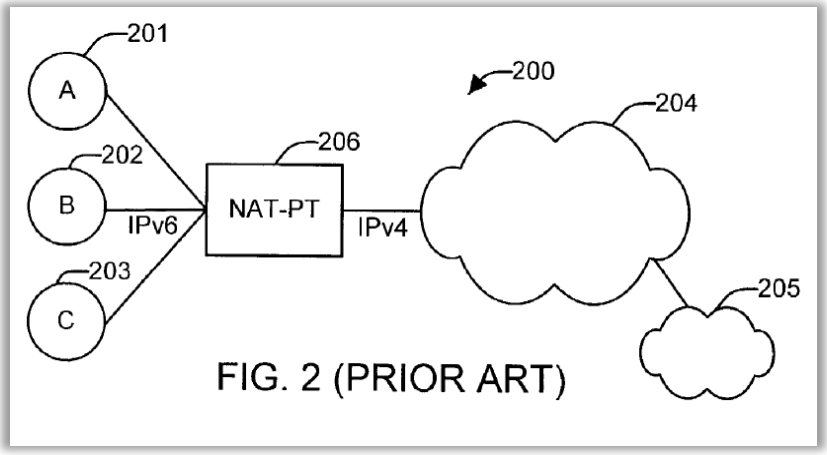
95. Satapati (Ex. 1006) is a U.S. Patent Application Publication filed on October 22, 2002, and published on April 22, 2004. Ex. 1006, cover. I understand that Satapati qualifies as prior art under pre-AIA 35 U.S.C. § 102(b).

96. Satapati discloses a system for providing network address translation, allowing a network to use one set of network addresses (such as IP addresses) internally, and a different set when dealing with external networks. Ex. 1006, [0004]-[0010]. Satapati identifies that network address translation is commonly used to facilitate communications between private networks and public networks, such as the Internet. Ex. 1006, [0002]. Satapati explains that a private network may have more devices than available Internet addresses allocated to the private network, and a network address translator (NAT) may be connected between the private network and the Internet (public network) to facilitate communications between the private network and the public network. Ex. 1006, [0002].



Ex. 1006, FIG. 1

97. Where translations between IP protocols, such as between IP version 4 (IPv4) and IP version 6 (IPv6) may be needed, Satapati's further discloses that a "network address translator-protocol translator (NAT-PT)" may be deployed between the private and public networks for providing protocol translation in addition to network address translation similarly provided by the NAT. Ex. 1006, [0011].



Ex. 1006, FIG. 2

98. Specifically, Satapati discloses that the NAT and NAT-PT may provide network address translation to dynamically assign IP addresses to the private network devices or use port address translation (PAT), which uses port numbers to uniquely identify different private networks devices having a single (i.e., common) Internet public address (such as the public IP address of the NAT device). Ex. 1006, [0002], [0011]. For example, when the NAT-PT has a single Internet public address, the NAT-PT may use PAT to multiplex the single address by port number. Ex. 1006, [0011].

99. Therefore, it is my opinion that Satapati is analogous art to the '015 Patent.

C. Building Internet Firewalls ("Zwicky")

100. Zwicky (Ex. 1012) is a printed publication published in June of 2000 with a United States copyright in the year 2000. Ex. 1012, iv. I understand that Zwicky qualifies as prior art under pre-AIA 35 U.S.C. § 102(b).

101. Zwicky discloses methods of performing network address translation (NAT), allowing a network to use one set of network addresses (such as IP addresses) internally and a different set when dealing with external networks. Ex. 1012, p. 33. Zwicky discloses that a particular implementation of NAT translates both ports and IP addresses that can be used when multiple clients are connected to a router having a single (i.e., common) IP address. Ex. 1012, Figure 5-4, pp. 33-35.

For example, as shown in Figure 5-4 below, two client devices with unique device identifiers may be routed through an address translation system (e.g., performing NAT) and receive unique public IP address-port combinations for communicating with outside servers. Ex. 1012, Figure 5-4, pp. 33-35.

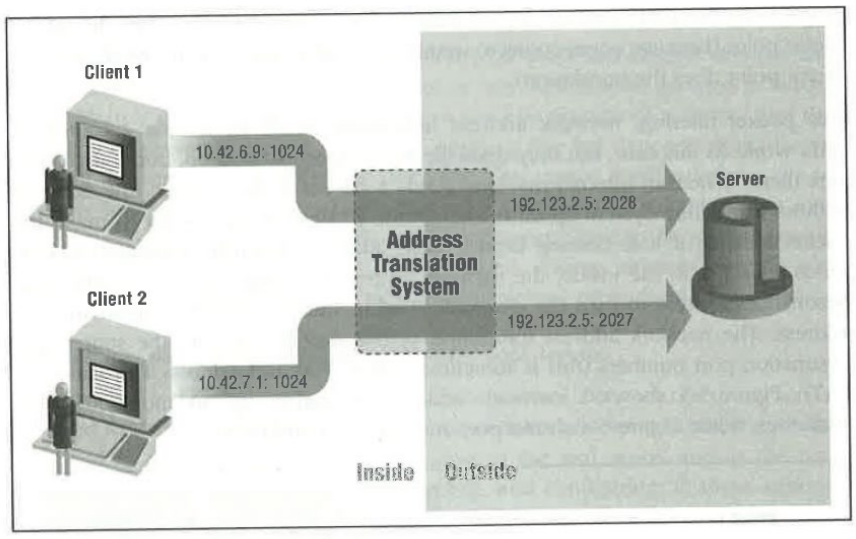


Figure 5-4. Port and address translation

Ex. 1012, Figure 5-4

102. Therefore, it is my opinion that Zwicky is analogous art to the '015 Patent.

D. U.S. Patent App. Pub. No. 2006/0242294 ("Damick")

103. Damick (Ex. 1017) is a U.S. Patent Application Publication filed on April 3, 2006, and published on October 26, 2006. Ex. 1017, cover. I understand that Damick qualifies as prior art under pre-AIA 35 U.S.C. §§ 102(a) and 102(e).

104. Damick discloses a system and method for providing network access control and logging. Ex. 1017, [0002], [0075]. Damick teaches that a network

interface device 110 (e.g., router) receives instructions from a host computer 114 to grant or deny an access request sent from a client 104 based on access control options. Ex. 1017, [0039]-[0043], [0060]-[0064], [0076]-[0084], FIGs. 3, 7-8. Damick's network interface device 110 periodically or continuously provides a log of requests from a client to the host. Ex. 1017, [0068]. The log of requests includes information indicating the particular URL visited by the client as well as a time of day at which the client accessed the particular URL (635). Ex. 1017, FIG. 6B, [0062]-[0063], [0069], [0072]-[0073]. Additionally, Damick's host may use obtained logs of client requests to generate a log report of access requests for multiple clients. Ex. 1017, [0070]-[0074].

105. Damick's network access control and logging techniques provide network access control options enabling an administrator to "determine when, or how long, Internet access may be granted to a user." Ex. 1017, [0062], [0055]-[0057], [0063], [0069], [0085]- [0087]. Damick also teaches tracking data associated with each access request (e.g., URL information) and processing to simplify the request log by grouping access requests based on network location. Ex. 1017, [0046]-[0047], [0069]-[0073], FIG. 6B.

106. Therefore, it is my opinion that Damick is analogous art to the '015 Patent.

E. U.S. Patent App. Pub. No. 2006/0265507 ("Banga507")

107. Banga507 (Ex. 1015) is a U.S. Patent Application Publication filed on May 12, 2006 and published on November 23, 2006. Ex. 1015, cover. I understand that Banga507 qualifies as prior art under 35 U.S.C. §§ 102(a) and 102(e).

108. Banga507 discloses a system for providing a user profile that is based off of access information gathered from user devices at an access point. Ex. 1015, FIG. 4, [0041], [0043]. Banga507's system includes multiple network access devices connected to an access point of a communication network, content providers that provide information to the users of the network access devices, and a "client relationship server" (CR server) that generates a user profile, and additionally includes a media server. Ex. 1015, FIG. 2, [0023]-[0029].

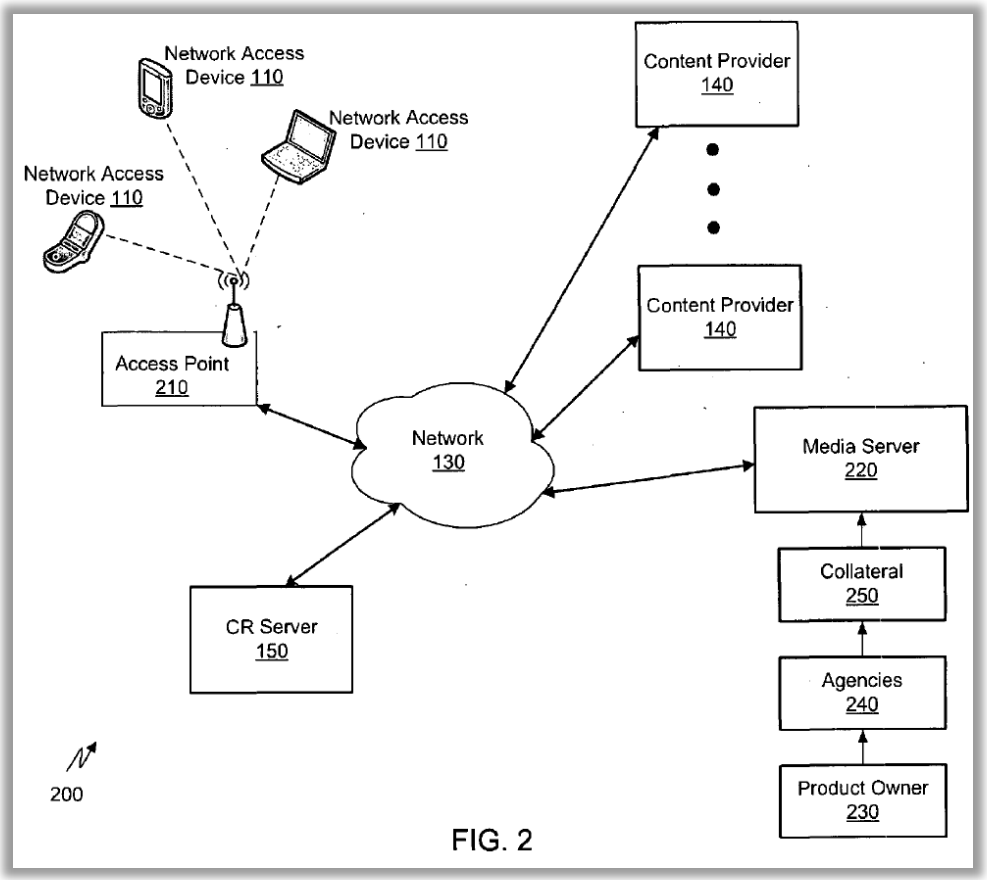


FIG. 2

Banga507, FIG. 2

109. Banga507 discloses storing device records that indicate when the network access devices access an access point, including historical information that is used to establish access patterns of the network access devices. Ex. 1015, Abstract, [0012], [0025], [0029], [0033]-[0037], [0054]. The device records include device identifiers—such as a media access control (MAC) address—that are used to generate the user profile for a user corresponding to a given device identifiers. Ex. 1015, [0029], [0034]-[0037], [0041], [0043]. Banga507 also discloses that, in some examples, the content providers may place a cookie on the user's network access

device as an alternative to or in conjunction with using the device identifier. Ex. 1015, [0007], [0031]. In either scenario, Banga507 teaches that a profile engine generates the user profiles based on characteristics of the user and of the user's network device using access information associated with the device identifier (e.g., MAC address) and/or cookie. Ex. 1015, [0041], [0043].

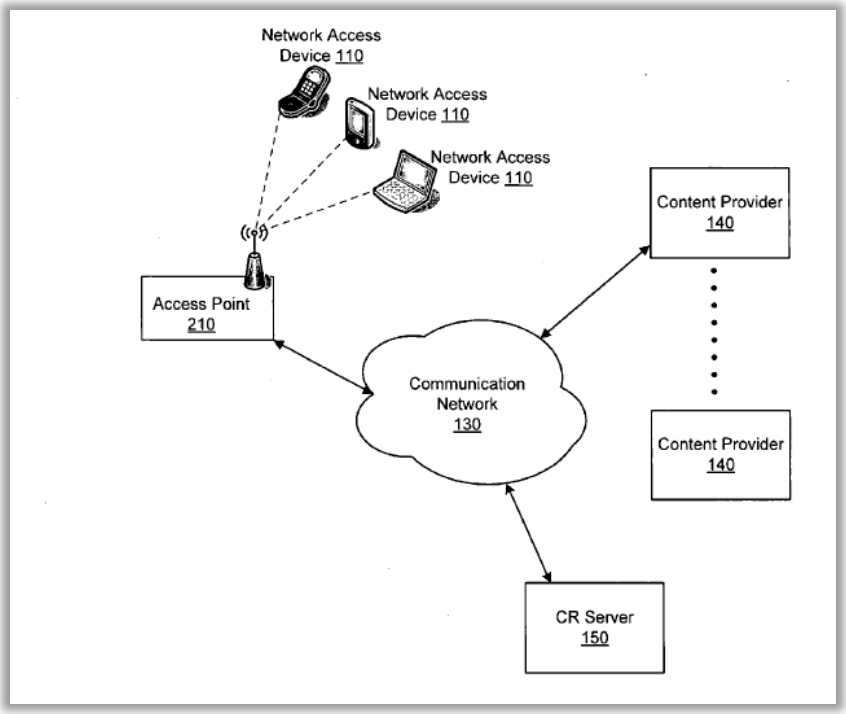
110. Therefore, it is my opinion that Banga507 is analogous art to the '015 Patent. It also is my opinion that a POSA would have found that various combinations of Banga507's teachings were predictable variations of such teachings given Banga507's reference to multiple, plural "embodiments" when describing them. *See*, e.g., Ex. 1015, [0010]-[0015]; *see also id.* [0022]-[0028] (referring to "embodiments" with reference to Figure 1), [0033]-[0039] (referring to "embodiments" with reference to Figure 2), [0040]-[0041], [0044]-[0049] (referring to "embodiments" with reference to Figure 3), [0051], [0055], [0057]-[0060] (referring to "embodiments" with reference to Figure 4), [0063]-[0071] (referring to "embodiments" with reference to Figure 6), [0072]-[0080] (referring to "embodiments" with reference to Figure 7). In view of Banga507's reference to multiple, plural "embodiments" and the fact that such features are disclosed adjacent to one another in Banga507, in my opinion, a POSA would have recognized that a leap of inventiveness was not required to combine them with each other or

collectively apply them to Baig as I explain below. *See* Ex. 1015, [0082] (suggesting a POSA would recognize variations to the disclosed embodiments).

F. U.S. Patent App. Pub. No. 2006/0271690 ("Banga690")

111. Banga690 (Ex. 1016) is a U.S. Patent Application Publication filed on May 11, 2006 and published on November 30, 2006. Ex. 1016, cover. I understand that Banga690 qualifies as prior art under 35 U.S.C. §§ 102(a) and 102(e).

112. Banga690 discloses a similar system to that of Banga507 for providing a user profile that is based off of access information gathered from user devices at an access point. Ex. 1016, [0013], [0028], [0046]-[0047], [0059]. Banga690's system, like that of Banga507, includes multiple network access devices connected to an access point of a communication network, content providers that provide information to the users of the network access devices, and a "client relationship server" (CR server) that generates a device record and corresponding user profile. Ex. 1016, FIG. 2, [0023]-[0028].



Ex. 1016, FIG. 2

113. The CR server connects to the communication network but is separate from the content providers and tracks user access activity irrespective of whether the user registers or logs into the content provider. Ex. 1016, [0006]-[0007], [0028], [0059]. Banga690 discloses that the CR server may include an information collection engine, a profile engine, and a profile storage system for generating and storing profiles of user activity. Ex. 1016, FIG. 3, [0041]-[0048]. Specifically, Banga690's CR server receives access information of devices at the access point in the form of device records for use in generating user profiles that include identifiers of the devices, the IP address associated with the device identifiers, access information, and other information associated with the network access devices. Ex.

1016, FIGs. 2, 3, [0013], [0028], [0041]-[0048], [0059]. The CR server in Banga690 stores a record of which access point was used to access the communication network each time the CR server receives the same device identifier, and includes that information in the user profile. Ex. 1016, [0034], [0038], [0046]-[0047], [0056].

114. The profile engine (similar to Banga507's profile engine) generates the user profiles that include the information associated with the network access devices and individual or group characteristics of the users of the network access devices. Ex. 1016, [0047]-[0048], [0057]-[0058]. Banga690 discloses that one use for these user profiles is to provide user preferences to an advertisement server or content provider to assist third parties in providing advertisements to the users based on user preferences. Ex. 1016, [0057], [0059]-[0060].

115. Therefore, it is my opinion that Banga690 is analogous art to the '015 Patent. Similar to Banga507, it also is my opinion that a POSA would have found that various combinations of Banga690's teachings were predictable variations of such teachings given Banga690's similar reference to multiple, plural embodiments when describing them. *See*, e.g., Ex. 1016, [0009] (summarizing Banga690's disclosures with reference to multiple, plural "embodiments"); *see also id.*, [0022]-[0029] (referring to "embodiments" with reference to Figure 1), [0030]-0040] (referring to "embodiments" with reference to Figure 2), [0043]-[0051] (referring to "embodiments" with reference to Figure 3), [0053]-[0060]

(referring to "embodiments" with reference to Figure 4), [0061]-[0070] (referring to "embodiments" with reference to Figure 5), [0071]-[0076] (referring to "embodiments" with reference to Figure 6), [0082] (similarly suggesting variations to the disclosed embodiments by noting that "[i]t will be apparent to those skilled in the art that various modifications may be made and other embodiments can be used without departing from the broader scope of the invention" and that "other variations upon the exemplary embodiments are intended to be covered by the present invention"). As with Banga507, therefore, given Banga690's reference to multiple, plural "embodiments" and the fact that such features are disclosed adjacent to one another in Banga690, a POSA would have recognized that a leap of inventiveness was not required to combine them with each other or collectively apply them to Baig as I explain below. *See* Ex. 1016, [0082] (likewise suggesting a POSA would recognize variations to the disclosed embodiments).

G. U.S. Patent No. 9,123,071 ("McFarland")

116. McFarland (Ex. 1018) is a U.S. Patent issued on September 1, 2015, from an application filed on March 29, 2006. Ex. 1018, cover. I understand that McFarland qualifies as prior art under 35 U.S.C. § 102(e).

117. McFarland discloses providing recommendations to a member of a group based on more than just a user's own profile, preferences, or activity. Ex. 1018, Abstract. In particular, McFarland discloses providing recommendations to a

member of a group based on the preferences of other group members, including "identifying items that correspond closely to the collective preferences of a group of two or more users." Ex. 1018, Abstract, 3:53-64.

118. McFarland teaches improving recommendations sent to individual group members based on group preferences determined from the preference lists of individual group members. For example, McFarland discloses recommendations based on group preferences, such as movie rentals in the form of a merged queue that merges the queue of the current user ("Misty") with the queue of another user ("Ross"). Ex. 1018, 5:62-6:17; FIG. 3.

119. Similarly, recommendations may be based on a "group recommendations list" generated using the "collective preferences of the group members". Ex. 1018, 8:42-61. For providing recommendations based on the collective preferences of the members of a group, a user database 1611 indicates "affiliations with other users" and "preferences… lists." Ex. 1018, 14:38-55 (discussing McFarland's user database and user preference lists).

120. Therefore, it is my opinion that McFarland is analogous art to the '015 Patent. It is also my opinion that a POSA would have found that various combinations of McFarland's teachings were predictable variations of such teachings given McFarland's explicit statement that "[a]ll combinations of the various embodiments and features described herein fall within the scope of the

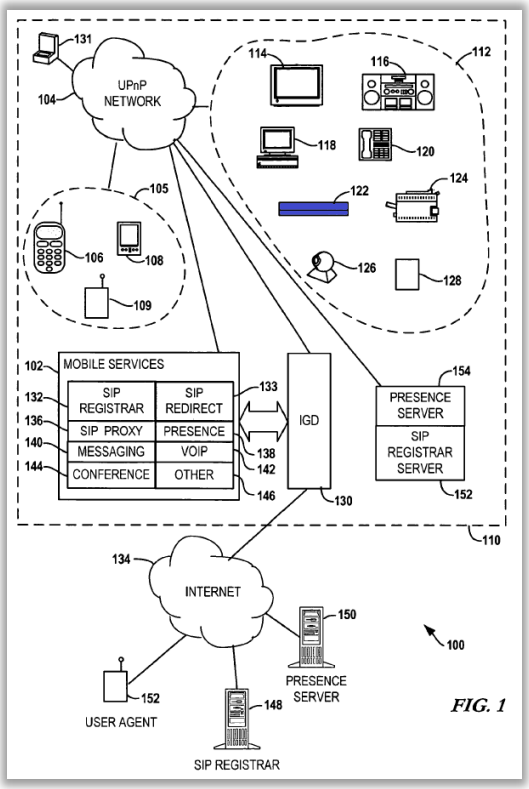
present invention" and that "other embodiments that are apparent to those of ordinary skill in the art, including embodiments which do not provide all of the benefits and features set forth [t]herein and do not address all of the problems set forth [t]herein, are also within the scope of [McFarland's] invention." Ex. 1018, 15:63-65, 16:1-5; *see also id.*, 4:11-19. In view of McFarland's adjacent teachings about its various embodiments and its statement that such embodiments can be combined, a POSA would have recognized that a leap of inventiveness was not required to combine them with each other or collectively apply them to Baig as I explain below.

H. U.S. Patent App. Pub. No. 2006/0128364 ("Costa")

121. Costa (Ex. 1011) is a U.S. Patent Application Publication filed on December 10, 2004, and published on June 15, 2006. Ex. 1011, cover. I understand that Costa qualifies as prior art under 35 U.S.C. §§ 102(a) and 102(e).

122. Costa discloses a method of providing mobile-specific services for mobile devices. Ex. 1011, Abstract. Costa discloses providing mobile-specific services for devices capable of being coupled to a network that allows devices to exchange data in a local environment, such as a public wireless hotspot. Ex. 1011, FIG. 1, [0035]-[0037]. Devices that join the network (e.g., via the wireless hotspot) obtain an IP address and are subsequently able to transfer content among other networked devices. Ex. 1011, [0007], [0038]. Costa discloses that one example of

a device that may be coupled to a network, obtain an IP address, and transfer content is a set-top box 122 (**blue**). Ex. 1011, FIG. 1, [0035]-[0037].



Ex. 1011, FIG. 1 (annotated)

123. Therefore, it is my opinion that Costa is analogous art to the '015 Patent.

I. U.S. Patent No. 8,930,239 ("Ashbaugh")

124. Ashbaugh (Ex. 1019) is a U.S. Patent issued on January 6, 2015, from an application filed in the U.S. on May 5, 2009, and that claimed priority to PCT Application No. PCT/US2005/047230, filed on December 29, 2005. Ex. 1019, cover; Ex. 1050. The Ashbaugh PCT designated the United States and published in

English. Ex. 1050, cover. The invalidating disclosures from Ashbaugh are supported by the Ashbaugh PCT. *See* Ex. 1050. I understand that Ashbaugh qualifies as prior art under 35 U.S.C. § 102(e).

125. Ashbaugh teaches using separate advertising frames to display advertisements on a webpage and using HTTP's redirect feature to receive the advertisements for display. Ex. 1019, 9:36-38, 11:67-12:3; Ex. 1050, 14, 17-18. In particular, Ashbaugh provides an advertising server 36 that provides advertising information to appear in advertising frame 26, including transmitting a message 3c, which may contain the XHTML or HTML code for the advertisement appearing in the frame 26. Ex. 1019, 9:36-38, 10:1-9; Ex. 1050, 14-15. Ashbaugh provides that message 3c may contain a redirection status code and Location headers that identify the URLs associated with the advertising server 36. Here, upon receiving the header redirect message, the browser sends a new request to advertising server 36, in accordance with the URLs in the Location header of the message 3c. In response, the advertising server 36 returns the advertisement data 5b for the advertising frame 26. Thus, as long as the browser, or other XHTML-rendering module, supports HTTP header redirects, the appropriate information will appear in the respective frames of the display area. Ex. 1019, 11:43-12:3; Ex. 1050, 17-18.

126. Therefore, it is my opinion that Ashbaugh is analogous art to the '015 Patent.

X. THE RELEVANT ART AND LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

127. In my opinion, the relevant field of art for the '015 Patent is a mercantile method of targeted delivery of advertisements for use in a data communications topology. Ex. 1001, 1:27-31, 1:49-53, 3:14-17, 5:20-26.

128. I understand that obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art (POSA) at the time of the alleged invention, which, for purposes of this declaration, I have assumed is the earliest claimed priority date of April 17, 2007.

129. I understand that the following four factors may be considered when identifying the appropriate level of a POSA: (i) the types of problems encountered by those working in the field and prior art solutions thereto; (ii) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; (iii) the educational level of active workers in the field; and (iv) the educational level of the inventor. I understand that a POSA is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

130. It is my opinion that, for the '015 Patent, a POSA would have had a bachelor's degree in electrical engineering, computer engineering, computer science, or a similar discipline, and two years of experience with the design and/or implementation of network-based content delivery systems and Internet advertising.

131. I worked in the relevant field with persons meeting this definition of a POSA at, and leading up to, the time of the alleged invention of the '015 Patent (*i.e.*, April 17, 2007). Therefore, I am familiar with the knowledge and skills that such persons had at the time. In my opinion, a POSA's skill set would have included client level and server level programming skills. More specifically, a POSA's skill set would have included computer programming languages and markup languages (*e.g.*, C, C++, C#, Java, JavaScript, Visual Basic.NET, HyperText Mark-up Language (HTML), XML) and knowledge of the HyperText Transfer Protocol (HTTP). A POSA's skill set would have also included client-server architecture and database design skills.

132. In this Declaration, wherever I refer to a POSA, it should be understood that I'm referring to a hypothetical person at the time of the alleged invention of the '015 Patent (*i.e.*, April 17, 2007) meeting the description I have provided in this section. I am an expert with at least the level of skill of a POSA. *See* Section II, *supra*.

XI. CLAIM CONSTRUCTION

133. I understand that my analysis requires an understanding of the scope of the claims of the '015 Patent. I understand that claim terms subject to *inter partes* review, absent some other definition provided in the patent, are given their plain and ordinary meaning to a POSA in light of the patent specification. I understand that

Petitioner's position is that plain and ordinary meaning should apply to all terms for purposes of this proceeding. Therefore, in my analysis below, I have assumed that all claim terms are given their plain and ordinary meaning as would have been understood by a POSA reading the patent specification at the time of the claimed invention (*i.e.*, April 17, 2007). I understand Petitioner has stated that no express construction is necessary at this time.

XII. ANALYSIS

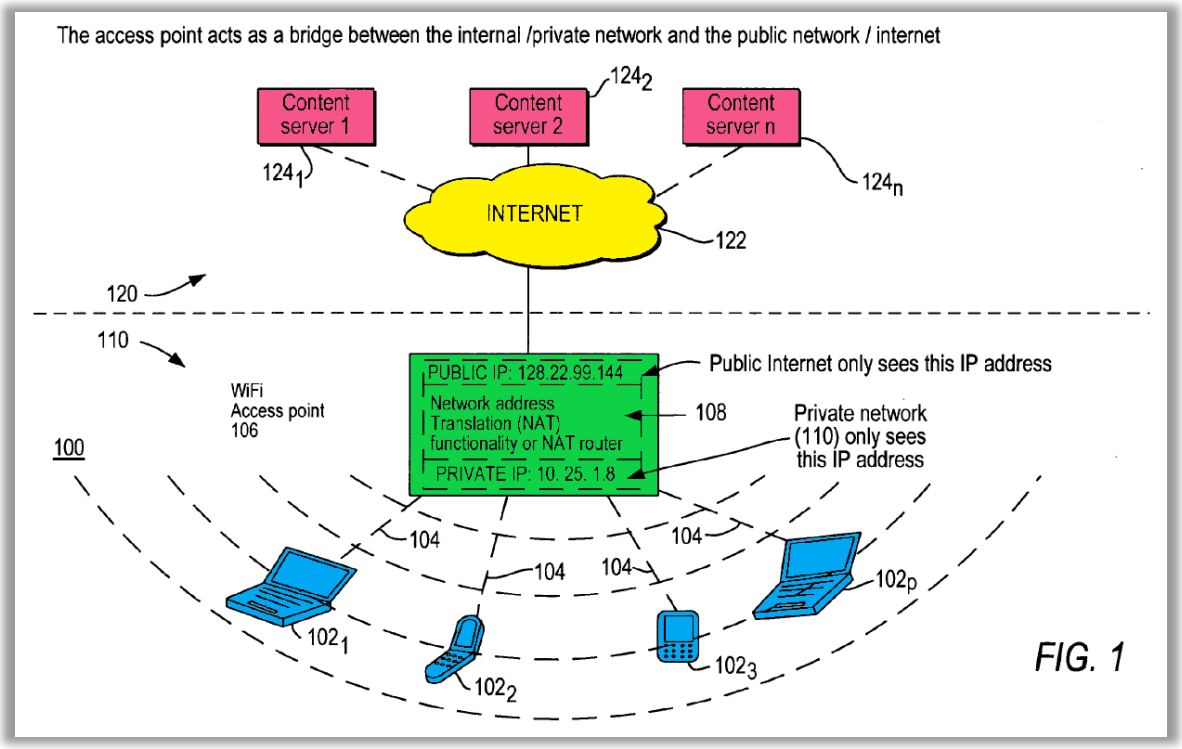
134. For reasons that I discuss in detail below, it is my opinion that, at least by April 17, 2007 (the earliest priority date), claims 1-26 of the '015 Patent would have been obvious to a POSA.

A. Ground A: Claims 1-7, 9-10, 12-20, 22-23, and 25-26 Are Obvious Over Baig in View of Banga507, Banga690, and McFarland

135. As I show and explain in further detail in the subsections below, the combination of Baig, Banga507, Banga690, and McFarland renders obvious both using device identifiers to associate mobile computing devices that access the Internet from a common access point, and automatically sending targeted advertisements to those mobile devices based on the preferences of their users as a whole. More specifically, the combination of these references renders obvious sending an advertisement to a device based on information in a profile for an

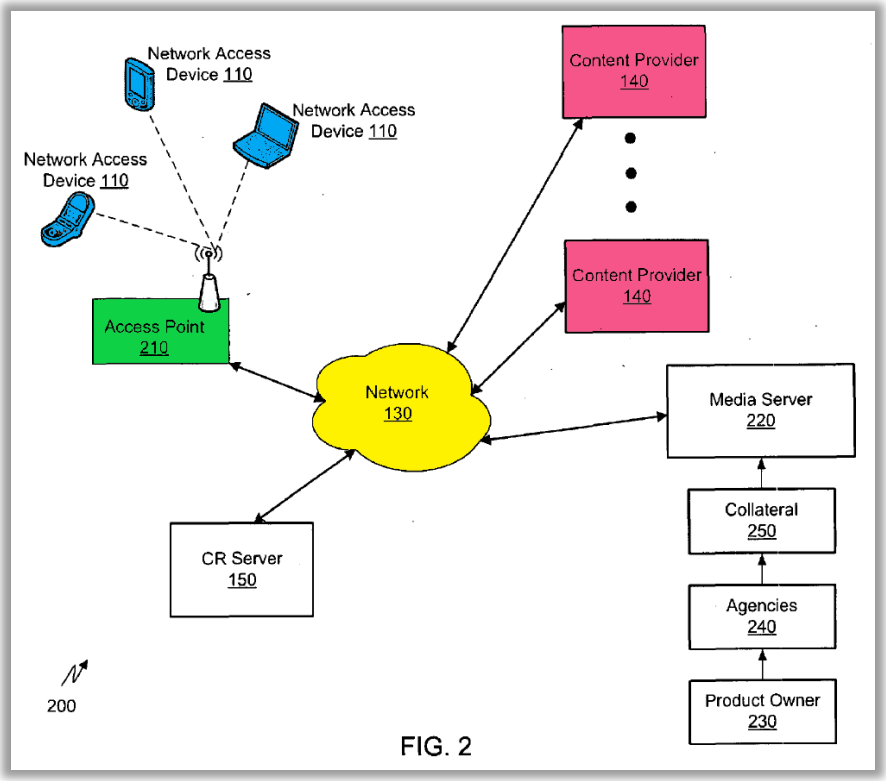
associated device. The result of this combination teaches independent claims 1 and 14 as well as their dependent claims 2-7, 9-10, 12-13, 15-20, 22-23, and 25-26.

136. As seen below in Figure 1 from Baig, its system includes multiple computing devices 102_p (**blue**), such as laptops and mobile telephones, connected to content servers 124_n (**pink**) over the Internet 122 (**yellow**) via a WiFi access point 106 (**green**) that is shared between the computing devices. Ex. 1007, [0042]-[0043], [0052], FIG. 1; Ex. 1008, 5-6, 7-8, FIG. 1. I note, however, that Baig does not teach that its system keeps historical records of network access for the mobile devices 102_p that connect to Baig's access point 106. Nor does Baig teach that its system identifies patterns with respect to the mobile devices' connection to the access point for Internet access.



Ex. 1007, FIG. 1 (annotated).

137. Similar to Baig and as seen below in Figure 2 of Banga507, its system includes multiple network access devices (ADs) 110 (**blue**) that access content providers 140 (**pink**) over a network 130 (**yellow**), such as the Internet, via an access point 210 (**green**) that is shared between the access devices. Ex. 1015, [0022]-[0023], [0026]-[0027], [0033]-[0034], FIGs. 1-2.



Ex. 1015, FIG. 2 (annotated).

138. Banga507 also teaches that its system includes a "client relationship" (CR) server 150 that maintains a history of the access devices' network access. Ex. 1015, [0023], [0028]-[0029], [0037], [0047], [0054], FIGs. 1-2. Banga507 obtains this network access history by creating a record any time an access device accesses

the Internet. *Id.* To create these network access records, Banga507's access point sends network access information to the CR server. Ex. 1015, [0029], [0036]-[0037]. The network access information sent from the access point includes a device identifier for the access device, the date and time the access device accessed the network, and the IP address of the access point. Ex. 1015, [0036]. Banga507 teaches that the records stored for this network access history are used to identify patterns in the access devices' connections to the access point 210. Ex. 1015, [0012], [0054].

139. Both Baig and Banga507 describe sending targeted advertisements and specifically teach automatically sending targeted advertisements to the devices connected to their respective access points. Ex. 1007, [0011]-[0012], [0054], [0058]-[0059], [0061]-[0062], [0093]-[0095], [0098]-[0106], [0115], [0120]; Ex. 1008, 2, 8-10, 16-19, 21; Ex. 1015, [0013], [0038], [0045], [0060], [0068]-[0070], [0078]-[0079]. In Baig, the system sends targeted advertisements based on the users' profile information, time of day, and statistics characterizing the network traffic to and from the users' devices. Ex. 1007, [0061]-[0062], [0103], [0114]-[0117]; Ex. 1008, 10, 18, 20-21. In Banga507, the system sends targeted advertisements based on users' preferences, network access histories, and observed network access patterns. Ex. 1015, Abstract, [0011]-[0013], [0021]-[0022], [0030], [0038], [0042], [0047], [0049], [0054], [0059], [0061], [0067]-[0072], [0074], [0076]-[0079]. Banga507 also teaches sending targeted advertisements to groups of

users that possess particular demographics that may be of interest to advertisers by creating profiles that include the device identifiers of the users' access devices. Ex. 1015, [0041], [0043]-[0045], [0049]. I also note, however, that Banga507 does not explicitly teach that the profiles it creates include the IP address of the access point 210 to which access devices are connected.

140. Banga690 names the same inventors as Banga507 and includes disclosures that overlap with Banga507. *See* Ex. 1015, cover; Ex. 1016, cover. For example, Figures 1-2 of Banga507 and Banga690 are identical with their respective Figure 3 being substantially similar, and the corresponding disclosures for those figures also being substantially similar. *See* Ex. 1015, [0022]-[0050]; Ex. 1016, [0022]-[0050]. Banga690 adds to Banga507's disclosures by explaining that a profile can also include an IP address that is associated with multiple device identifiers of the ADs, which is not explicit in the disclosures of Banga507. Ex. 1016, [0046].

141. McFarland generally describes providing recommendations and explains that a recommendation can be based on more than just a user's own profile, preferences, or activity. Ex. 1018, Abstract, 3:53-64 ("The present invention provides computer-implemented methods and services for identifying items that correspond closely to the collective preferences of a group of two or more users."),

4:15-19. Specifically, McFarland teaches, for example, providing recommendations to a member of a group based on the preferences of other group members. *Id.*

142. As I describe in further detail below, it is my opinion that a POSA would have been motivated and would have found it obvious to incorporate the teachings of Banga507, Banga690, and McFarland summarized above in Baig's system in order to select targeted advertisements to automatically send to a group of users that demonstrate a pattern of accessing the Internet from a shared access point based on the collective preferences of the group members. This is because a POSA would have recognized that, by selecting targeted advertisements for users that exhibit similar network access patterns, Baig's modified system, as I explain further below with various examples, would have been able to advantageously improve the relevance of the advertisements provided to that group of users. The system resulting from this combination would have created profiles that include the IP address of the access point and the device identifiers of the connected devices. The device identifiers would have been associated with user preferences, demographic information, and network access information used to select targeted advertisements provided to those devices.

143. Baig, for example, describes a scenario whereby users connect to its access point from a coffee shop, and Banga507 describes a scenario whereby users access a shared coffee shop access point at the same time each week such as every

Sunday morning at 10am. Ex. 1007, [0039]; Ex. 1008, 5; Ex. 1015, [0054]. It is my opinion that a POSA exercising ordinary creativity would have been motivated to combine the teachings of Baig, Banga507, and Banga690 in order to create profiles that indicate the device identifiers of the users' mobile devices (as taught by Banga507) and include the IP address of the access point shared between those devices (as taught by Banga690). Ex. 1015, [0010], [0021], [0029]-[0030]; Ex. 1016, [0034], [0046]. In my opinion, a POSA would have been motivated to do so for the purpose of sending Baig's users additional targeted advertisements that they might have found to be relevant. Although Baig's system groups users that are concurrently connected to its access point 106, Baig does not specifically consider whether any particular user connects to that access point with any regularity or in accordance with any type of network access pattern. Ex. 1007, [0006] ("grouping end-users accessing common wireless access points"), [0037], [0038] ("VCSP identifies a group of users at a wireless hotspot based upon their common public IP address"), [0052] ("identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110"), [0059] ("the server 224 forms a vicinity-based user group at each hotspot 110"), [0063], [0094]. Nor does Baig specifically consider whether any particular users connect to that access point with the same regularity or frequency or in accordance with the same or similar pattern of network access as another user.

144. It is my opinion that a POSA would have appreciated that the users of devices sharing a common network access pattern at a common access point would likely have more in common than users whose devices are concurrently connected to an access point at a given moment. A POSA also would have recognized that storing records of historical network access and associating the identifiers of devices that exhibit the same patterns of network access at a common access point, as taught by Banga507 and Banga690, would have enabled those devices to be associated with one another in order to identify advertisements that are likely to be more relevant to the users of the group.

145. In my opinion, that POSA further would have been motivated to select the targeted advertisements by taking into account the preferences of other users that exhibit the same network access pattern (e.g., other users that also access the same coffee shop access point at the same time each week) as taught by McFarland. It is my opinion that a POSA would have recognized that, by considering the preferences of users with similar habits and selecting targeting advertisements based on the preferences of those users, Baig's system (modified in view of Banga507 and Banga690) advantageously would have made a more informed evaluation of what ads a particular user might find useful. That POSA also would have appreciated that relatively more or less might be known about the individual users of associated devices having a similar network access pattern. Baig, for example, states that its

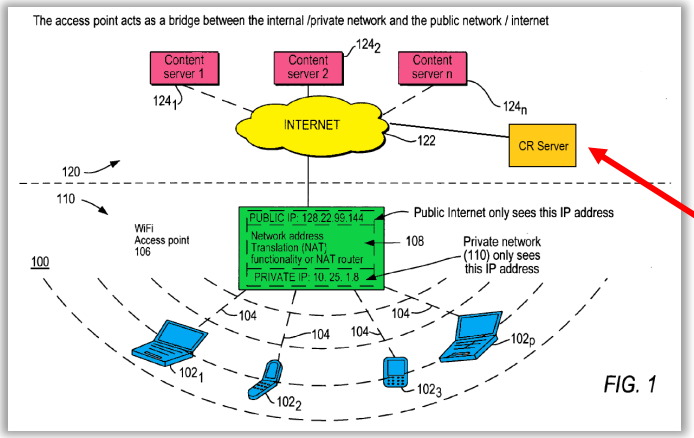
users may provide information about their interests when registering for access to its vicinity-based website and services. Ex. 1007, [0093]. Banga507 similarly teaches that its user profiles may include user preference information, which may be tracked based on the users' network activities and habits. Ex. 1015, [0021]-[0022], [0030], [0042], [0047] [0077]. In my opinion, a POSA would have appreciated that, to supplement what was known about a particular user's preferences, it would be reasonable to conclude that the user would have preferences similar to those of other users with similar habits. In my opinion, that POSA thus would have found it obvious to select and provide a targeted advertisement based on the known and demonstrated preferences of other users exhibiting similar network access patterns.

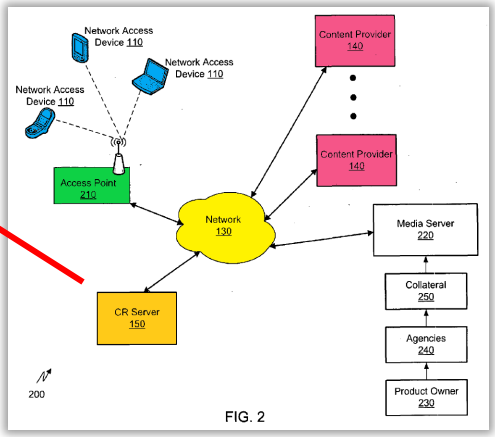
146. To provide a specific example, a POSA would have recognized that, similar to Banga507, a cycling club may regularly meet at a coffee shop every Sunday morning to socialize following a weekly morning bicycle ride. The members of the cycling club may connect their mobile devices (e.g., smartphones) to a shared access point at the coffee shop while gathered in order to access the Internet (e.g., if the shared access point, WiFi, or Ethernet network is preferred over cellular network access, which was common as of the priority date of the '015 Patent because of likely inferior cellular network data performance). One or more members of the bike riding club may be associated with a respective user profile that indicates those members have an interest in cycling (e.g., based on information received

directly from the members when creating or updating a user profile or inferred from the Internet activity of those members that includes browsing cycling-focused websites as I describe above when discussing targeted digital advertising). It is my opinion that a POSA would have found it reasonable to conclude, therefore, that other users showing the same pattern of connecting to the shared access point are likely to have an interest in cycling as well. That POSA thus also would have found it reasonable to conclude that targeted advertisements for products and services related to cycling likely would have been relevant to those other users. It is my opinion that a POSA would have been able to recognize other example scenarios where a group's collective preferences would have been obvious to use in order to target advertisements to users that exhibit similar network access patterns, for example, religious groups that gather at the coffee shop following religious services on Saturday or Sunday mornings, veterans groups or bible study groups that gather at the coffee shop for breakfast at the same time on a given weekday, students or study groups that gather at the coffee shop to do homework or study at the same time each weekday after class, etc..

147. To incorporate the Banga507's (and Banga690's) disclosures into Baig's system, a POSA would have added a CR server (**orange**) like Banga507's (and Banga690's), for example, as shown below. In my opinion, a POSA also would have added the reporting functionality of Banga507's access point 210 (**green**) to

Baig's system, for example, by programming/configuring Baig's access point 106 (also **green**) to report network access information to the CR server as taught by Banga507. Ex. 1015, [0029], [0036]-[0037]. Alternatively, assuming Banga507's access point 210 would have included the network address translation (NAT) functionality of Baig's access point 106, in my opinion, a POSA would have found it obvious to simply substitute an access point like Banga507's (e.g., access point 210) for Baig's access point 106. Ex. 1007, [0046], [0049]-[0051] (discussing the NAT functionality of Baig's access point 106).





Ex. 1007, FIG. 1 (edited to add CR server; annotated with color)

Ex. 1015, FIG. 2 (annotated with color)

148. As shown above, the CR server added to Baig's system is connected to the Internet 122 as a standalone device. Banga507 also teaches, however, that its CR server 150 alternatively can be connected to Banga507's service provider 120 (shown in Banga507's Figure 1) or even one of its access devices 110. Ex. 1015, [0028], FIG. 1. It is my opinion that a POSA, therefore, would have appreciated that

the CR server could have been added to Baig's system in various other ways, for example, by connecting it to Baig's server 224 that provides the VCSP website (shown in Baig's Figure 2). It is my opinion that a POSA also would have appreciated that, rather than adding a CR server like Banga507's to Baig's system as a standalone device, it would have been obvious to add the functionality of Banga507's CR server 150 to one of Baig's servers (e.g., server 224). In my opinion, a POSA would have recognized that either approach would have been suitable to achieve the goal of introducing the functionality of Banga507's CR server 150 into Baig's system. A POSA, therefore, would have recognized both approaches to be an obvious design choice with both approaches being well within a POSA's skills and capabilities. A POSA, for example, would have had the skills and knowledge to program one of Baig's servers to provide the functionality described in Banga507 for the CR server 150. Ex. 1007, [0052]-[0053] (explaining that Baig's server 224 has programs for providing the features of its VCSP website). A POSA also would have had the skills and knowledge to, alternatively, connect a CR server like Banga507's to the Internet and program Baig's access point 106 to report the network access information to that CR server via the Internet as described for Banga507's access point 210. Ex. 1015, [0029], [0036]-[0037]; Ex. 1007, [0131] (explaining that modifications and variations can be made to Baig's system).

149. The result of this modification would have been a modified version of Baig's system that includes an access point that reports network access information (as taught by Banga507) to a CR server. Ex. 1015, [0033]-[0034], [0037]-[0038]. The CR server in this modified version of Baig's system would have identified network access patterns and would have created profiles for groups of users that access the Internet from the same access point at the same time each week (as also taught by Banga507) in order to send targeted advertisements to the users' mobile devices (as taught by both Baig and Banga507). Ex. 1007, [0011]-[0012], [0054], [0058]-[0059], [0061]-[0062], [0093]-[0095], [0098]-[0106], [0115], [0120]; Ex. 1008, 2, 8-10, 16-19, 21; Ex. 1015, [0013], [0038], [0045], [0054], [0060], [0068]-[0070], [0078]-[0079]. The profiles stored by the CR server in this modified version of Baig's system would have included the device identifiers of the users' mobile devices (as taught by Banga507) as well as the IP address of the access point those devices connect to (as taught by Banga690). Ex. 1015, [0010], [0021], [0029]-[0030]; Ex. 1016, [0034], [0046]. The targeted advertisements in the modified version of Baig's system would have included advertisements based on the preferences of other members of the group (as taught by McFarland). Ex. 1018, Abstract, 3:53-64, 4:15-19.

150. As I explain in further detail below, Baig's modified system would have been an obvious combination of the teachings of Baig, Banga507, Banga690, and

McFarland. Baig's modified system would have been nothing more than the simple combination of prior art elements according to known methods, the simple use of known techniques to improve a known or similar system and method in the same way, and the application of a known technique to a known system ready for improvement in order to yield predictable results. As I also explain below, it is my opinion that a POSA would have reasonably expected success in combining the teachings of Baig, Banga507, Banga690, and McFarland to arrive at what is claimed in claims 1-7, 9-10, 12-20, 22-23, and 25-26.

1. Independent Claim 1

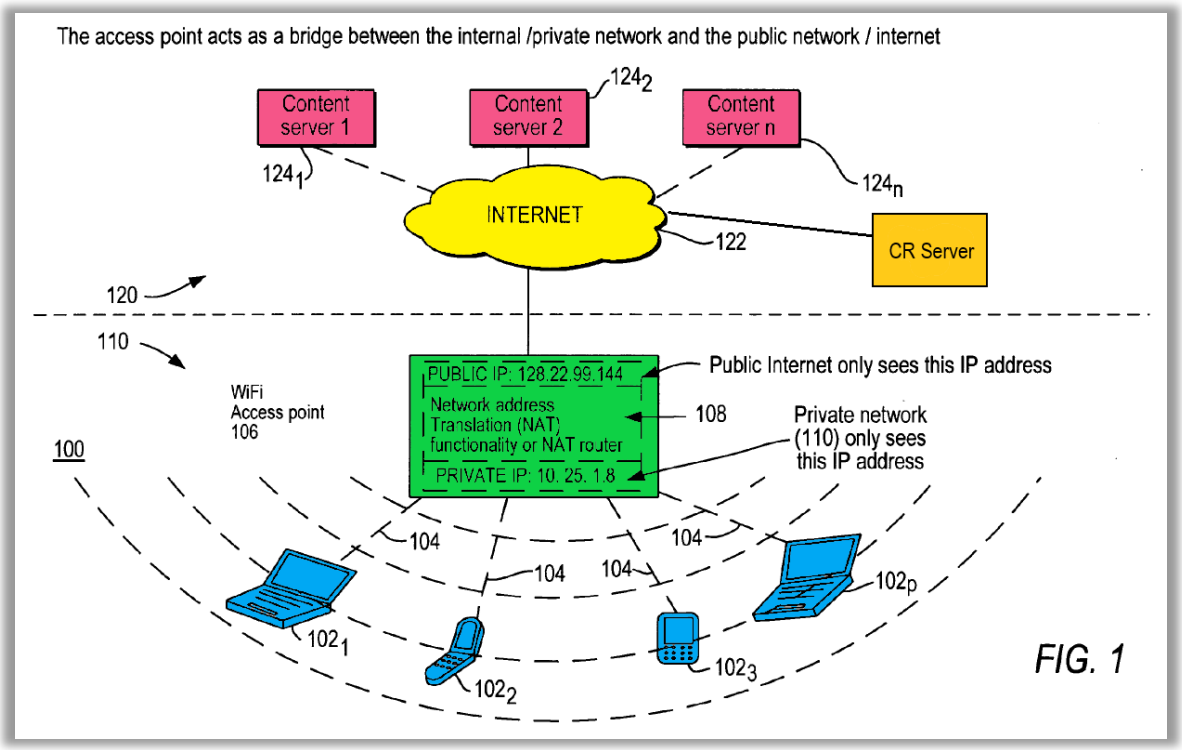
151. As I explain below, in my opinion, a POSA would have found it obvious to combine Baig, Banga507, Banga690, and McFarland.

i. Element [1A]: "A computer system comprising at least one hardware server computer, wherein the computer system is programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action, the method comprising:"

152. Assuming the preamble [1A] imposes a limitation, in my opinion it is disclosed by and rendered obvious over Baig in view of Banga507, Banga690, and McFarland.

153. As I introduced above and show again below, the result of combining the teachings of Baig, Banga507, Banga690, and McFarland is a modified version

of Baig's system. This system ("**computer system**") includes a CR server 150 (**orange**) ("**at least one hardware server computer**"), mobile devices 102_p (**blue**), and access point 106 (**green**) all connected to the Internet 122 (**yellow**). Ex. 1007, [0042]-[0043], [0049]-[0051], FIG. 1; Ex. 1008, 5-7, FIG. 1; Ex. 1015, [0022]-[0023], [0026]-[0027], [0033]-[0034], FIGS. 1-2. This modified version of Baig's system also includes content servers 124_n (**pink**) that "store and/or host information (e.g., multimedia information and data) … from websites, and are communicably linked together [via] the public internet 122." Ex. 1007, [0042].



Ex. 1007, FIG. 1 (edited; annotated).

154. As I explain in further detail below for elements [1B]-[1I], the modified version of Baig's system is "**programmed and connected to perform a method of**

using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action" as recited in independent claim 1 of the '015 Patent.

155. It is my opinion that a POSA would have understood that, given the system's components reside in a computing network, their functionalities would have been implemented using programmed instructions. *See* Ex. 1007, [0002] ("[t]he present invention relates generally to vicinity-based communications services, and more specifically to an apparatus … for providing various services for mobile devices which are in communication with local area network wireless access points"), [0052] ("network 200 … further includes a vicinity-based community service provider (VCSP) 202 having at least one content server 224 coupled to the Internet 122 in a conventional manner" and "server 224 includes at least one processor, memory and support circuitry for running programs that, for example, identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110"), [0053] ("server 224 further includes programs and data for hosting a website of the VCSP 202"), [0063] ("server 224 of the VCSP 202 includes programming which determines that WiFi mobile devices accessing a single hotspot are connected to the same WiFi access point"), FIGS. 1-2; Ex. 1015, [0003] ("[e]mbodiments of the present invention relate generally to network access and more particularly to providing

directed media in a network"), [0010] ("When a user of the network access device attempts to access a content provider's web site, the IP address of the network access device is used by a customer relationship server to identifier the particular network access device."), [0023] ("the environment 100 comprises at least one network access device 110, the service provider 120, a network 130, a plurality of content providers 140, and a client relationship server ("CR server") 150" and "[i]n exemplary embodiments, the network 130 is the Internet … the network 130 may be a local area network (LAN), intranet, or extranet."), FIGS. 1-2; Ex. 1016, [0077] ("block diagram of a digital device 700" and "digital device 700 includes a system bus 770 coupled to a processor 710, memory 720, storage system 730, input/output (I/O) interface 740, communications (com.) network interface 750, and display interface 760"), [0078] ("processor 710 is configured to execute software or instructions"), FIG. 7. That POSA, therefore, would have understood that the functionalities of the components in Baig's modified system likewise would have been implemented using programmed instructions.

156. The proposed combination thus discloses and renders obvious element [1A].

ii. Element [1B]: "(a) with the computer system, creating an electronic database containing a multitude of associations, each indicating an association between device identifiers of two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices, wherein:"

157. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1B].

158. As I introduced above, combining the teachings of Baig, Banga507, Banga690, and McFarland would have resulted in a modified version of Baig's system. That system discloses the claimed "**computer system**." Baig's mobile devices in that modified system, which connect to Baig's access point 106 for Internet access, disclose the claimed "**multitude of Internet-accessing electronic devices**." Ex. 1007, [0038], [0042]-[0043], FIG. 1; Ex. 1008, 5-6, FIG. 1. Banga507 discloses mobile devices such as laptops and mobile phones that are the same as, or at least similar to, Baig's mobile devices. *Compare* Ex. 1015, [0024] ("network access device 110 include desktops, laptops, personal digital assistants, and cellular telephones") and FIG. 2 *with* Ex. 1007, [0003] ("[w]ireless 'hotspots' are locations with wireless connectivity where users having mobile devices, such as laptops, PDA, mobile phones and the like, can connect to a public network (e.g., the Internet) using standard WiFi technology"), [0049] and FIG. 1.

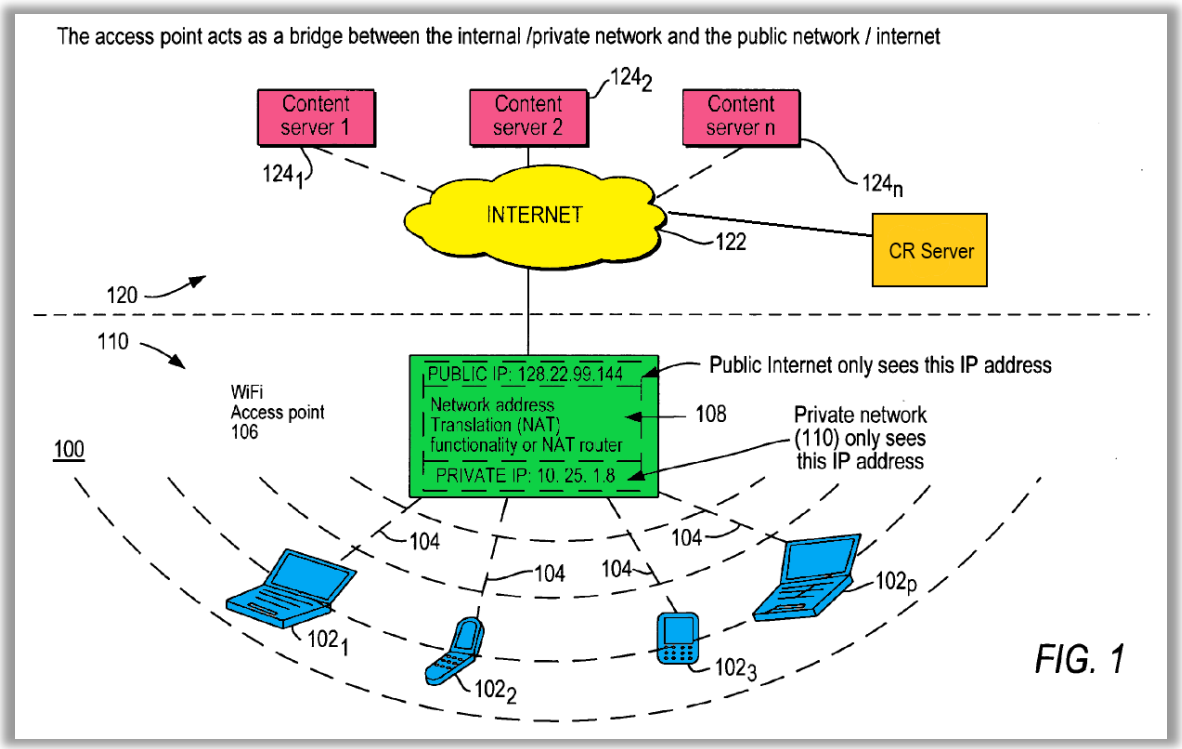
159. Banga507 teaches that its access devices each include a device identifier, which may comprise "any anonymous device identifier," e.g., a media access control (MAC) address. Ex. 1015, [0025]. Although not explicit in Baig, given the similarity between Baig's mobile devices and Banga507's access devices, in my opinion, a POSA would have understood that Baig's devices, and thus the devices in Baig's modified system, would have had equivalent device identifiers like those in Banga507 (e.g., MAC addresses). Baig explains that its "mobile devices … can connect to a public network (e.g., the Internet) using standard WiFi technology (often referred to as Wireless LAN or WLAN technology)." Ex. 1007, [0003]. It is my opinion that a POSA would have recognized that Baig's reference to "standard WiFi technology" refers to the IEEE 802.11 family of wireless networking standards. *See* Ex. 1041 (Part 11 of the IEEE 1999 edition of the 802.11 standard providing WLAN MAC and physical layer specifications). As seen below, a POSA also would have understood that mobile devices "using standard WiFi technology," such as those in Baig, would have included device identifiers, specifically MAC addresses:

> Each IEEE 802.11 PHY operates in a single medium—the WM. The IEEE 802.11 MAC operates in a single address space. MAC addresses are used on the WM in the IEEE 802.11 architecture. Therefore, it is unnecessary for the standard to explicitly specify that its addresses are "WM addresses." This is assumed throughout this standard.

Ex. 1041, 41 (annotated), 8 ("WM" being the abbreviation for "wireless medium").

160. I also note that the '015 Patent specifically identifies MAC addresses as one example of a device identifier. Ex. 1001, 15:30-37 ("Examples of such identifiers could include an equipment serial number or a portion thereof, a device MAC address or a portion thereof, a username, a pseudonym, a confirmation number, a tag, or any other identifying code or data element."), 16:2-4 ("If a unique identifier is used (such as a complete MAC address or a complete device serial number) …"). I further note that Banga507 contemplates using other types of device identifiers besides MAC addresses: "The device identifier may comprise a media access control address (MAC address) … or any anonymous device identifier." Ex. 1015, [0025]. The device identifiers (e.g., MAC addresses) of the mobile devices in Baig's modified system thus disclose the claimed "**device identifiers**."

161. As I show above, the modified version of Baig's system would have included the functionality of a CR server like the CR server 150 described in Banga507 (e.g., by including a standalone CR server as one of the components in communication with Baig's access point 106 over the Internet):



Ex. 1007, FIG. 1 (edited to include CR server; annotated with color).

The CR server in this modified version of Baig's system would have included functionality similar to that of the CR server 150 in Banga507 including recording each time a device accessed the network thus creating a history of that device's network access as taught by Banga507. Ex. 1015, [0023], [0028]-[0029], [0037], [0047], [0054], FIGS. 1-2.

162. As seen in Figure 3 below, Banga507's CR server 150 includes an information collection engine 320 that it uses to create the records of network access (sometimes referred to as "device records"):

> The CR server 150 is configured to receive the device identifier and the access information from the access point

> 210. The device identifier and **access information is then stored within a record**. The **record tracks the device identifier and access information**. Additionally, the record may store any other kind of information associated with the device identifier.

Ex. 1015, [0037] (emphasis added).

> The information collection engine 320 is configured to **receive or obtain information** from the network access device 110, the access point 210, and any other source of information **which may be associated with** the user profile, user preferences, and **the network access device 110**. The information collection engine 320 may be further configured to store the information in the storage system 330. In some embodiments, the information is stored in a device record. The information collection engine 320 will be discussed in more detail in connection with FIG. 4.

Ex. 1015, [0047] (emphasis added).

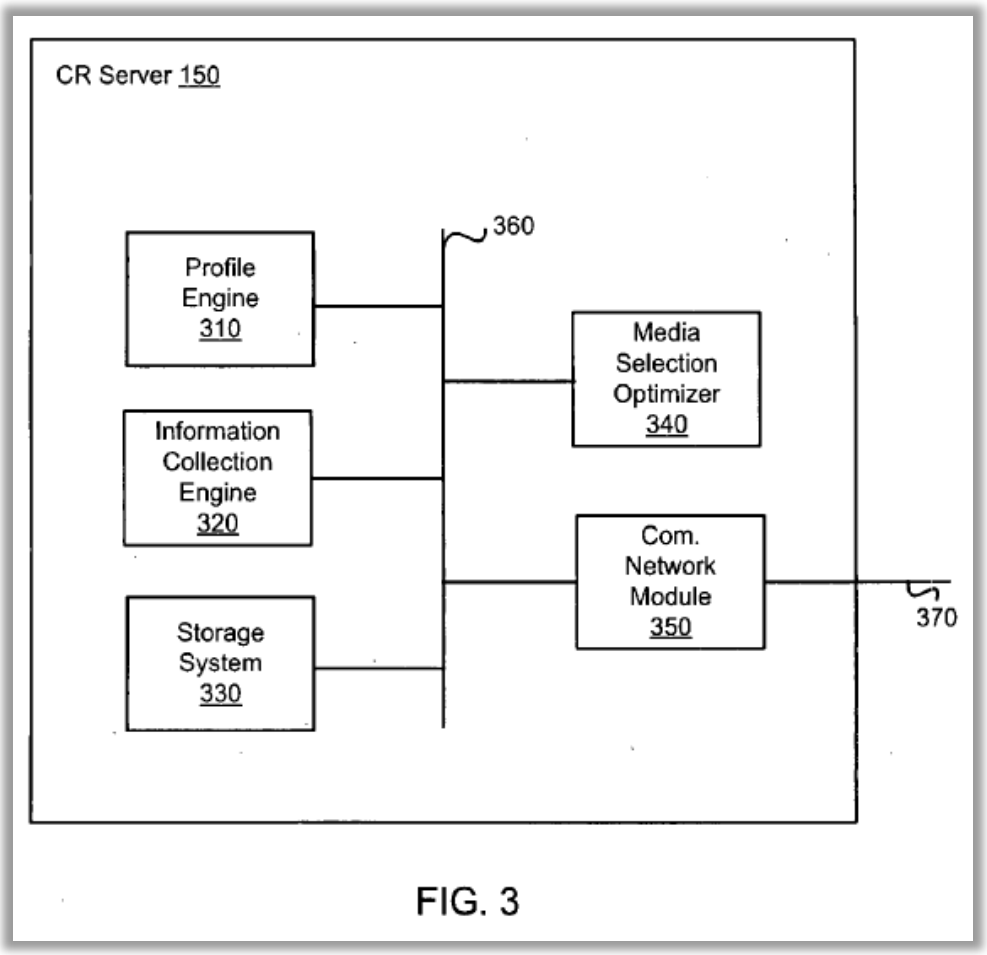


FIG. 3

Banga-570, FIG. 3.

163. As further seen in Figure 4 below, Banga507's information collection engine 320 of Banga507's CR server 150 includes a history module 430 that it uses to collect the historical network access information used to create the records of historical network access:

> The **history module 430 is configured to collect and maintain historic information regarding a network access device 110**. For example, every time a same device identifier is received by the CR server 150, a number of

> times the network 130 is accessed, the corresponding access point 210 used, date and time of access, and so forth may be tracked by the history module 430. Historical information is then used to establish a pattern for which aspects of the user profile may be developed from. For example, if a user has a history of accessing the network 130 from a particular location at a particular day and time (e.g., corner coffee shop at 10 am every Sunday), the history module 430 will record this pattern. The pattern may then be used to assign group identifiers.

Ex. 1015, [0054] (emphasis added).

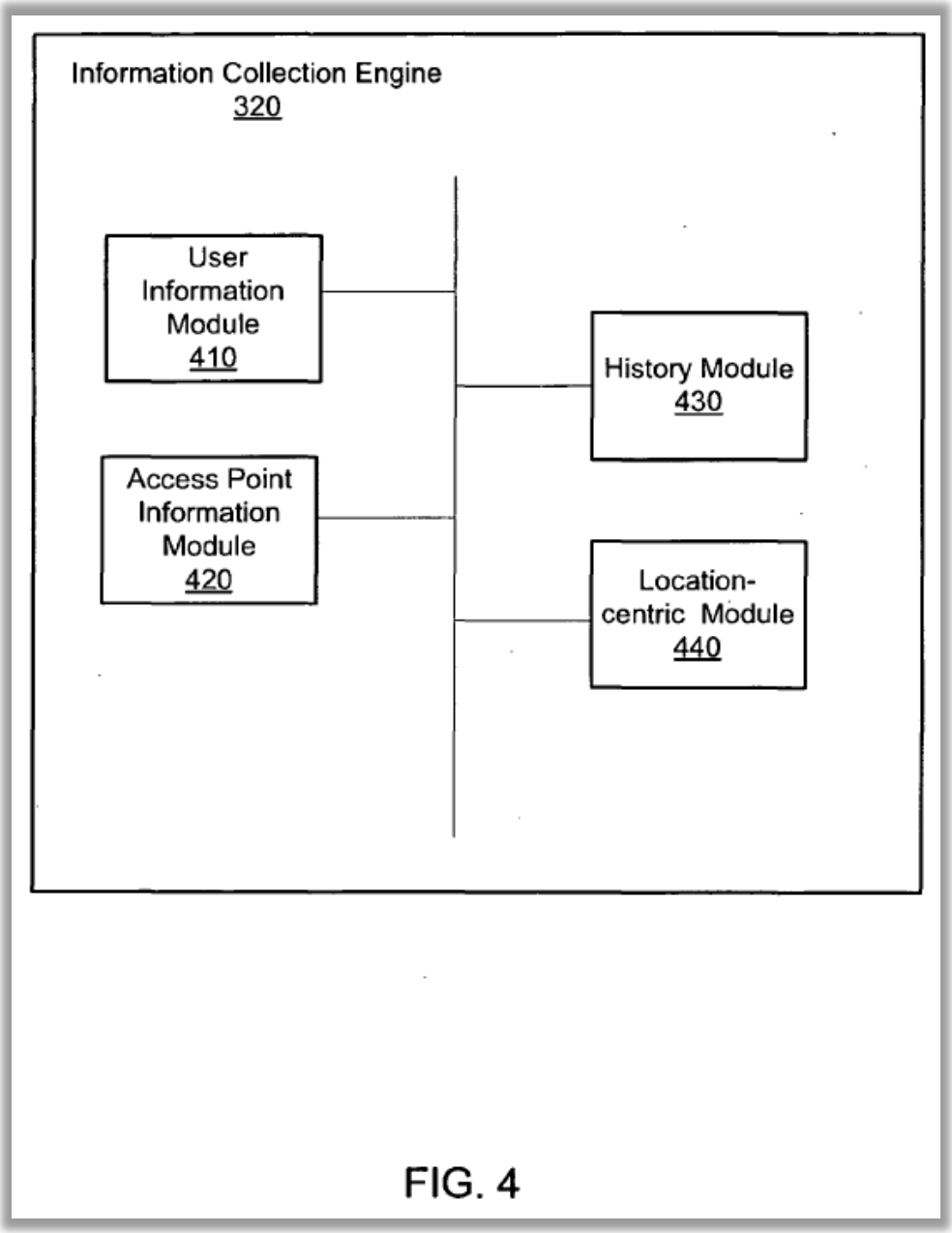


FIG. 4

Banga-570, FIG. 4.

164. The CR server in Baig's modified system, like Banga507's CR server 150, also would have been configured to create user profiles as taught by Banga507:

> The exemplary CR server 150 is **configured to identify any number of network access devices 110 seeking**

> **access to the network 130, and to generate a user profile for each network access device 110**. The user profile may be used to build and develop relationships between users of the network access devices 110 and the owners or agents of products and/or services. In various embodiments, the CR server 150 may be coupled to the network access device 110, the service provider 120, or the network 130.

Ex. 1015, [0028] (emphasis added).

165. Banga507's CR server 150 includes a profile engine 310 that generates user profiles using, among other things, stored network access records, device identifiers, and related network access information:

> The **profile engine 310 is configured to generate user profiles based on characteristics associated with** the user and **the user's network access device 110** (FIG. 1). Each **user profile may comprise** one or more device identifiers (of the network access devices 110), **access information, device histories, and any other information associated with the network access devices 110** or device identifier.

Ex. 1015, [0041] (emphasis added).

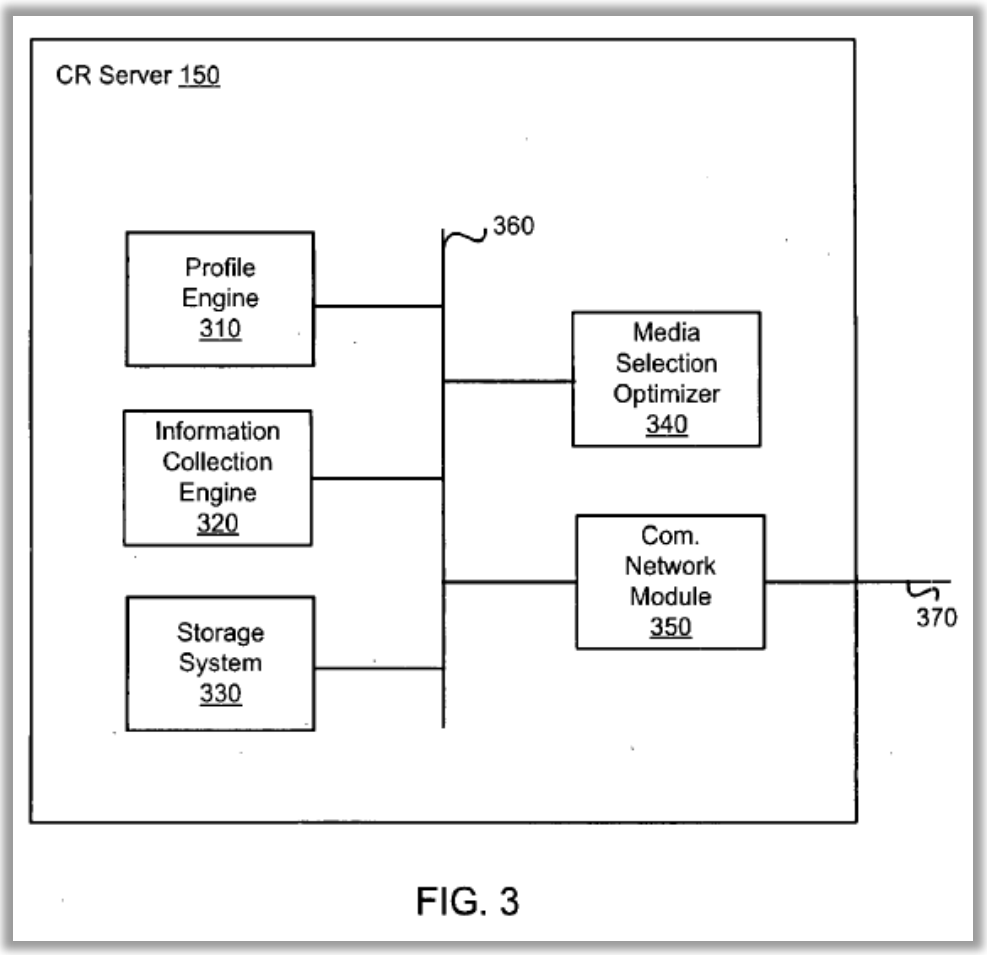


FIG. 3

Banga-570, FIG. 3.

See also Ex. 1015, [0028], [0029] ("CR server 150 generates the user profile based on the device identifier, access information, and other information associated with the device identifier"), [0030], [0036], [0037] ("The CR server 150 is configured to receive the device identifier and the access information from the access point 210. The device identifier and access information is then stored within a record."), [0040], FIGS. 3-4.

166. Baig's modified system, therefore, would have included functionality that used the network access information to identify the preferences and habits of the mobile devices' users. Banga507 provides one specific example where the profile engine determines a user has a preference for a particular coffee shop based on the user's habit of accessing the network 130 from the access point 210 at that coffee shop:

> **The profile engine 310 can further customize the user profile based on** individual characteristics, preferences, and **habits of the user of a particular network access device 110**. For example, if the user **repeatedly accesses the network 130 with the same network access device 110 through an access point 210 at a particular coffee shop**, the user profile associated with the device identifier may indicate that the user has a preference for the coffee shop. As a result, the user profile may indicate that the user prefers coffee or a particular coffee shop.

Ex. 1015, [0042]; *see also id.*, [0047], [0054] ("Historical information is then used to establish a pattern for which aspects of the user profile may be developed from" and "if a user has a history of accessing the network 130 from a particular location at a particular day and time (e.g., corner coffee shop at 10 am every Sunday)"). More generally, both Baig and Banga507 describe profiles that include information about user preferences and interests. Ex. 1007, [0093]; Ex. 1015, [0021]-[0022], [0030],

[0038], [0042], [0044] (preference for particular sports), [0061], [0077] (preference for particular teams).

167. Banga507's CR server 150 creates the user profiles using the device identifiers of the network access devices 110 and related network access information:

> The CR server 150 is further configured to receive a device identifier from the network access device 110 seeking access to the network 130. The CR server 150 also receives access information and other information associated with the user, such as the current IP address assigned to the network access device 110. **The CR server 150 generates the user profile based on the device identifier, access information, and other information associated with the device identifier**.

Ex. 1015, [0029] (emphasis added); *see also id.*, [0030] ("[T]he CR server 150 receives a device identifier from the user's network access device 110 and/or the service provider 120. Through the device identifier, the user can be recognized and the number of times and where the user accesses the network can be stored to assist in the generation of the user profile."), [0036] ("The access point 210 directs the device identifier as well as access information to the CR server 150. Access information may comprise any information associated with the device identifier.").

168. Beyond creating user profiles for individual network access devices 110, Banga507 uses its network access records "to build and develop relationships between users of the network access devices 110." Ex. 1015, [0028]. For example, Banga507 teaches that a pattern of network access "may … be used to assign group identifiers." Ex. 1015, [0054]. Furthermore, Banga507 teaches that its user profiles can include multiple device identifiers in addition to group characteristics:

> **Each user profile may comprise one or more device identifiers** (of the network access devices 110), access information, device histories, and any other information associated with the network access devices 110 or device identifier.

Ex. 1015, [0041] (emphasis added).

> The profile engine 310 **can also incorporate group characteristics into the user profile**. That is, the user profile may **include one or more group identifiers indicating a group type that the user is associated with**.

Ex. 1015, [0043] (emphasis added). I also note, as I do above, that Baig likewise teaches grouping users connected to an access point. *See* Ex. 1007, [0006], [0037]-[0038], [0052], [0059], [0063], [0094].

169. It is my opinion that a POSA would have recognized a "group identifier" assigned on the basis of a network access pattern to be an example of the type of "relationship[] between users of the network access devices" that

Banga507's CR server 150 would have been able to build and develop. Ex. 1015, [0028], [0041], [0043], [0044] ("the user profiles collectively identify general trends"), [0045] ("predetermined group identifier may be generated and utilized by the profile engine 310"), [0054]. Banga507 explains that, by identifying relationships between groups of users, advertisements may be directed to groups of users that exhibit certain demographics. Ex. 1015, [0043]-[0045].

170. Banga507's user profiles, therefore, include multiple device identifiers. Ex. 1015, [0041] ("Each user profile may comprise one or more device identifiers (of the network access devices 110) …"). It is my opinion that a POSA would have understood that a user profile with multiple device identifiers as taught by Banga507 discloses multiple associations between those device identifiers. For example, a POSA would have understood that a user profile with three device identifiers (e.g., Device ID A, Device ID B, and Device ID C) would have yielded three associations between those device identifiers (e.g., a first association between Device ID A and Device ID B, a second association between Device ID A and Device ID C, and a third association between Device ID B and Device ID C).

171. In Banga507, relationships between users are identified (e.g., using network access records) in order to direct advertisements to groups of users possessing desired demographics. Ex. 1015, [0028] ("user profile may be used to build and develop relationships between users of the network access devices 110"),

[0043] ("the user profile may include one or more group identifiers indicating a group type that the user is associated with" and "a plurality of group identifiers may be used to identify groupings the user may be associated with"), [0044], [0045] ("A group identifier can be generated that corresponds to that demographic and user profiles that fall into the demographics will include this group identifier."), [0054] ("Historical information is then used to establish a pattern for which aspects of the user profile may be developed from. … The pattern may then be used to assign group identifiers.").

172. Banga507 teaches that its CR server 150 includes a media selection optimizer 340 to determine which targeted advertisement (which Banga507 refers to as a type of "directed media") to present to a user:

> **The media selection optimizer 340 is configured to determine a directed media which should be presented to a user**. In exemplary embodiments, the media selection optimizer 340 receives an IP address of a network access device 110 that is attempted to access a content provider 140. Based on the IP address, the media selection optimizer 340 can determine the associated network access device 110, and retrieve user profile information associated with the network access device 110 (e.g., based on the device identifier). The media selection optimizer 340 may also retrieve other information (e.g., access point and location-centric information) via the information

> collection engine 320. Using the retrieved information, **the media selection optimizer 340 performs an analysis to match up the user profile information, user preferences, and group identifiers with access point and location-centric information to determine the most appropriate media or media type that should be directed to the network access device 110 requesting the content from the content provider 140**.

Ex. 1015, [0049] (emphasis added).

> In exemplary embodiments, when the user visits a web site of a content provider 140, the user will see directed media on portions of a web page. In some embodiments, **the directed media is targeted advertisement**.

Ex. 1015, [0038] (emphasis added); *see also id.*, [0045] ("For example a soft drink company may wish to **direct advertisements** to a certain demographics.") (emphasis added).

173. In Baig's modified system, the user profiles thus would have included multiple device identifiers and, if desired, a group identifier indicating a user group of users as taught in Banga507. Ex. 1015, [0041], [0043]-[0045]. Those user profiles would have associated the device identifiers with one another by including them in a profile for an identified user group. The associations established between device identifiers by including them together in such a profile, therefore, disclose

the claimed "**multitude of associations, each indicating an association between device identifiers of two or more Internet-accessing electronic devices**."

174. The CR server in Baig's modified system also would have included a storage system that stored the user profiles like the storage system 330 in Banga507's CR server 150. Ex. 1015, [0048] ("storage system 330 is configured to store the information from the collection engine 320" and "storage system 330 may also store user profiles"), FIG. 3. The storage system at the CR server in Baig's modified system would have stored the profiles as taught by Banga507, which discloses the claimed "**electronic database containing a multitude of associations**." Ex. 1015, [0040], [0047], [0048] ("The storage system 330 may also store user profiles."), FIG. 3.

175. As I explain above, in my opinion, a POSA would have been motivated and would have found it obvious to add the functionality of a CR server like Banga507's CR server 150 to Baig's system and to add to Baig's access point the network access reporting functionality as described in Banga507. That POSA would have been motivated to add the CR server functionality to Baig's system because doing so would have advantageously provided a mechanism for tracking historical network access by Baig's mobile devices and creating profiles for user groups as described in Banga507. Ex. 1015, [0023], [0028], [0029] ("CR server 150 also receives access information and other information associated with the user, such as

the current IP address assigned to the network access device 110"), [0037] ("CR server 150 is configured to receive the device identifier and the access information from the access point 210"), [0040]-[0041], [0047]. With the functionality of a CR server, like Banga507's CR server 150, Baig's modified system would have been able to create profiles indicating relationships between Baig's mobile devices based on historical network access information and network access patterns as also taught by Banga507. Ex. 1015, [0028], [0054]. Baig's modified system also would have been able to direct targeted advertisements to the mobile devices identified in those profiles as further taught by Banga507. Ex. 1015, [0045], [0049] ("media selection optimizer 340 is configured to determine a directed media which should be presented to a user" and "the media selection optimizer 340 performs an analysis to match up the user profile information, user preferences, and group identifiers with access point and location-centric information to determine the most appropriate media or media type that should be directed to the network access device 110").

176. It is my opinion that a POSA would have found that adding the functionality of a CR server like Banga507's CR server 150 to Baig's system to be the simple combination of prior art elements according to known methods to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include Baig's system and the functionality of a CR server like Banga507's CR server 150. Ex. 1007, FIGS. 1-2; Ex. 1008, FIGS. 1-2; Ex.

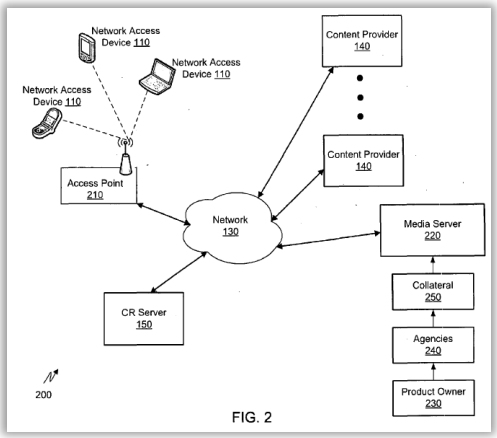
1015, FIGS. 1-2. The known methods include configuring an access point to provide device identifiers and network access information to a CR server, storing historical network access records, and creating profiles that associate the device identifiers with each other as taught by Banga507. Ex. 1015, [0028]-[0029], [0036]-[0037], [0047]-[0048]. The predictable results include a system that uses device identifiers and network access information, obtained from an access point, to create historical network access records and profiles associating the device identifiers.

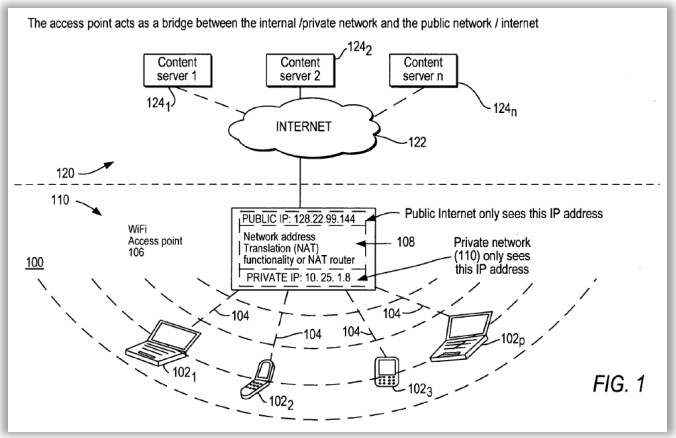
177. It is my opinion that a POSA also would have found that adding the functionality of a CR server like Banga507's CR server 150 to Baig's system to be merely using known techniques to improve a similar system in the same way. *See* Section IV, *supra* (exemplary obvious rationale (C) above). The known techniques include Banga-570's technique of creating historical network access records based on device identifiers and generating user profiles using those records. Ex. 1015, [0028]-[0029], [0036]-[0037], [0047]-[0048], [0054]. The similar system includes Baig's system that provides Internet access to mobile devices via wireless access points. Ex. 1007, FIGS. 1-2; Ex. 1008, FIGS. 1-2. The improvements include introducing into Baig's system the ability to track whenever a device accesses the network and to create profiles that indicate a user group by associating the devices' identifiers as taught by Bang-507. Ex. 1015, [0028]-[0029], [0036]-[0037], [0047]-[0048], [0054].

178. In my opinion, a POSA further would have found that combining Baig and Banga507 would have been merely applying a known technique to a known system ready for improvement. *See* Section IV, *supra* (exemplary obvious rationale (D) above). The system to be improved is Baig's system, which lacks the ability to historically track each instance of Internet access with the same granularity as Banga-570. Ex. 1007, [0042]-[0047] (describing Baig's system with reference to FIG. 1), 49-52 (describing Baig's system with reference to FIG. 2); Ex. 1008, 6-7. Banga-570 teaches the known technique of configuring an access point to report, to a remote server, device identifiers and network access information whenever devices access the Internet via that access point. Ex. 1015, [0036]-[0037], [0047], [0054].

179. In my opinion, a POSA would have had the skills and knowledge to combine the teachings of Baig and Banga507 with a reasonable expectation of success in arriving at the subject matter recited in element [1B]. Baig indicates, for example, that "modifications and variations" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex. 1007, [0131]. Furthermore, like Baig's server that hosts its vicinity-based service and website (e.g., server 224) and Baig's access point 106, Banga507's CR server 150 and its access point 210 are in communication with each other over the Internet. *Compare* Ex. 1015, FIG. 2 *with* Ex. 1007, FIGS. 1-2; *see also* Ex. 1008, FIGS. 1-2. Similar to Baig's access point

106 connected to the Internet 122, Banga-570's access point 210 is also connected to a network 130 (e.g., Internet):





Ex. 1015, FIG. 2. Ex. 1007, FIG. 1.

180. Baig teaches that its servers (e.g., server 224) are connected to its access point 106 "in a conventional manner." Ex. 1007, [0052]. Baig also teaches that its content servers (e.g., server 224) include typical computing components such as processors, memory, data, and supporting circuitry that run programs for carrying out the functionality of Baig's system. Ex. 1007, [0052]-[0053]. It is my opinion that a POSA would have recognized that, as a server connected to the Internet, a CR server like Banga507's CR server 150 would have had similar computing components such as processors, memory, data, and supporting circuitry that run programs for carrying out the functionality of Banga507's system. It is my opinion that a POSA, therefore, would have recognized that a CR server like Banga507's CR server 150, which is also connected to Banga507's network 130 (e.g., the Internet),

would have been compatible with Baig's system 100 and thus suitable for Baig's modified system. Ex. 1015, FIG. 2.

181. Similar to Baig's access point 102 connected to the Internet 122, Banga-570's access point 210 is also connected to a network 130 (e.g., Internet). That POSA, however, would have been able to introduce such functionality into Baig's system, for example, by updating the programming of Baig's access point 106 or even simply substituting Banga-570's access point 210 for Baig's.

182. In my opinion, a POSA further would have recognized that Baig and Banga507 share similar components and features that further indicate their compatibility. For example, both Baig and Banga507 describe the same types of mobile computing devices that connect to their respective access points (e.g., mobile devices 102_p in Baig and access devices 110 in Banga507) and each describes content servers that provide content to those devices (e.g., content servers 124_n in Baig and content providers 140 and media server 220 in Banga507). Ex. 1007, FIG. 1; Ex. 1015, FIG. 2. It is my opinion that a POSA would have been familiar with installing, programming, configuring, and connecting servers and access points like those described in Baig and Banga507. That POSA, therefore, would have had the skills and knowledge to install, program, configure, and connect an access point and CR server in Baig's modified system as I describe here.

183. The proposed combination thus discloses and renders obvious element [1B].

iii. Element [1C]: "(i) each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising (A) a device identifier of one of the Internet-accessing devices, (B) an IP address through which the one of the devices accessed the Internet, and (C) a timestamp identifying when the one of the devices accessed the Internet;"

184. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1C].

185. As I show above for element [1B], Baig's modified system includes a CR server (e.g., Banga507's CR server 150) that receives, from an access point, the device identifiers for Baig's mobile devices 102 and network access information. *See* Ex. 1015, [0029], [0036]-[0037], [0054], [0074], FIGS. 1-2. The device identifiers for the mobile devices of Baig's modified system disclose the claimed "**device identifier of one of the Internet-accessing devices**." The CR server in Baig's modified system stores the received network access information in a storage system, which discloses the claimed "**stored data relating to Internet access by various of the multitude of devices**." *See* Ex. 1015, [0047], [0052], FIG. 3. The network access information includes the date and time of network access, which discloses the claimed "**timestamp identifying when the one of the devices**

accessed the Internet," and the IP address of the access point (e.g., access point 210) that a network access device in Baig's modified system used to access the network (e.g., network 130) discloses the claimed "**IP address through which the one of the devices accessed the Internet**." *See* Ex. 1015, [0036], [0054], [0074]. The CR server in Baig's modified system, therefore, would have used the device identifiers and network access information received from the access point and stored in the storage system to create the user group profiles that associate device identifiers with each other ("**each of the associations is determined using stored data relating to Internet access by various of the multitude of devices**") as taught by Banga507. Ex. 1015, [0036], [0054], [0074].

186. I also note that Baig stores the IP addresses of its access points. Ex. 1007, [0038], [0039] ("the VCSP is able to build a database that associates the unique public IP addresses of each hotspot with the street address of a physical location"), [0052], [0056]-[0058], [0064] ("the VCSP 202 can maintain a database of WiFi access point IP addresses with their corresponding physical addresses").

187. The proposed combination thus discloses and renders obvious element [1C].

iv. Element [1D]: "(ii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address at respective times satisfying a predetermined time-relation criterion;"

188. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1D].

189. As I show above for element [1C], in my opinion, a POSA would have found it obvious for Baig's modified system to create a profile for a group of users that have a habit (pattern) of accessing the same access point (AP) hotspot (e.g., an AP hotspot at a particular coffee shop) at regular intervals (e.g., the same day and time each week such as every Sunday at 10am). As I also explain above for element [1B], the CR server in Baig's modified system would have created profiles using device identifiers and access information received from Baig's access point 106 and the device histories stored by the CR server as taught by Banga507. Ex. 1015, [0041], [0043], [0045]. In particular, the CR server would have used historical network access information to identify patterns of network access (e.g., regularly connecting to the Internet from the same access point at a particular coffee shop) and to assign group identifiers when creating the profiles as also taught by Banga507.

Ex. 1015, [0044], [0047], [0054], FIGS. 3-4 (history module 430 of the information collection engine 320 of Banga507's CR server 150).

190. A profile in Baig's modified system, therefore, would have included the device identifiers (e.g., MAC addresses) of Baig's mobile devices. As I also explained above for element [1B], that profile would have associated the device identifiers with each other by including them together in the same profile generated for users associated with the observed network access pattern. Where such a group included more than two users, the profile would have included multiple associations between the respective device identifiers ("**at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices**").

191. I note that, while Banga507 teaches that its profiles can include multiple device identifiers, it does not appear to explicitly teach that those profiles also include an IP address associated with multiple device identifiers such as the IP address of the access point to which the mobile devices regularly are connected. Ex. 1015, [0041]. Banga690 adds to Banga507's disclosures that a profile can include multiple device identifiers and a "current [singular] IP address associated with [plural] device identifiers" ("**common IP address**"). Ex. 1016, [0046]. Banga690 even provides the same coffee shop example as Banga507 and further recognizes that groups of users may be identified as repeatedly accessing the communication

network from a common location. Ex. 1016, [0039] (referring to "frequent visitors"). I also note that Banga507's profiles that associate the device identifiers of Banga507's access devices are the same profiles that Banga690 describes. Ex. 1016, [0046]; *compare* Ex. 1015, [0040]-[0042], FIG. 3 (profile engine 310) *with* Ex. 1016, [0041], [0046]-[0047], FIG. 3 (profile engine 310).

192. It is my opinion that a POSA who was aware of Banga690's teachings and who possessed ordinary creativity would have been able to extrapolate Banga690's teaching of analyzing network access records to identify a group of users that repeatedly accessed the network from the same location (e.g., a city) to other contexts. That POSA, for example, would have been motivated and would have found it obvious to analyze network access records to identify a group of users that accessed the network from the same establishment (e.g., coffee shop) according to a common network access pattern (Sundays at 10am). *See* Ex. 1016, [0039] ("the user may repeatedly access the communication network 130 with the same network access device 110 through the access point 210 at a coffee shop" and "the device record for the device identifier associated with the user may indicate that the user is often at a coffee shop"). A POSA would have recognized that, by analyzing network access records in this fashion, Baig's modified system would have been able to advantageously group users that have a common network access pattern and

advantageously select more relevant advertisements for that group as I describe above.

193. It is my opinion that a POSA, aware of the teachings of both Banga507 and Banga690, also would have been motivated and would have found it obvious to configure the CR server in Baig's modified system to assign a group identifier to users having an observed pattern of accessing the network from the same coffee shop access point on a regular basis, and include that group identifier in a profile that indicates the device identifiers of the users' devices and the access point's IP address ("**common IP address**"). Ex. 1015, [0036], [0041], [0054]; Ex. 1016, [0039], [0046]. A POSA would have recognized that, by using a group identifier in this fashion, Baig's modified system would have been able to easily retrieve a list of users that were grouped based on exhibiting a common network access pattern. With the knowledge that Baig contemplates its users connecting to a coffee shop access point, in my opinion, that POSA also would have recognized that applying Banga690's teachings to Baig's modified system would have advantageously enabled that system to determine specific groups of users based on observed network access patterns. Ex. 1016, [0039], [0046]. As an example, a POSA would have recognized that assigning an "AM" group identifier to a group of users that exhibit a morning network access pattern would have advantageously allowed Baig's modified system to retrieve a list of morning users by querying the data store for any

device identifiers associated with that "AM" group identifier. Similarly, a POSA would have recognized that assigning a "PM" group identifier to a group of users that exhibit an afternoon/evening network access pattern would have advantageously allowed Baig's modified system to retrieve a list of afternoon/evening users by querying for any device identifiers associated with that "PM" group identifier. The group identifier, therefore, constitutes a single reference that Baig's modified system would have used to identify a group of users having a common network access pattern. A POSA would have recognized that other group identifiers were possible to advantageously identify additional and alternative user groups (e.g., a "10" group identifier to identify users that regularly access the network from 10–11am, an "11" group identifier to identify users that regularly access the network from 11am–12pm" and so forth).

194. In my opinion, a POSA would have understood that the associations between device identifiers indicated in the profile for the group of users would have been determined using the network access information received from the common access point as taught by Banga507. Ex. 1015, [0029], [0036]-[0037], [0054], [0074]. In particular, the determination that the group of users accessed the network from the same access point (e.g., at the same coffee shop) would have been determined using the stored access information indicating the IP address of the access point, which discloses that an "**association is determined by using the**

stored data to determine that both of the at least two devices have accessed the Internet via a common IP address" as recited in element [1D]. Ex. 1015, [0036], [0054], [0074].

195. The determination that the group of users accessed the network at the same day and time (e.g., every Sunday morning at 10am) discloses the claimed "**respective times satisfying a predetermined time-relation criterion**." Here, the claimed "**predetermined time-relation criterion**" is whether the devices' network access times both correspond to the observed network access pattern (e.g., every Sunday morning at 10am). It is my opinion that a POSA would have understood that the observed network pattern satisfies the requirement in element [1D] that the claimed "**time-relation criterion**" be "**predetermined**" because Baig's system, modified to include Banga507's CR server, would have first analyzed historical network access records to identify one or more patterns of network access and then applied one or more of those observed (predetermined) patterns to subsequent instances of network access to evaluate whether those subsequent instances correspond to the observed pattern.

196. It is my opinion that a POSA would have recognized that Baig's system, modified to include Banga507's CR server, would have determined whether the devices' network access correspond to the observed network access pattern using the stored access information that indicates IP address of the access point used for

network access plus the date and time of network access, which discloses that an "**association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address at respective times**" as also recited in element [1D]. Ex. 1015, [0036], [0054], [0074]. Here, the "**respective times**" in element [1D] are the Sunday mornings at 10am that the network access devices accessed the Internet, and the "**common IP address**" in element [1D] is the IP address of Baig's access point 106 at the location (e.g., the coffee shop) used for Internet access.

197. The proposed combination thus discloses and renders obvious element [1D].

v. Element [1E]: "(iii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information; and"

198. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1E].

199. As I note above, the '015 Patent includes explicit definitions for both "personally identifiable information" (PII) and "non-personally-identifiable information" (non-PII):

> **Personally Identifiable Information (PII)**—information that can be used to identify a specific person, including but

not limited to: name, Social Security number (SSN), date of birth, street address, email address, static IP address (if any), phone number (home, work, wireless), financial account numbers (bank accounts, credit accounts, or any other financial data), driver's license number, vehicle registration number, vehicle license number, facial photographs, fingerprints, handwriting or signature, or any other information that can assist in identifying a specific person.

Non-Personally-Identifiable Information (non-PII)—information about a person that typically cannot be used to specifically identify that person, including but not limited to: city, state, or country of residence, age, gender, race, ethnicity, school or workplace (if sufficiently large), salary or income, hobbies, dynamically assigned IP addresses, online sites visited, online searches conducted, or other information that is useful to know about a person **but done [sic] not by itself allow one knowing the information to identify the particular person**.

Ex. 1001, 6:25-44 (emphasis added).

The ’015 Patent’s definition of non-PII includes device identifiers such as MAC addresses:

In another exemplary implementation, **the user’s STB 36 can be assigned an identifier, which need not include PII.** Such an identifier can be permanently or temporarily

> assigned to STB 36. **Examples of such identifiers could include** an equipment serial number or a portion thereof, **a device MAC address** or a portion thereof, a username, a pseudonym, a confirmation number, a tag, or any other identifying code or data element.

Ex. 1001, 15:30-37 (emphasis added).

200. In my opinion, a POSA also would have understood that a MAC address does not constitute PII under the '015 Patent's explicit definition of PII because a MAC address "[does] not by itself allow one knowing the information to identify the particular person." Ex. 1001, 6:41-44; Ex. 1029, 5 (definition of "MAC address") and Ex. 1030, 5 (definition of "MAC address").

201. Banga507 generally contemplates storing an "anonymous device identifier" and more specifically contemplates storing a MAC address, which the '015 Patent excludes from its definition of "personally identifiable information." Ex. 1015, [0025]; Ex. 1001, 15:30-37. I also note that both Baig and Banga507 contemplate preserving users' anonymity. *See* Ex. 1007, [0068] (explaining that Baig's users can select anonymous usernames that do not identify the user); Ex. 1008, 11; Ex. 1015, [0046] ("the user may block or hide some information which the user prefers to remain private"). It is my opinion that a POSA, therefore, would have found it obvious for Baig's modified system to use anonymous device identifiers (e.g., the mobile devices' MAC addresses) in the profile created for

mobile devices that connect to the same access point according to an observed network access pattern.

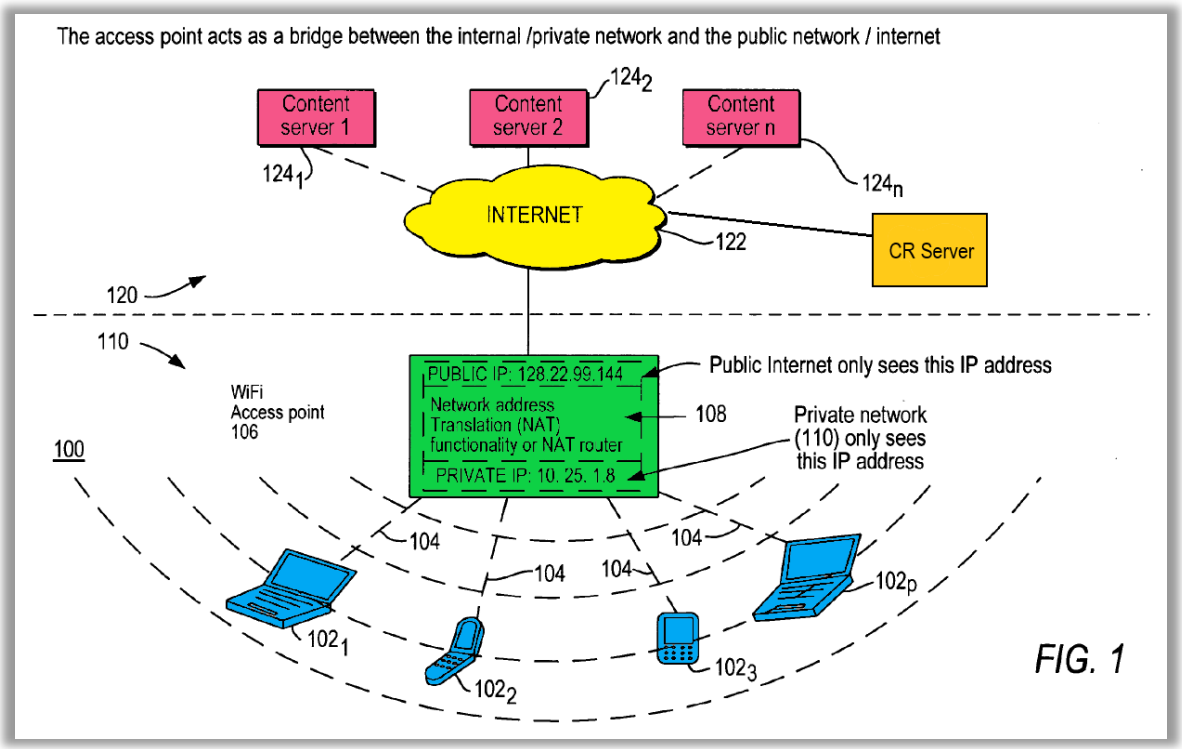
202. As I show above for elements [1C]-[1D], the CR server in Baig's modified system would have determined the associations between the device identifiers using the network access information reported by the common access point including the IP address of the access point, the device identifiers of the mobile devices, and the date and time of network access. Ex. 1015, [0036], [0054], [0074]. The associations between the device identifiers in Baig's modified system thus would have been determined without using PII ("**at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information**").

203. The proposed combination thus discloses and renders obvious element [1E].

vi. Element [1F]: "(iv) the computer system determining the associations accesses the Internet without using any of the common IP addresses of the associations identified in part (ii); and"

204. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1F].

205. As I show above for element [1A], the CR server in Baig's modified system ("**the computer system determining the associations**") would not have connected to the Internet using the same access point 106 as the mobile devices 102_p. The CR server in Baig's modified system, therefore, would have used a different IP address than the access point 106 that provides the mobile devices 102_p with Internet access ("**accesses the Internet without using any of the common IP addresses of the associations identified in part (ii)**") because the CR server is not located at the local network hotspot but rather is connected to the public Internet. Ex. 1007, [0043] ("The mobile devices 102 form a 'local network' 104 with the access point 106, while everything outside of (i.e., external to) the hotspot 110, i.e., all servers & computers residing on the public Internet, is considered the 'public' network 120."), FIG. 1; Ex. 1008, FIG. 1; Ex. 1015, FIG. 2.



Ex. 1007, FIG 1 (edited to add CR server; annotated with color).

206. The proposed combination thus discloses and renders obvious element [1F].

vii. Element [1G]: "(b) when the computer system and a first device identified in a first association are in communication with one another, with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association to cause an automatic action to be taken with respect to the first device, wherein:"

207. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1G].

208. In Baig's modified system, the claimed "**automatic action**" is a targeted advertisement that Baig's modified system automatically provides to a mobile device based on that mobile device being associated with another mobile device in a profile via their device identifiers (e.g., MAC addresses) and using profile information for the associated device as I show above for elements [1B]-[1D].

209. Baig describes automatically providing targeted advertisements to devices connected to Baig's access point based on users' profiles, the time of day, and observed network traffic patterns:

> The vicinity-based user network (i.e., the mesh-network of vicinity-based hotspots 110) increases the VCSP services that are available to the users at the hotspots. For example, the location based barter service provides the users with the ability to barter products in their local vicinity-based hotspot community, as well as with users in the entire vicinity based online community (i.e., mesh network). Similarly, **vicinity-based advertising provides the ability to advertise to an audience at a particular WiFi hotspot based upon the profile** (e.g., age or gender) **of the user** (among other profile information), as well as advertise to other vicinity-based hotspots in the mesh network of the VCSP 202.
>
> Further, a bidding system for advertisers provides the ability to create a bidding system for advertisers, thus enabling the advertisers to bid for rights to **advertise at a**

> **prime hotspot for a particular time of the day for a particular audience** either **at one** or more **vicinity-based hotspot**s in the mesh network of the VCSP 202. …

Ex. 1007, [0061]-[0062]; Ex. 1008, 10.

> … **Targeted advertising** at wireless hotspots using vicinity-based networks[.] The vicinity-based service permits **advertisers to target particular geographical locations**. Advantageously, the **advertisers can target the audience of a particular hotspot according to the profile**, e.g., age/gender etc. of the users and/or a **particular time of the day**. As users register online on the VCSP website, profile information about our users, such as age, gender, occupation, interests and the like are requested during the registration process and securely stored by the VCSP 202. **Advertisers can selectively choose to advertise to users at a particular address**, city, state or zip code. Similarly **advertisers can target the traffic patterns at a particular geographic location** according to the time of the day.

Ex. 1007, [0093] (emphasis added); *see also Id.*, [0103] ("target younger audience between 6-8 pm" and "bidding system for such advertisers who may want to pay a premium for rights to advertise at a given time of the day, such as prime time"); Ex. 1008, 17-18.

FIGS. 14-19 illustrate statistical information tracked by the VCSP to better assist in providing services to the users. Referring to FIG. 14, the chart illustrates that the average **number of users logged into the VCSP website at particular times (hourly increments) of the day**. The number of users is illustratively at the higher levels between 3:00 pm to 10:00 pm, with the peak number of users occurring approximately between 5:00 and 6:00 pm. The **number of users logging in during the hourly time slots can be monitored on a daily, weekly, monthly or yearly basis**, such that an average value is shown in the graph.

Referring now to FIG. 15, the illustrative graph depicts the **number of users** sorted by gender accessing the website during each hourly timeslot. Gender information is **useful for advertisers who wish to target advertisements** directed to either male or female genders.

Ex. 1007, [0114]-[0115] (emphasis added); Ex. 1008, 20-21.

Referring now to FIG. 17, the illustrative graph depicts the **number of users** sorted by age groups. The distribution by age groups can be **provided for a single hotspot** or as an aggregate of numerous hotspots in a particular region.

Ex. 1007, [0117] (emphasis added); Ex. 1008, 21.

210. Baig teaches that its advertisements are provided via Baig's VCSP website. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. It is my opinion that a POSA would have appreciated that the targeted advertisements were provided to Baig's users automatically because they were provided based on traffic patterns or in real time according to a bidding system. Ex. 1007, [0011]-[0012], [0054], [0058]-[0059], [0061]-0062], [0093]-[0095], [0098]-[0106]; Ex. 1008, 2, 8-10, 16-19.

211. Similar to Baig's disclosure of automatically providing targeted advertisements to users based on user profile information (e.g., age, gender), Banga507 teaches automatically providing targeted advertisements (which Banga507 identifies as a type of "directed media component") based on the users' particular preferences, network access histories, or network access patterns:

> The exemplary system comprises **a media selection optimizer which is configured to determine a directed media component based on a user profile** associated, via a device identifier, with a network access device. The **media selection optimizer may also utilize access point information, historic information, and access point location-centric information in its determination of the directed media component**. The directed media component may then be forward to a media server which provides the corresponding directed media to the user. **The directed media may comprise advertisement**, coupons,

> video, music, or any other media which is customizable to the user.

Ex. 1015, Abstract (emphasis added); *see also id.*, [0011]-[0013], [0021] ("the present systems can identify media or media types which are most relevant to the user" and "[t]he present systems also may use real-time information related to the user or user's location to tailor the media presented to the user"), [0022], [0030].

> In exemplary embodiments, when the user visits a web site of a content provider 140, **the user will see directed media** on portions of a web page. In some embodiments, **the directed media is targeted advertisement**. …

Ex.1015, [0038] (emphasis added); *see also id.*, [0042], [0047], [0049] ("[u]sing the retrieved information, the media selection optimizer 340 performs an analysis to match up the user profile information, user preferences, and group identifiers with access point and location-centric information to determine the most appropriate media or media type that should be directed to the network access device 110"), [0059], [0061].

> **Media selection is then optimized in step 650 for the network access device 110 associated with the IP address**. The optimization analyzes a user profile, access point 210 information, and location-centric information to **determine a directed media component that is most relevant for the user**.

Ex. 1015, [0067] (emphasis added); *see also id.*, [0069], [0070] ("directed media may comprise a static or dynamic **advertisement**"); [0071]-[0072], [0074], [0076]-[0079], FIG. 3 (media selection optimizer).

212. Banga507 also teaches directing advertisements to groups of users:

> In another embodiment, predetermined group identifier may be generated and utilized by the profile engine 310. For example a soft drink company may wish to **direct advertisements to a certain demographics**. A **group identifier can be generated that corresponds to that demographic and user profiles that fall into the demographics will include this group identifier**.

Ex. 1015, [0045] (emphasis added); *see also id.*, [0049].

213. Banga507 teaches placing the targeted advertisement in a banner ad location on a web page:

> In exemplary embodiments, **when the user visits a web site** of a content provider 140, **the user will see directed media on portions of a web page**. In some embodiments, the **directed media is targeted advertisement**. Alternatively, the directed media may comprise targeted audio, video, coupons, or other media tailored to the interests/preferences of the user. The **directed media is typically located on particular portions of the content provider's web page** (e.g., **in a banner ad location**).

Ex. 1015, [0038] (emphasis added); *see also id.*, [0060] ("the directed media is an advertisement which is placed in a banner ad location"), [0070] ("the directed media is positioned in a portion of the web page, such as in a banner ad location"). It is my opinion that a POSA would have appreciated that Banga507's directed media in the form of targeted advertisements were automatically provided to Banga507's users because they would be included in web pages (e.g., at banner ad locations) without Banga507's users specifically requesting them to be included.

214. In my opinion, a POSA would have found it obvious and would have been motivated to extend the profile-based targeted advertising techniques in Baig's modified system to include sending targeted advertisements based on the users' preferences, historic network access, and network access patterns as taught by Banga507. This would have been the simple use of known techniques to improve a known/similar method in the same way to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationales (C) and (D) above); Ex. 1015, Abstract, [0011]-[0012], [0059], [0067], [0074], [0076]-[0078]; Ex. 1007, [0061]-[0062], [0093]; Ex. 1008, 10, 16-17. The known techniques include Banga507's providing targeted advertisements (e.g., in banner ad locations on webpages) based on user preferences and network access patterns. The known/similar method being improved includes Baig's targeting of advertisements to the mobile devices connected to its access point based on their profile information. The predictable results include targeted

advertisements included on the webpages of Baig's VCSP website that are more specific and thus more likely to be relevant to the user.

215. It is my opinion that a POSA would have had the skills and knowledge to combine the teachings of Baig and Banga507 with a reasonable expectation of success in arriving at the subject matter recited in element [1G]. Both Baig and Banga507 teach systems that are configured to store user profiles/preferences and include the advertisements in web pages sent to the users' devices. Ex. 1007, [0053] ("the server 224 provides web pages for user access to information, as well as interactive and non-interactive services"), [0059] ("user can then access various web pages from the VCSP website to participate or receive particular service offered by the VCSP 202" and "services include receiving particular advertisements"), [0061], [0093], [0096], [0099] ("businesses or other entities can advertise online through the VCSP website for a particular hotspot"); Ex. 1008, 8-10, 17-18; Ex. 1015, [0011] ("media selection optimizer reviews user preferences associated with the user profile to determine the type of media which is best suitable for presentation to the user via a web page of the content provider"), [0021], [0038] ("when the user visits a web site of a content provider 140, the user will see directed media on portions of a web page"), [0039] ("the directed media is placed on the content provider's web page"), [0041]-[0042], [0070] ("the directed media is positioned in a portion of the web page, such as in a banner ad location"), [0071], [0079], [0081], FIG. 3.

216. Baig and Banga507 also contemplate sending targeted advertisements to groups of users. Ex. 1007, [0061] ("vicinity-based advertising provides the ability to advertise to an audience at a particular WiFi hotspot"), [0093] ("advertisers can target the audience of a particular hotspot according to the profile … of the users"); Ex. 1008, 10, 16-17; Ex. 1015, [0045] (discussing using group identifiers for directed advertisements to multiple users). In my opinion, a POSA who was aware of the teachings in Baig and Banga507 and who employed ordinary creativity would have found it obvious to also send targeted advertisements to a group of the mobile devices in Baig's modified system that are identified in a profile that associates those devices with each other, via their device identifiers, based on an observed network access pattern (e.g., accessing the same coffee shop access point at the same time and day each week) as I discuss above for elements [1C]-[1D].

217. As I show above, Baig and Banga507 describe sending advertisements based on a user's own user profile or preferences, but neither appears to teach sending advertisements based on another user's profile or preferences. For example, neither Baig nor Banga507 appear to appreciate that, among a group of related users, the particular preferences or interests of one group member may be shared with another group member (e.g., members of a cycling club as I discuss above). Although Baig contemplates advertising to groups of users based on some shared characteristic or demographic such as age or gender, Baig does not appear to

specifically contemplate advertising to a particular user in an age group or gender group based on the specific preferences or interests of another user in that group. Banga507 similarly contemplates advertising based on a user's age, gender, and individual preferences and interests rather than the particular preferences or interests of another user belonging to a common user group. Ex. 1015, [0068]-[0069] (describing an age-based and gender-based advertisement using a user's own preference for baseball).

218. McFarland discloses providing recommendations to a member of a group based on the preferences of other group members:

> The present invention provides computer-implemented methods and services for **identifying items that correspond closely to the collective preferences of a group of two or more users**. The collective preferences are based or represented, in whole or in part, on preference lists created by individual users. These preference lists may, for example, be in the form of rental queues used for movie/video rentals, wish/gift registry lists of desired gifts, shopping lists for making purchases, or suggestion lists created by members of a club, such as a book club. User preference information in the form of rental histories, purchase histories, and/or item ratings profiles may also be taken into consideration.

Ex. 1018, Abstract (emphasis added); *see also id.*, 3:53-64 ("identifying items that correspond closely to the collective preferences of a group of two or more users").

> As will be apparent, the various features of the invention can also be used with other types of preference lists, such as shopping lists used to make initial or recurring purchases of items, and **can be used with other types of items**.

Ex. 1018, 4:15-19 (emphasis added).

219. McFarland teaches improving recommendations sent to individual group members based on group preferences determined from the preference lists of individual group members. *Id.*; *see also Id.* at 1:50-65, 2:13-17, 2:38-41.

220. Figure 3 of McFarland provides one example of recommendations that are based on group preferences, specifically movie rentals in the form of a merged queue 303 that merges the queue 301 of the current user ("Misty") with the queue 302 of another user ("Ross"). *See also* Ex. 1018, 5:62-6:17 (discussing McFarland's merged queue).

221. Figure 6 of McFarland provides another example of recommendations that are based on group preferences, this time books in the form of a "group recommendations list" 616 that are "based on collective preferences of all members" of a book group. Ex. 1018, 8:42-61.

222. McFarland teaches, with reference to Figure 16 that, to provide recommendations based on the collective preferences of the members of a group, a user database 1611 indicates "affiliations between users" and "preference lists." Ex. 1018, 14:38-55 (discussing McFarland's user database and user preference lists). McFarland explains that recommendations sent to individual group members can be improved by taking into account the preferences of the other members of a group:

> **One problem with existing preference list and recommendation services**, such as those described above, is that **they commonly fail to take into consideration information about associations between users**. For example, a service may fail to consider that two users have the same shipping address, or that these users frequently share the items they acquire. As a result, the functionality provided by these services is sometimes limited.
>
> The present invention comprises computer services for using group preferences, as specified in whole or in part by preference lists created by individual users, to **identify items that are well suited for a group of two or more users**. The items may, for example, include movie/video titles, book titles, other types of works in physical or digital form, and/or subscriptions. Also disclosed are associated features for facilitating the sharing of items between users.

Ex. 1018, 1:50-65 (emphasis added); *see also Id.*, 2:13-17.

> The **system may also generate recommendations of additional items that** are not on the wish lists of, but **correspond to the collective preferences of, two or more affiliated users**.

Ex. 1018, 2:38-41 (emphasis added).

223. It is my opinion that a POSA would have been motivated and would have found it obvious to apply McFarland's teachings to the targeted advertisements sent to the mobile devices in Baig's modified system. More specifically, that POSA would have been motivated to apply McFarland's teachings to Baig' modified system because doing so would have allowed Baig's modified system to advantageously send, to one of Baig's mobile devices, a recommendation in the form of a targeted advertisement based on the preferences a user of another mobile device indicated in a profile that associates the two mobile devices with each other via their device identifiers (e.g., their MAC addresses). To continue the example I provided above, a POSA who was aware of McFarland's teachings would have found it obvious to apply them to Baig's modified system because this would have allowed Baig's modified system to advantageously send a targeted advertisement to a mobile device with an historical network access pattern (e.g., every Sunday at 10am) based on the preferences and/or interests of a user of an associated mobile device with the same historical network access pattern. A POSA would have recognized that the

common network access pattern between such users suggests those users have other preferences and interests in common, which expands the scope of potentially relevant advertisements for a particular user when the preferences and interests of those other (similar) users are considered.

224. In my opinion, a POSA would have found that applying McFarland's teachings to Baig's modified system to be the simple use of a known technique to improve similar methods in the same way to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (D) above). The known technique includes McFarland's providing recommendations to one group member based on preferences of another group member. Ex. 1018, Abstract, 3:53-64, 4:15-19, FIG. 3, FIG. 16. The similar methods include sending targeted advertisements based on users' own preferences and/or interests as taught by Baig and Banga507. Ex. 1007, [0061] ("vicinity-based advertising provides the ability to advertise to an audience at a particular WiFi hotspot based upon the profile (e.g., age or gender) of the user (among other profile information)"), [0062], [0093] ("profile information about our users, such as age, gender, occupation, interests and the like are requested during the registration process"); Ex. 1008, 10, 16-17; Ex. 1015, Abstract, [0012], [0059], [0074], [0076]-[0077] ("the user profile may show the user to be male between 18-30 who lives in San Francisco and likes baseball" and "[b]ased on this user profile, the media selection optimizer 340 may determine that the optimized media should

pertain to baseball related (and possibly team specific) media"), [0078]. The predictable results include providing additional advertisements that may be relevant to a user by accounting for preferences and/or interests of other group members exhibiting the same network access habits (e.g., accessing the Internet from the same access point (AP) hotspot located at a coffee shop at the same time each week such as every Sunday morning at 10am). It is my opinion that a POSA would have recognized that Baig's modified system would have been ready for further improvement because, although Baig and Banga507 provide targeted advertisements based on a user's own preferences and/or interests, they do not explicitly teach sending recommendations based on the preferences and/or interests of another user as taught by McFarland. Ex. 1007, [0061]-[0062], [0093]; Ex. 1008, 10, 16-17; Ex. 1015, Abstract, [0012], [0059], [0074], [0076]-[0078]; Ex. 1018, Abstract, 3:53-64, 4:15-19, FIG. 3, FIG. 6, FIG. 16.

225. In my opinion, a POSA would have had the skills and knowledge to apply McFarland's teachings to Baig's modified system with a reasonable expectation of success in arriving at the subject matter recited in element [1G]. Each of Baig and McFarland teach storing user profiles that indicate preferences the users' respective preferences and/or interests. Ex. 1007, [0053], [0093] ("profile information about [] users, such as … occupation, interests and the like are requested during the registration process"); Ex. 1008, 8, 16-17; Ex. 1015, [0021] ("By utilizing

a user profile containing user preferences, the present systems can identify media or media types which are most relevant to the user."), [0038] ("media tailored to the interests/preferences of the user"), [0040], [0048], [0052]; Ex. 1018, 14:38-55. Furthermore, as shown above, McFarland teaches that its disclosures are not limited to recommendations for any particular type of item and "can be used with other types of items." Ex. 1018, 4:15-19. Furthermore, as I note above, Baig indicates that "variations and modifications" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex. 1007, [0131]. Banga507 and Banga690 include similar statements indicating, respectively, that "various modifications" and "various modifications and variations" to their respective disclosures were within the capabilities of ordinarily skilled artisans. Ex. 1015, [0082]; Ex. 1016, [0082].

226. More specifically, McFarland teaches a user database 1611 that stores affiliations between users, preference lists, and other information used to make recommendations based on collective group preferences. Ex. 1018, 14:38-55. In a similar fashion, Baig's system includes a server that stores the profile information associated with its users. Ex. 1007, [0053] ("The server 224 is also capable of storing information that is entered on the web pages or uploaded by the users … "), [0093] ("As users register online on the VCSP website, profile information about our users, such as age, gender, occupation, interests and the like are requested during the registration process and securely stored by the VCSP 202."). Likewise,

Banga507 teaches that its storage system 330 stores information collected by its information collection engine 320 as well as user profiles. Ex. 1015, [0047]-[0048], [0072].

227. It is my opinion that a POSA, therefore, would have recognized that the storage device in Baig's modified system would have been capable of and suitable for storing preference lists like those described in McFarland for use when selecting a targeted advertisement to send to one of the mobile devices as I describe above. Furthermore, given that McFarland teaches that one or more servers are used to implement its recommendation functionality, in my opinion, a POSA would have recognized that Baig's modified system would have been suitable for implementing the group-based recommendations taught by McFarland (e.g., by programming a server of that system to provide such functionality or otherwise installing any appropriate programs or software applications that are programmed to provide such functionality).

228. In Baig's modified system, therefore, a targeted advertisement would have been sent to a first one of the mobile devices ("**cause an automatic action to be taken with respect to the first device**") connected to the access point ("**when the computer system and a first device … are in communication with one another**"). The targeted advertisement would have been based on the preferences of a user of a second one of the mobile devices associated with the first device, via

their respective device identifiers, in a profile for mobile devices exhibiting the same network access pattern ("**with the computer system using … user profile information associated with a device identifier of a second device identified in a first association**").

229. It is my opinion that a POSA would have understood that Baig's modified system would have used the device identifier of the first mobile device ("**with the computer system using a device identifier of the first device**") in order to select the targeted advertisement to include in a webpage provided to the first mobile for presentation to its user. For example, Baig's modified system would have used the device identifier of the first mobile device to retrieve (e.g., by querying the storage section) any profiles that include the device identifier in order to identify any associated device identifiers for mobile devices and select a targeted advertisement based on the preferences of the users associated with those other devices.

230. The proposed combination thus discloses and renders obvious element [1G].

viii. Element [1H]: "(i) the first association is one of the associations identified in part (a)(ii); and"

231. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1H].

232. As I show above for element [1G], the association between the respective device identifiers of first and second of Baig's mobile devices in Baig's

modified system would have been one of the associations indicated in the profile created for those two devices based on the observation that they connect to the access point at the same time each week (e.g., every Sunday morning at 10am). The association between these identifiers, therefore, discloses the claimed requirement that "**the first association is one of the associations identified in part (a)(ii)**" as recited in element [1H]. See also my comments regarding elements [1B]-[1D] above.

233. The proposed combination thus discloses and renders obvious element [1H].

ix. Element [1I]: "(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)."

234. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious element [1I].

235. It is my opinion that a POSA would have understood that, in Baig's modified system, the association between Baig's mobile devices would have been stored before one of the mobile devices connected to that system and received the targeted advertisement. See, for example, my comments regarding elements [1B]-[1D] and [1G] above. As I show above, in my opinion, that POSA would have recognized that the profile that associates the device identifiers with the same

network access pattern (e.g., accessing the Internet from the same access point at a coffee shop every Sunday at 10am) would have been created and stored before a subsequent iteration of the network access pattern (e.g., a subsequent Sunday at 10am) when one of the mobile devices next connects to Baig's system and receives the targeted advertisement. This creation and storage of the profile that associates the device identifiers of mobile devices having an observed network access pattern prior to a subsequent iteration of that network access pattern thus discloses the claimed requirement that "**the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)**" as recited in element [1I].

236. I also note that Banga690 teaches that the profiles that associate device identifiers with each other can be predetermined:

> The profile engine 310 is configured to **retrieve one or more device records and generate user profiles**. The user profile may comprise one or more device identifiers, current IP address associated with device identifiers, access information, device histories, or any other information associated with the network access devices 110 (FIG. 2) or device identifiers.
>
> In another embodiment, **predetermined user profiles may be generated**. In an example, a soft drink company

> may wish to direct advertisements to a certain demographic at certain times of day in the summer. **A user profile can be generated that identifies device identifiers and current IP addresses with users who fit the demographic**. **Access information may indicate the time of day they are accessing the communication network 130 and the location of the access point 210** including city and state. Further, the CR server 150 may check the weather of the city and state from resources available on the Internet to include those users in hot climates and temperatures to be included within the user profile.

Ex. 1016, [0046], [0058] (emphasis added). These teachings of Banga690 directed to predetermined profiles further support the conclusion that it would have been obvious for the system in the proposed combination to create and store profiles that associate the device identifiers of the mobile devices before those mobile devices next connect to the access point.

237. The proposed combination thus discloses and renders obvious element [1I].

2. Dependent Claim 2: "The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

238. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 2, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

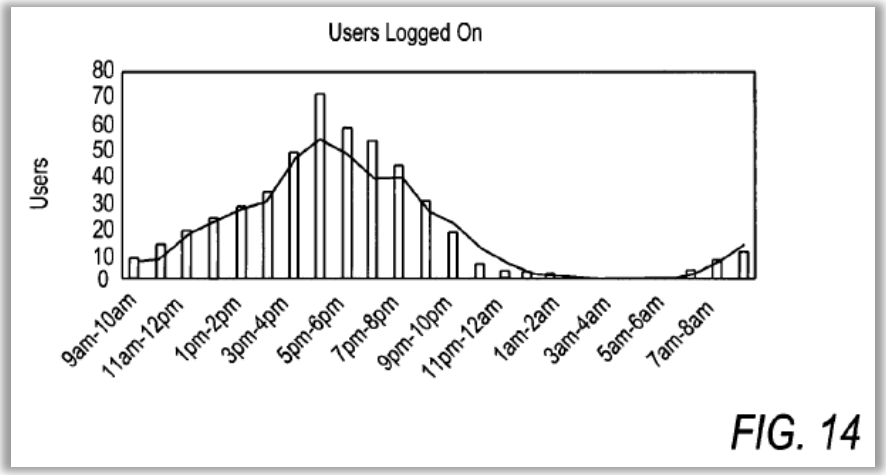
239. As I show above for elements [1B]-[1D], the proposed combination renders obvious creating a profile that associates the device identifiers of the mobile devices in Baig's modified system having an observed network access pattern. As I also show above, one example network access pattern includes multiple mobile devices connecting to the access point at the same day and time each week such as every Sunday at 10am. This observed network access pattern discloses the claimed "**predetermined time relation criterion**" recited in claim 2.

240. Baig discloses monitoring the quantity of users connected to its access point (AP) hotspot at hourly increments throughout the day:

> FIGS. 14-19 illustrate statistical information tracked by the VCSP to better assist in providing services to the users. Referring to FIG. 14, **the chart illustrates that the average number of users logged into the VCSP website at particular times (hourly increments) of the day**. The number of users is illustratively at the higher levels

between 3:00 pm to 10:00 pm, with the peak number of users occurring approximately between 5:00 and 6:00 pm. **The number of users logging in during the hourly time slots can be monitored on a daily, weekly, monthly or yearly basis**, such that an average value is shown in the graph.

Ex. 1007, [0114] (emphasis added); *see also Id.*, [0026], FIG. 14 (reproduced below and showing the average quantity of users at hourly increments of "9am-10am" and "11am-12pm"); Ex. 1008, 4, 20-21, FIG. 14.



Ex. 1007, FIG. 14.

241. In my opinion, a POSA would have been motivated and would have found it obvious to use any desired time period to create the profile that associates the device identifiers having an observed network pattern in order to improve the groupings of users that access the Internet from the same access point. For example, in view of Baig's teachings directed to monitoring connected users at hourly

increments, in my opinion, a POSA would have found it obvious to create a profile associating the device identifiers of the mobile devices that connect to the access point for Internet access around the same time each day (e.g., in the morning). Ex. 1007, FIG. 1 (indicating that Baig's access point 106 provides Internet access to Baig's mobile devices 102_p). A POSA would have recognized that grouping users based on their patterns of network access at particular time periods throughout the day (e.g., in the morning, in the evening) would have been a more flexible approach as compared to grouping users that happen to be connected to a common access point at the same time.

242. To give one specific example, in my opinion, a POSA would have found it obvious to create a profile for the mobile devices in Baig's modified system that connect to the access point during a particular morning hourly increment indicated in Baig (e.g., "9am-10am"), including a first mobile device that connects during the "9am-10am" morning hour and a second mobile device that also connects during the "9am-10am" morning hour. Ex. 1007, FIG. 14; Ex. 1008, FIG. 14. The second mobile device in this example discloses the claimed "**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)"** as recited in claim 2. Given that this second mobile device would have accessed the Internet within the same specified morning hours ("9am-10am") as the first mobile device, the proposed combination discloses the claimed requirement that the second mobile

device "**accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**" as also required by claim 2. In this example, if the first mobile device accessed the Internet at 9am, then the second mobile device would have accessed the Internet within at least one hour (e.g., 60 minutes) ("**a specified length of time**") after the first mobile device given that both devices accessed the Internet within the 9am-10am time period.

243. As another example, a POSA would have found it obvious to create a profile for the mobile devices in Baig's modified system that connect to the access point during any of the morning hourly increments indicated in Baig (e.g., "9am-10am" or "11am-12pm"), including a first mobile device that connects during the "9am-10am" morning hour and a second mobile device that also connects during the "11am-12pm" morning hour. Ex. 1007, FIG. 14; Ex. 1008, FIG. 14. The second mobile device in this example discloses the claimed "**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)** as recited in claim 2. Given that this second mobile device would have accessed the Internet within the same specified morning hours (e.g., "9am-10am" or "11am-12pm") as the first mobile device, the proposed combination discloses the claimed requirement that the second mobile device "**accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic**

devices referenced in part (a)(ii) accessed the Internet" as also required by claim 2. More specifically, in this example, because the first mobile device accessed the Internet between 9-10am, and the second mobile device accessed the Internet between 11am-12pm, then the second mobile device would have accessed the Internet within at least 3 hours ("**a specified length of time**") after the first mobile device. For instance, if the first mobile device accessed the Internet at 9am and second mobile device accessed the Internet at 12pm, the specified length of time would be just less than 3 hours. In comparison, if the first mobile device accessed the Internet at 10am and second mobile device accessed the Internet at 11am, the specified length of time would be just less than 2 hours.

244. The proposed combination thus discloses and renders obvious claim 2.

3. Dependent Claim 3: "The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

245. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 3, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

246. As I show above for elements [1B]-[1D], Baig's modified system renders obvious creating a profile that associates the respective device identifiers of

mobile devices having an observed network access pattern. As I also show above, one example network access pattern includes multiple mobile devices connecting to the access point at the same day and time each week such as every Sunday at 10am. This observed network access pattern discloses the claimed "**predetermined time relation criterion**" recited in claim 3.

247. It is my opinion that a POSA, exercising ordinary creativity, would have recognized that additional network access patterns were possible such as, for example, users accessing the Internet from the same access point at a coffee shop every Saturday at 10am. Banga507 teaches that network access patterns may be used to assign group identifiers and that a profile may include multiple group identifiers:

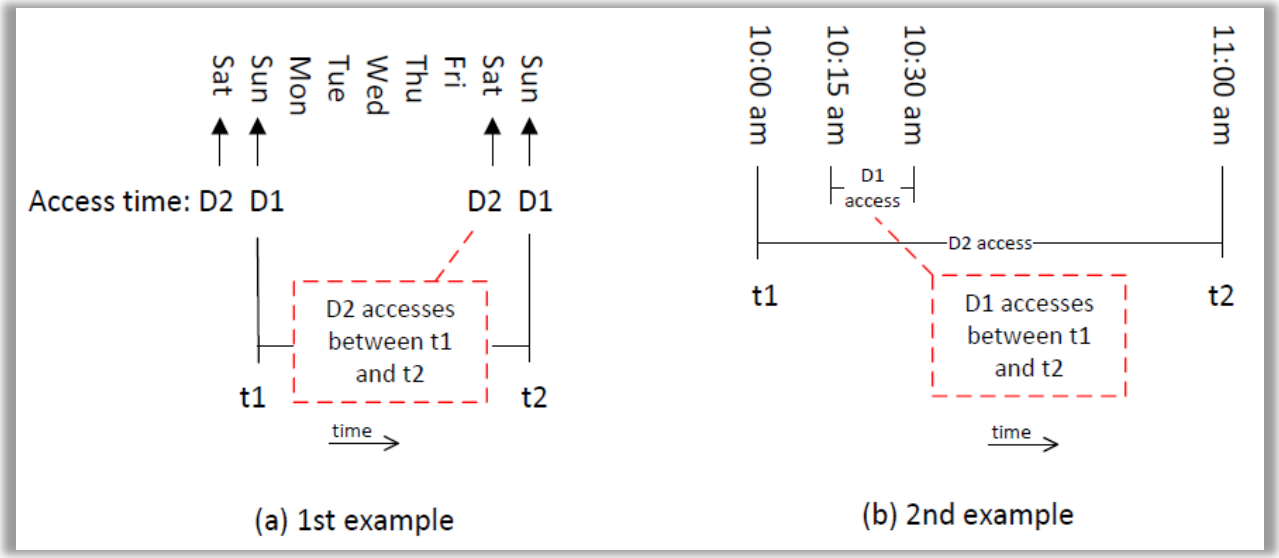
> The profile engine 310 can also incorporate group characteristics into the user profile. That is, **the user profile may include** one or **more group identifiers** indicating a group type that the user is associated with. For example, a group identifier may be included in the user profile covering a group of users of a particular gender and age living in a specific city and having similar hobbies (e.g., male between 18-30 in the San Francisco area who enjoy baseball). Alternatively, **a plurality of group identifiers may be used to identify groupings the user may be associated with**. That is, for example, one group identifier may indicate the gender and age, while a second

> group identifier may indicate the city, and the third group identifier indicates a hobby. Alternatively, other combinations of characteristics and group identifier may be used (e.g., a single group identifier to indicate gender, age, and location).

Ex. 1015, [0043]; *see also id.*, [0054] (discussing example network access pattern of accessing the Internet from the same coffee shop every Sunday at 10am).

248. Baig in view of Banga507, therefore, would have suggested to a POSA creating a profile indicating respective group identifiers for mobile devices that connect to Baig's access point (AP) hotspot during weekend morning hours (i.e., Saturday and Sunday mornings) including a first mobile device that regularly connects every Sunday at 10am and a second mobile device that regularly connects every Saturday at 10am. *See also*, Section XII.A.1.iv, *supra*. I created the diagram shown below in Fig. 1(a) to illustrate this obvious example of the claim where Device 2 (D2) accesses the Internet on Saturdays and Device 1 (D1) accesses the Internet on Sundays. As can be seen, the first mobile device (D1) accesses the Internet between two times, t1 and t2, when the second mobile device (D2) accesses the Internet. The second mobile device (D2), in this example, discloses the claimed "**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**" in claim 3 and would have accessed the Internet on a Saturday morning between consecutive Sunday morning network accesses by the first mobile device

(D1), which satisfies the claimed requirement that the second mobile device "**accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**" as recited in claim 3.



Example Figures 1(a) and 1(b) for Ground A, Claim 3 discussion

249. In the event it is argued that the language of dependent claim 3 (e.g., "between two times") should be read to simply require that a device accesses the Internet within window of time when another device accessed the Internet, the Baig-Banga507-Banga690-McFarland combination still discloses what dependent claim 3 requires. This example is illustrated in the above Fig. 1(b). When creating a profile for devices that accessed the Internet from a common AP during the 10am Sunday morning hour, for example, Baig's modified system would have associated mobile devices that accessed the Internet from the same access point from 10am until 11am.

This criteria, therefore, would have resulted in a profile that associates the device identifiers of a first device (e.g., D1) that accessed the Internet from an access point on Sunday morning at one time between 10am and 11am (e.g., Sunday at 10:15am until 10:30am, for example) and a second device (e.g., D2) that accessed the Internet from that same access point on Sunday morning the whole time from 10:00am until 11am. Thus, the first device (e.g., D1) would have accessed the Internet from a common access point between two times (e.g., 10am and 11am) when another device (e.g., D2) accessed the Internet, which satisfies the requirement that the claimed "**predetermined time-relation criterion … that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**."

250. The proposed combination thus discloses and renders obvious claim 3.

4. Dependent Claim 4: "The computer system of claim 1 wherein the first association of part (b) is one of the associations identified in part (a)(iii)."

251. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 4, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

252. As I show above for elements [1B]-[1D], the proposed combination renders obvious creating a profile that associates the device identifiers (e.g., MAC

addresses) of the mobile devices in Baig's modified system that have an observed network access pattern. Baig's modified system, therefore, would have determined the associations between those device identifiers without using PII as required by "**part (a)(iii)**" in element [1E] thus satisfying the requirement that "**the first association of part (b) is one of the associations identified in part (a)(iii)**" as recited in claim 4.

253. The proposed combination thus discloses and renders obvious claim 4.

5. Dependent Claim 5: "The computer system of claim 1 wherein the second device of part (b) comprises a mobile device that accessed the Internet both via the common IP address of the first association and via at least one different IP address, and wherein the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address."

254. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 5, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

255. Baig teaches that users may connect their devices (e.g., a "first device" of a first user and a "second device" of a second user) to its system from multiple access point (AP) hotspots:

> For example, end-users connected to a hotspot provided by a coffee shop (e.g., STARBUCKS), illustratively located at 100 Madison Avenue, NY, N.Y., are asked to provide the street address of the STARBUCKS where the

> WiFi hotspot is located. End users are also asked other optional data such as age and gender etc. of each user. As the **public IP addresses of each hotspot are unique**, the VCSP is able to **build a database that associates the unique public IP addresses of each hotspot** with the street address of a physical location (e.g. "280 Park Ave, NY, N.Y." or "Starbucks at 48th and Park, NY, N.Y.").
>
> At step 310, the server correlates the **geographic locations of the hotspots** to their unique IP addresses. In this manner, the VCSP 202 can determine the **locations and geographical distributions of hotspots** in a particular region. For example, in a five-block radius in a particular metropolitan city, **there may be a dozen hotspots that are available for users to access the Internet**. Such information can be utilized by the VCSP 202 to provide particular services to users accessing a particular hotspot 110. For example, the owner of a music store who has logged in to the VCSP 202 can choose to advertise discount coupons to other users logged on the hotspots in his store's vicinity. As will be discussed below in further detail, other services can be provided to users at **particular hotspots** 110.

Ex. 1007, [0039], [0058] (emphasis added); *see also Id.*, [0047], [0056]-[0057], [0059]-[0060], [0065] (describing a mesh network geographically spread over a region), FIG. 3; Ex. 1008, 5, 7-11, FIGS. 1-3.

256. Baig also teaches providing connected users with a link to edit their respective user profiles created during a registration process:

> The illustrative web page 700 also provides **a link 718 to allow the user to edit their profile**. A link 720 can also be provided to remove their concealment (i.e., invisibility) to other users.
>
> … As users register online on the VCSP website, **profile information about our users, such as age, gender, occupation, interests and the like are requested during the registration process** and securely stored by the VCSP 202. …

Ex. 1007, [0081], [0093] (emphasis added); *see also Id.*, FIGS. 5, 7; Ex. 1008, 14, 16-17, FIG. 5.

257. Given Baig's teachings that multiple AP hotspots are available for its users to connect to, in my opinion, a POSA would have understood Baig to suggest using a mobile device (e.g., a second user's "second device") connected to a first AP hotspot having a first IP address to create a user profile during a registration process and, once registered, modifying the user profile using the mobile device while it is connected to a second AP hotspot having a second, different IP address. The mobile device connected to the first AP hotspot used during the registration process thus discloses the claimed "**mobile device that accessed the Internet … via the common IP address of the first association**" as recited in claim 5. That mobile

device, when updating the user profile after registering while connected to a different AP hotspot with a different IP address, would have "**accessed the Internet … via at least one different IP address**" and would have satisfied the claimed requirement that "**the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address**" as also recited in claim 5. Ex. 1007, [0039], [0047], [0056]-[0060], [0081], [0093]; Ex. 1008, 5, 7, 8-10, 14, 16-17.

258. The proposed combination thus discloses and renders obvious claim 5.

6. Dependent Claim 6: "The computer system of claim 5 wherein the user profile information of part (b) was collected after the computer system has determined the first association, and wherein the first association of part (b) is one of the associations identified in part (a)(iii)."

259. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 6, which depends from claim 5. See my comments regarding claim 5 above.

260. As I show above for claim 5, Baig teaches using one of its mobile devices 102_p to create and update a user profile from different access point (AP) hotspots. Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIG. 3, FIG. 5; Ex. 1008, 5, 7, 8-11, 14, 16-17, FIG. 3, FIG. 5. It is my opinion that a POSA would have found it obvious for Baig's modified system to receive modifications to a user profile at the user's discretion whenever the mobile device is connected to an

AP hotspot. That POSA, therefore, would have found it obvious for Baig's modified system to receive user profile updates both before and after that system creates a profile that associates device identifiers of mobile devices having an observed network access pattern such as every Sunday morning at 10am. In my opinion, a POSA would have appreciated profile updates would have included updates to a user's occupation (e.g., if changing jobs) or updates to a user's interests (e.g., if beginning a new hobby or cheering on a new sports team). Ex. 1007, [0093]; Ex. 1008, 16-17; Ex. 1015, [0038], [0077]. Receiving updates to the user profile after creating the profile that associates device identifiers of mobile devices having an observed network access pattern thus satisfies the claimed requirement that "**the user profile information of part (b) was collected after the computer system has determined the first association**" as recited in claim 6. See my comments regarding elements [1B]-[1D] above.

261. As I show above for element [1E], Baig's modified system would have created the associations between the mobile devices using their device identifiers (e.g., MAC addresses). It is my opinion that Baig's modified system, therefore, would not have used PII to create the associations as required by "**part (a)(iii)**" in element [1E] thus satisfying the requirement that "**the first association of part (b) is one of the associations identified in part (a)(iii)**" as recited in claim 6.

262. The proposed combination thus discloses and renders obvious claim 6.

7. Dependent Claim 7: "The computer system of claim 5 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

263. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 7, which depends from claim 5. See my comments regarding claim 5 above.

264. I note that dependent claim 7 recites the same language as dependent claim 3. The proposed combination, therefore, discloses and renders obvious the requirements of claim 7 at least for the same reasons as claim 3. See my comments regarding claim 3 above. Ex. 1015, [0043], [0054]. The dependency of claim 7 from claim 5 does not impact how claim 7 is met as described above for dependent claim 3.

265. The proposed combination thus discloses and renders obvious claim 7.

8. Dependent Claim 9: "The computer system of claim 1 wherein the user profile information of part (b) was collected after the computer system has determined the first association."

266. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claim 9, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

267. I note that dependent claim 9 recites the same language as dependent claim 6. The proposed combination, therefore, discloses and renders obvious the requirements of claim 9 at least for the same reasons as claim 6. See my comments regarding claim 6 above. Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIG. 3, FIG. 5; Ex. 1008, 5, 7-11, 14, 16-17, FIG. 3, FIG. 5.

268. The proposed combination thus discloses and renders obvious claim 9.

9. Dependent Claim 10: "The computer system of claim 1 wherein the automatic action of part (b) comprises selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information associated with the device identifier of the second device, and causing the selected advertisement to be directed to the second device."

269. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses claim 10, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

270. As I show above for elements [1B]-[1D] and [1G], Baig's modified system would have sent targeted advertisements to one of the mobile devices indicated in a profile that associates device identifiers of mobile devices having an observed network access pattern (e.g., accessing the Internet via the same access point every Sunday at 10am).

271. As I also show above for element [1G], Baig's modified system would have selected the advertisement sent to that mobile device based on user profile

information associated with the device identifier of another mobile device indicated in the profile as taught by McFarland, which discloses that "**the automatic action of part (b) comprises selecting an advertisement … based at least in part on at least a portion of the user profile information associated with the device identifier of the second device**" as recited in claim 10. Ex. 1018, Abstract, 3:53-64, 4:15-19.

272. It is my opinion that a POSA would have recognized that the advertisement selected as the targeted advertisement in Baig's modified system would have been selected from among multiple possible advertisements. Baig, for example, contemplates that multiple advertisers can provide respective advertisements and bid on the opportunity to provide those advertisements to Baig's mobile devices. Ex. 1007, [0011] (multiple "advertising entities can bid to provide advertising to the end users at a given wireless hotspot"), [0012] (multiple "advertisements associated with the selected entity are provided"), [0054] ("bidding system for [multiple] advertisers"), [0062], [0093], [0094] ("flow diagram is shown for providing [multiple] advertisements to a particular hotspot 110"), [0095] (multiple "advertisements delivered"), [0099] ("VCSP provides [multiple] advertisements from [multiple] advertisers"), [0102] ("multiple advertisers can bid"), [0103] (multiple "online advertisements"). It is my opinion that a POSA would have understood, therefore, that the targeted advertisement selected in Baig's

modified system would have been selected "**from among a plurality of possible advertisements**" as claimed.

273. In my opinion, a POSA would have found it obvious to send the advertisement selected based on the profile for an associated device ("**the second device**") to the associated device itself. That POSA would have recognized that the selected advertisement also would have been even more relevant to the user of the associated device due to that user's own preferences and interests being used to select the advertisement. Sending the targeted advertisement to the associated device in Baig's modified system thus also discloses that "**the automatic action of part (b) comprises … causing the selected advertisement to be directed to the second device**" as claimed.

274. I also note that Banga507 and Banga690 contemplate multiple advertisers and multiple advertisements that would have been available to select as the directed media in the form of a targeted advertisement. Ex. 1015, [0013], [0039] ("agency 240 may work with a web advertisement designer (collateral 250) to create the media" and "media is then stored in the media server 220 until it is served to the user via the web page of the content provider 140"), [0045] ("soft drink company may wish to direct advertisements to [] certain demographics"), [0078] ("directed media component will determine that a soda or food advertisement should be presented"); Ex. 1016, [0027], [0035], [0049]-[0050], [0060] (advertisement server

selects an advertisement from "an index of advertisements" and "provide[s] the proper advertisement to [a] content provider").

275. The proposed combination thus discloses and renders obvious claim 10.

10. Dependent Claim 12: "The computer system of claim 1 wherein at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system."

276. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses claim 12, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

277. Banga507 teaches that its "network access device 110 may be identified by a hybrid cookie/device identifier combination." Ex. 1015, [0031]. I note that, while Banga507 acknowledges certain drawbacks associated with cookies, it nevertheless explains that using a "cookie/device identifier combination" would have helped ease the transition away from a cookie-only advertising system for advertisers that still relied on cookies for Internet advertising:

> In alternative embodiments, **cookies may still be placed on the network access device 110**. Because most of the current advertisement industry is based on using cookies, **the use of a cookie and/or a device identifier will assist in transitioning the advertisement industry away from the current cookie-only system**. As a result, each

> network access device 110 may be identified by a **hybrid cookie/device identifier combination**.

Ex. 1015, [0031] (emphasis added); *see also Id.*, [0007] (providing background information on the use of cookies).

278. Banga507 further teaches that cookies stored on users' network access devices were capable of storing any type of information such as identifiers and user preferences:

> … A cookie is a small text file or program that certain Internet sites attach to the user's hard drive within the computing device. **A cookie can contain information such as** a user identifier, user preferences, shopping information, personally identifiable information, and a list of web sites previously visited. As the user revisits a content provider's web site, the content provider can retrieve the cookie to identify the user and then update the cookie as appropriate. …

Ex. 1015, [0007] (emphasis added).

279. Given that Banga507 teaches a cookie can store a "user identifier," a POSA, aware of Banga507's teachings and employing ordinary creativity, would have been able to extrapolate such teachings and recognize that a cookie would have been able to store the same information included in the profile created for mobile devices having an observed network access pattern as I describe above for

elements [1B]-[1D]. More specifically, in my opinion, a POSA would have recognized that a cookie would have been able to include the device identifiers indicated in the profile that associates them with each other, which satisfies the claimed requirement that "**at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system**" as recited in claim 12.

280. It is my opinion that a POSA would have been motivated to apply Banga507's teachings to Baig's modified system because Banga507teaches that its "cookie/device identifier combination" would have benefitted advertisers that still rely on cookies for Internet advertising in systems that transition away from cookie-only approaches and incorporate alternatives. Ex. 1015, [0031].

281. The proposed combination thus discloses and renders obvious claim 12.

11. Dependent Claim 13: "The computer system of claim 1 wherein the device identifier of the first device of part (b) and the device identifier of the second device of part (b) include no personally identifiable information pertaining to a user of the first device or the second device."

282. In my opinion, the combination of Baig, Banga507, Banga690, and McFarland discloses claim 13, which depends from claim 1. See my comments regarding elements [1A]-[1I] above.

283. As I describe above for element [1E], the profile created for mobile devices having an observed network access pattern would have associated the device

identifiers (e.g., MAC addresses) of those devices and thus would not have included any PII, which satisfies the claimed requirement that "**the device identifier of the first device of part (b) and the device identifier of the second device of part (b) include no personally identifiable information pertaining to a user of the first device or the second device**" as recited in claim 13. See my comments regarding element [1E] above.

284. The proposed combination thus discloses and renders obvious claim 13.

12. Independent Claims 14 and Dependent Claims 15-20, 22-23, and 25-26

285. Regarding independent claim 14, I note that this claim recites substantially the same claim language as independent claim 1. I also note that any differences between claim 1 and claim 14 are not substantive. Compare, for example, the language of claim 1, which recites a "computer system," and the language of claim 14, which recites an "article comprising a tangible data storage medium." Baig's non-transitory computer memory of its servers (e.g., server 124, server 224) storing computer programs and software discloses the claimed "**article comprising a tangible data storage medium that is not a transitory propagating signal encoding computer-readable instructions**" in independent claim 14. Ex. 1007, [0042]-[0043], [0052], FIG. 1; Ex. 1008, 5-6, 8, FIG. 1. It is my opinion that a POSA would have understood that those computer programs and that software would have performed the steps recited in independent claim 14 for the same reasons

I explain above for independent claim 1. As would have been understood by a POSA, the computer programs and software in Baig would also have been encoded on a "**tangible data storage medium that is not a transitory propagating signal**" as claimed (e.g., non-transitory computer memory for storing computer programs and software). Ex. 1007, [0052]; Ex. 1008, 8.

286. The proposed combination of Baig, Banga507, Banga690, and McFarland disclose and render obvious independent claim 14 and dependent claims 15-20, 22-23, and 25-26 for the same reasons as independent claim 1 and dependent claims 2-7, 9-10, and 12-13. See my comments regarding elements [1A]-[1I] and claims 2-7 and 9-13 above.

B. Ground B: Claims 8 and 21 Are Obvious Over Baig in View of Banga507, Banga690, McFarland, and Costa

287. As I show above for Ground A, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious claims 1 and 14. As I explain below, the combination of Baig, Banga507, Banga690, McFarland, and Costa discloses and renders obvious claims 8 and 21.

1. Element [8A]: "The computer system of claim 7 wherein: (A) the first device of part (b) is a television set-top box;" and Element [21A]: "The article of claim 20 wherein: (A) the first device of part (b) is a television set-top box;"

288. In my opinion, the combination of Baig, Banga507, Banga690, McFarland, and Costa discloses and renders obvious element [8A] in dependent

claim 8, which depends from claim 7, and element [21A] in dependent claim 21, which depends from claim 20. See my comments regarding elements [1A]-[1I], 7, 14, and 20 above.

289. Baig teaches that its mobile devices 102_p, that connect to its publicly available AP hotspot, can include laptop computers, PDAs, "and the like." Ex. 1007, [0043]; Ex. 1008, 6. Banga507 similarly teaches that its network access devices 110 "include desktops, laptops, personal digital assistants, and cellular telephones." Ex. 1015, [0024]. Further, Banga690 teaches that the network access devices "include, but are not limited to" the examples provided. Ex. 1016, [0024]. This prior art, however, does not explicitly disclose that Baig's mobile devices 102_p or Banga's network access devices 110 include set-top boxes.

290. Costa, however, shows that it was known to provide a television and a set-top box in a network environment that includes a public wireless hotspot:

> The UPnP network 104 (or similar networking technology) allows devices to exchange data in a local environment 110. **The local environment 110** typically includes a home or office, although it will be appreciated that **other environments may provide UPnP connectivity**, including automobiles, airplanes, boats, **public wireless hotspots**, etc. The UPnP network 104 may couple consumer electronics devices 112, including televisions 114, audio systems 116, computers 118,

> telephones 120 (e.g., analog phones, digital phones, cordless phones, SIP phones), **digital media centers 122** (e.g., **set-top boxes**, MP3 jukeboxes, personal video recorders, media hubs), printers 124, cameras 126, and other devices, represented by generic UPnP device 128.

Ex. 1011, [0036]-[0037] (emphasis added).

291. In my opinion, a POSA would have found it obvious to include a set-top box with a corresponding television, as taught by Costa, as one of the devices connected to the publicly available hotspot at the access point 106 in Baig's modified system, which discloses the claimed "**first device of part (b) is a television set-top box**" as recited in elements [8A] and [21A]. Ex. 1011, [0036]-[0037]; Ex. 1007, [0042]-[0047], FIG. 1; Ex. 1008, 5-7, FIG. 1.

292. In my opinion, that POSA would have been motivated to apply Costa's teachings to Baig's modified system and include a set-top box and television in Baig's network environment (e.g., in Baig's coffee shop) because, by doing so, Baig's modified system would have been able to advantageously display targeted advertisements to the audience present at the access point (AP) hotspot location. *See* Ex. 1007, [0061]-[0062], [0093], [0103] (discussing providing targeted advertisements to an audience at a particular AP hotspot); Ex. 1008, 10, 16-17, 18. It is my opinion that a POSA also would have recognized that, by connecting the set-top box to the access point in Baig's modified system, the set-top box would

have been able to receive the targeted advertisements from, for example, one of Baig's content servers 124_n. Ex. 1007, [0042]-[0043], FIG. 1; Ex. 1008, 5-6, FIG. 1; Ex. 1011, [0036]-[0037] (teaching universal plug-and-play network (UPnP) connectivity at a local network environment); *see also* Ex. 1015, e.g., [0076]-[0079] (discussing the media selection optimizer that determines the directed media components to send to the users).

293. It is my opinion that a POSA would have understood that Costa's set-top box would have include a device identifier such as a MAC address based on its teachings that its UPnP network relies on the Internet Protocol for network communications, including Internet communications:

> Various contributors publish UPnP device and service descriptions, thus creating a way to easily connect devices and simplifying the implementation of networks. **UPnP is designed to work in many environments, including** the home, businesses, public spaces, and **on devices attached to the Internet**. The UPnP standard is an open architecture that leverages Web technologies and is designed to provide ad-hoc networking and distributed computing.
>
> The **UPnP model** is designed to support zero-configuration networking and automatic discovery for a wide variety of device categories. This allows a device to dynamically join a network, **obtain an IP address**,

convey its capabilities, and learn about the presence and capabilities of other devices. Other Internet protocols such as Dynamic Host Configuration Protocol (DHCP) and Domain Name Service (DNS) may optionally included in a UPnP network, although they are not required. A device can leave a UPnP network smoothly and automatically without leaving any unwanted state behind.

The **UPnP network 104 may also be configured to provide communications outside the local environment 110**. For example, an **Internet Gateway Device (IGD) 130 may provide communications to networks outside the local environment, such as the Internet 134**. The IGD 130 is an IP addressable device typically residing at the edge of a home or small-business network. The IGD 130 includes **a WAN interface capable of accessing the Internet 134** and other external networks. The **IGD 130 is configured to provide external network access to elements of the UPnP network 104**. The IGD 130 may also provide **local addressing and routing services between one or more LAN segments in the local environment 110**. The IGD 130 can be located in a specific home device to provide external connectivity to all devices in the home network. In some cases, a mobile device 105 (e.g., mobile phone 106) can also act as IGD 130. Such devices 105 may have access to external wireless networks such as 3G, GPRS, UWB, etc.

Ex. 1011, [0006], [0007], [0038] (emphasis added); *see also* Ex. 1041 (802.11 standard indicating MAC addresses are used for WLAN network communications).

294. Banga507 also teaches that the directed media can "**comprise** a static or **dynamic advertisement**, a **video**, music, or any other form of media." Ex. 1015, [0070] (emphasis added). In my opinion, a POSA thus would have understood Banga507 to disclose or at least suggest an advertisement in the form of a video. That POSA further would have appreciated that a video advertisement would have been suitable for display at a display device (e.g., a television), which are often found in public environments as taught by Costa (e.g., coffee shops). Ex. 1011, [0036]-[0037].

295. It is my opinion that a POSA thus would have found it obvious to include a device identifier of a television set-top box (e.g., a MAC address) as one of the device identifiers included in a profile created in Baig's modified system for the mobile devices having an observed network access pattern as taught by Banga507 and Banga690. See my comments regarding elements [1B]-1D] above. More specifically, that POSA would have recognized that, by including the device identifier of the set-top box in the profile, Baig's modified system would have been able to send a targeted advertisement to the set-top box for display to the audience of users present at Baig's access point (AP) hotspot at a time a group of users exhibiting an observed network pattern (e.g., at 10am on Sunday morning) were

likely to be present. Ex. 1007, [0061]-[0062], [0093], [0103] (discussing advertising to an audience). That POSA would have recognized that a television set-top box would have been a suitable recipient of a targeted advertisement in view of Banga507's teachings that the directed media can be video content. Ex. 1015, [0070].

296. It is my opinion that a POSA, exercising ordinary creativity, would have recognized that a set-top box need not exhibit the same pattern of network access as Baig's mobile devices 102_p to include it in a profile. For example, a POSA exercising ordinary creativity and aware of Baig's desire to advertise to an audience at a particular location (e.g., a coffee shop) would have found it obvious to include the set-top box's device identifier (e.g., MAC address) by default in one or more profiles created for the mobile devices in Baig's modified system. To provide a particular example, a POSA exercising ordinary creativity would have found it obvious to include the device identifier of a coffee shop's STB by default in each of a first profile created for a first group of the mobile devices that regularly connect to the coffee shop's access point every Sunday morning, a second profile created for a second group of the mobile devices that regularly connect to the coffee shop's access point every Sunday afternoon, and a third profile created for a third group of the mobile devices that regularly connect to the coffee shop's access point every Sunday evening. That POSA would have recognized that the profile would have been able

to differentiate the set-top box from other mobile devices using information that identifies a category, class, or type of device as taught by Banga690. Ex. 1016, [0055] (describing embodiments where "the device identifier identifies a category of network access devices 110" and "[t]he category can identify a specific type of digital device or a general class"); *see also* Ex. 1015, [0036] ("Access information may comprise any information associated with the device identifier."), [0041] ("user profile may comprise one or more device identifiers …, access information, device histories, and any other information associated with the network access devices 110 or device identifier").

297. In my opinion, a POSA would have found adding a set-top box as taught by Costa to Baig's modified system would have been merely the simple combination of prior art elements according to known methods to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include Costa's set-top box and Baig's communications network 100, access point 106, and public WiFi hotspot 110. Ex. 1011, [0036]-[0037]; Ex. 1007, [0042]-[0043], FIG. 1. The known methods include Costa's teaching of including a set-top box in a local networking environment. Ex. 1011, [0036]-[0037]. The predictable results include a communications system having a set-top box that can connect to the Internet via a publicly available hotspot and receive targeted advertisements in the form of video.

298. It is my opinion that a POSA would have had the skills and knowledge to combine the teachings of Baig and Costa with a reasonable expectation of success in arriving at the subject matter recited in element [8A]. Given that Costa teaches its set-top box is suitable to be connected to a local networking environment, a POSA would have been able to successfully connect a set-top box to the access point in Baig's modified system. Ex. 1011, [0036]-[0037].

299. The proposed combination thus discloses and renders obvious elements [8A] and [21A].

2. Element [8B]: "(B) the second device of part (b) is an online user interface device;" and Element [21B]: "(B) the second device of part (b) is an online user interface device;"

300. In my opinion, the combination of Baig, Banga507, Banga690, McFarland, and Costa discloses and renders obvious elements [8B] and [21B].

301. The '015 Patent includes an explicit definition for "online user interface," specifically "any user interface device used to access a remote network such as the Internet, including … a cell phone or mobile handset." Ex. 1001, 2:52-56. Baig teaches that its mobile devices 102_p connected to its access point 106 include laptops, PDAs, and cellular telephones. Ex. 1007, [0043], FIG. 1 (illustrating telephone 102_2); Ex. 1008, 6, FIG. 1. The mobile devices in Baig's modified system thus satisfy the '015 Patent's definition of the claimed "**online user interface device**."

302. The proposed combination thus discloses and renders obvious elements [8B] and [21B].

3. Element [8C]: "(C) the user profile information of part (b) was collected after the computer system has determined the first association; and" and Element [21C]: "(C) the user profile information of part (b) was collected after the computer system has determined the first association; and"

303. In my opinion, the combination of Baig, Banga507, Banga690, McFarland, and Costa discloses and renders obvious elements [8C] and [21C].

304. As I show above for claim 5, Baig teaches using one of its mobile devices 102_p to create and update a user profile from different access point (AP) hotspots. See my comments regarding claim 5 above. Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIG. 3, FIG. 5; Ex. 1008, 5, 7, 8-11, 14, 16-17, FIG. 3, FIG. 5. As I also show above for claim 6, in my opinion, a POSA would have found it obvious for Baig's modified system to receive updates to a user profile at the user's discretion whenever the mobile device is connected to one of multiple AP hotspots geographically distributed throughout a region, which would have included user profile updates received both before and after Baig's modified system creates a profile that associates device identifiers of mobile devices having an observed network access pattern such as every Sunday morning at 10am and includes the set-top box's device identifier by default as I described above for element [8A]. Receiving updates to the user profile after creating the profile that

associates device identifiers of mobile devices having an observed network access pattern thus satisfies the claimed requirement that "**the user profile information of part (b) was collected after the computer system has determined the first association**"). See my comments regarding elements [1B]-[1D] and claim 6 above.

305. The proposed combination thus discloses and renders obvious elements [8C] and [21C].

4. Element [8D]: "(D) the first association of part (b) is one of the associations identified in part (a)(iii)." and Element [21D]: "(D) the first association of part (b) is one of the associations identified in part (a)(iii)."

306. In my opinion, the combination of Baig, Banga507, Banga690, McFarland, and Costa discloses and renders obvious elements [8D] and [21D].

307. As I show above for element [1E], the profile that associates the device identifiers of the mobile devices in Baig's modified system would have been created without using PII to create the associations as required by "**part (a)(iii)**" in element [1E] thus satisfying the claimed requirement that "**the first association of part (b) is one of the associations identified in part (a)(iii)**" as recited in elements [8D] and [21D]. See my comments regarding element [1E] above.

308. The proposed combination thus discloses and renders obvious elements [8D] and [21D].

C. Ground C: Claims 11 and 24 Are Obvious Over Baig in View of Banga507, Banga690, McFarland, and Ashbaugh

309. As I show above for Ground A, the combination of Baig, Banga507, Banga690, and McFarland discloses and renders obvious independent claims 1 and 14. As I explain below, the combination of Baig, Banga507, Banga690, McFarland, and Ashbaugh discloses and renders obvious dependent claims 11 and 24.

310. In my opinion the combination of Baig, Banga507, Banga690, McFarland, and Ashbaugh discloses and renders obvious dependent claims 11 and 24, which respectively depend from dependent claims 10 and 23. See my comments regarding dependent claims 10 and 23 above.

311. None of Baig, Banga507, Banga690, or McFarland, however, specifically discloses receiving delivery of an advertisement through redirection as required by dependent claims 11 and 24.

312. Ashbaugh teaches a networked content exchange that includes a network appliance 10 (e.g., a personal computer, terminal, web TV, mobile phone, etc.) that may communicate with an exchange controller 14, a content server 34, and advertising servers 36, 38, via network 12:

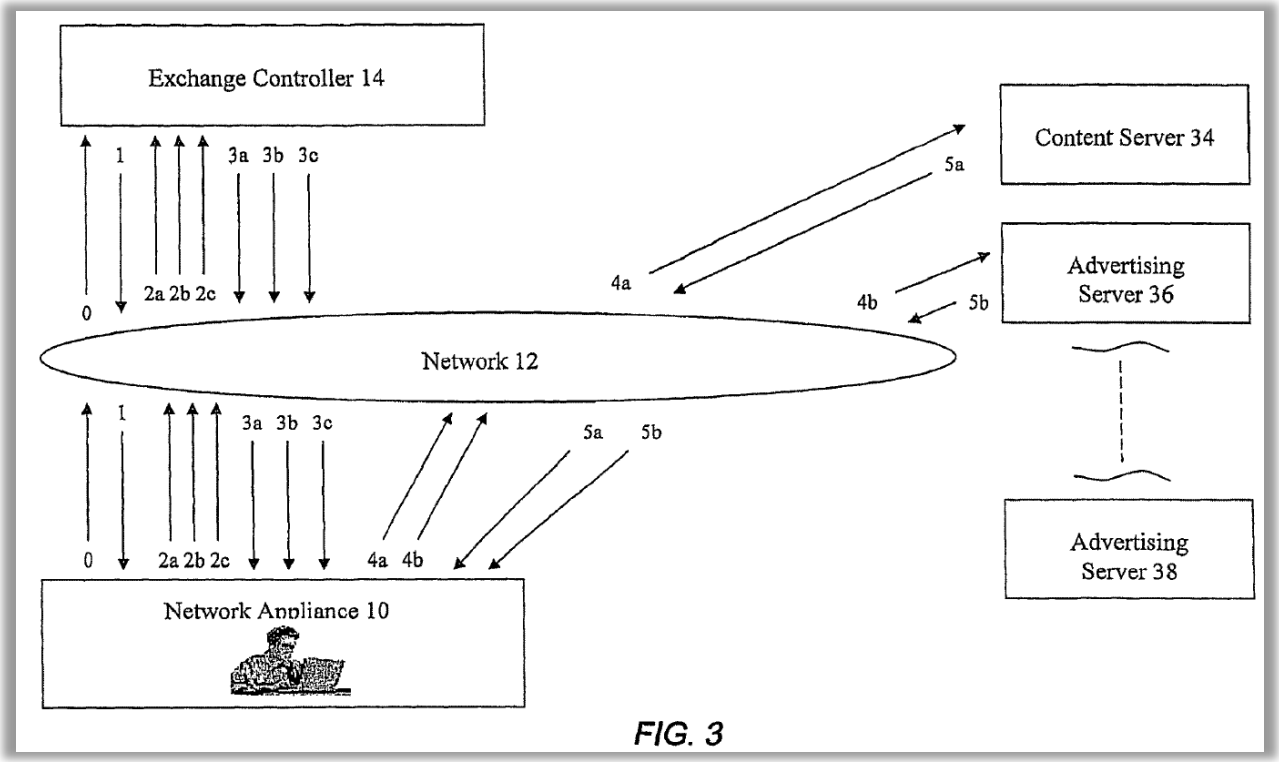


FIG. 3

Ex. 1019, FIG. 3; Ex. 1050, FIG. 3.

313. Ashbaugh teaches using a redirect feature of HTTP in order to request advertisements for display in an advertising frame of a webpage, including describing advertising frame for a webpage:

> In a similar manner, the **network appliance 10 sends a request 2c to an advertising server 36 that provides the advertising information that appears in the advertising frame 26**. In response to requests 2b and 2c, content server 34 sends a message 3b which may contain the XHTML or HTML code for the content to appear in the frame 24, and the **advertising server 36 transmits a message 3c, which**

> **may contain the XHTML or HTML code for the advertisement appearing in the frame 26**.

Ex. 1019, 10:1-9 (emphasis added); *see also id.*, 9:36-38, FIG. 1; Ex. 1050, 14-15.

314. Ashbaugh also teaches requesting advertisements for display in an advertising frame of a webpage using the redirect feature of HTTP:

> The **concurrent display of** content, **advertising**, and/or other information in a single window **can be implemented for the purposes of advertising** or other purposes **with as few as two frames**, one of which displays the requested content and **the other of which displays the advertising** or other content, and/or one of which displays navigation. Furthermore, the locations of the primary content frame and the primary advertising frame and/or any other frames can be swapped without impact to any of the frames' functions or usefulness.
>
> In the example of FIG. 3, therefore, each of the messages 2 a, 2 b and 2 c is transmitted to the server 14. As in the example of FIG. 1, if the server 14 is the provider of the content for the navigation frame 28, this content can be directly returned to the network appliance 10, in the form of message 3 a. **In response to requests 2 b and 2 c, the server 14 transmits HTTP Location header redirect requests to the browser on the network appliance 10.**

> **These header redirect requests are represented as messages 3 b and 3 c in the example of FIG. 3.**
>
> Briefly, **the "redirect" feature of the HTTP protocol provides redirection status codes that a server can employ to indicate to a browser device that it should look for a desired page at another URL**. This other URL is specified in the "Location" HTTP header. Therefore, in the example of FIG. 3, messages 3 b and 3 c contain redirection status codes and Location headers that identify the URLs associated with the content server 34 and advertising server 36. **Upon receiving these header redirect messages, the browser on the network appliance 10 sends new requests 4 a and 4 b to the content server 34 and advertising server 36**, in accordance with the URLs in the Location headers of the messages 3 b and 3 c, respectively. **In response, the servers 34 and 36 return** the desired content 5 a for the content frame 24, and **the advertisement data 5 b for the advertising frame 26**, respectively. Thus, as long as the browser, or other XHTML-rendering module, supports HTTP header redirects, the appropriate information will appear in the respective frames of the display area.

Ex. 1019, 8:67-9:9, 11:43-12:3 (emphasis added); *see also id.*, 9:36-38 (discussing Ashbaugh's frames 24, 26, and 28 with reference to Ashbaugh's Figure 1), 10:1-9

(describing an "advertising frame" for a webpage), FIG. 1, FIG. 3; Ex. 1050, 13-15, 17-18, FIG. 1, FIG. 3.

315. It is my opinion that a POSA would have been motivated and would have found it obvious to apply Ashbaugh's teachings to Baig's modified system, which presents advertisements on its vicinity-based website to the users connected to its access point (AP) hotspot. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. More specifically, it is my opinion that a POSA would have been motivated to apply Ashbaugh's teachings to Baig's modified system in order to include an advertising frame as taught by Ashbaugh in the webpages of Baig's vicinity-based website and use HTTP's redirect feature to receive the targeted advertisements presented to Baig's AP hotspot users as I show above for element [1G]. Ashbaugh's teachings about the benefits of using advertising frames and redirection would have motivated a POSA to further modify Baig's modified system to include such features because Ashbaugh teaches that its advertising frame and redirection techniques provided better resistance to known ad-blocking techniques due to the use of native HTML and HTTP features that were not easily circumvented without detracting from the user's web browsing experience:

> … In an embodiment, **framesets are utilized** as an underlying presentation method, **because other methods** of content presentation, **particularly for the purposes of advertising**, are **more readily blocked by modern**

browser software, thus preventing display of some or all of the intended content or advertising to the target user. …

The use of a frameset to present advertising provides a number of advantages. As discussed previously, prior techniques for displaying advertising typically employed browser-based scripting language to generate new logical layers for the ad space, e.g., items with new windows or stacking order considerations, pop-up windows, or XHTML divisions, layers, or other more susceptible tags or constructs. As a result, it became easy to separately identify and intercept the scripting or layers associated with various forms of web-oriented advertisement, and block them from being displayed. In contrast, **by using a frame to display the advertising, the code that is sent to the rendering device, such as a browser, is native to the XHTML and HTML core language specification** at a most granular and atomic level, and operates without developing a new primary layer or window. As such, **it becomes significantly more difficult to determine advertising streams and thus more difficult to prevent the display of the intended website or equivalently formatted advertising**. In order to do so, it would become necessary to change the international language specification for XHTML and HTML, to support disabling the display of frames, which is highly unlikely, as it would negatively impact the entire World Wide Web.

Ex. 1019, 3:41-46, 10:21-43 (emphasis added); Ex. 1050, 5, 15.

316. It is my opinion that a POSA would have found this to be the simple use of a known technique to improve similar devices in the same way or applying known technique to a known device ready for improvement to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationales (C) and (D) above). The known technique includes Ashbaugh's use of redirection to an advertisement server to obtain advertisements to present in an advertisement frame of a webpage. Ex. 1019, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17. The known or similar device includes Baig's vicinity-based website that presents targeted advertisements. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. The improvement to Baig's vicinity-based website includes better resistance to known ad-blocking techniques as described in Ashbaugh and noted above.

317. The predictable results include the websites in Baig's modified system using advertising frames in the webpages sent to the mobile devices that display the targeted advertisements selected as I show above for element [1G] and using redirection to obtain the targeted advertisements to display in those frames. Using redirection to obtain the targeted advertisements included in the webpages sent to mobile devices in Baig's modified system thus discloses the requirement that "**part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement**" as recited in dependent claims 11 and 24.

318. The proposed combination thus discloses and renders obvious claims 11 and 24.

D. Grounds D and E: Claims 1-7, 9-10, 13-20, 22-23, and 26 Are Obvious Over Baig-Satapati-Damick and Baig-Zwicky-Damick

319. As I explain below, in my opinion, a POSA would have found it obvious to modify Baig's system—having an access point 106, which enables multiple mobile devices 102 to communicate with each other and with content servers 124 over the Internet 122 using a common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action—to include Satapati's or Zwicky's network address translation techniques and Damick's network access control and logging techniques.

320. The combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick meet all features of independent claims 1 and 14, and their respective dependent claims.

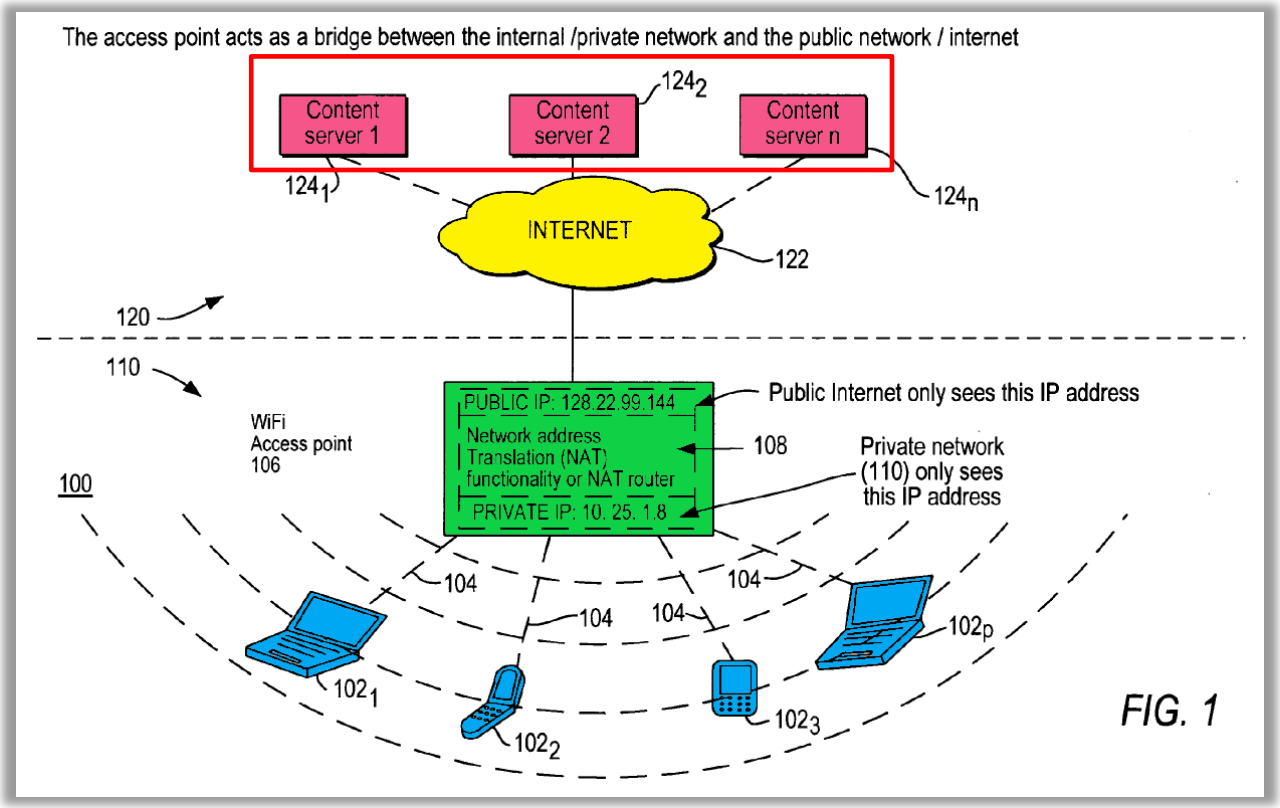
321. In the following subsections of this section, I show how the combination of Baig. Satapati, and Damick and the combination of Baig, Zwicky, and Damick meet each of the elements of certain claims and provide numerous rationales for arriving at the combination.

1. Independent Claim 1

i. Element [1A]: "A computer system comprising at least one hardware server computer, wherein the computer system is programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action, the method comprising:"

322. Again, assuming the preamble imposes a limitation, it is disclosed by and rendered obvious over the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick.

323. As I show below, the result of combining the teachings of Baig, Satapati, and Damick is a modified version of Baig's system. As shown for example in Figure 1 (annotated below), Baig's modified system ("**computer system**") (**red**) includes multiple content servers 124 ("**at least one hardware server computer**") (**pink**) that are coupled to the Internet 122 (**yellow**), to which WiFi wireless access point 106 (**green**) is also coupled. Ex. 1007, [0042]-[0043], [0052], FIG. 1; Ex. 1008, 5-6, 7-8. Baig's WiFi hotspot 110 enables multiple mobile devices 102_p (**blue**) to communicate with each other and content servers 124 (**pink**) over the Internet 122 (**yellow**) via access point 106 (**green**). Ex. 1007, [0042]-[0043], [0045]-[0052], FIG. 1; Ex. 1008, 5-8, FIG. 1.



Ex. 1007, FIG. 1 (annotated).

324. Any one of these content servers, or any collection of them, discloses the claimed "computer system" (**red**). As I explain in further detail below, Baig's modified system, is "**programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action**" that renders obvious the steps of independent claim 1. It is my opinion that a POSA would have understood that, because the Baig system's components reside in a computing network, their functionalities would have been implemented using programmed instructions. Ex. 1007, [0002], [0052]-[0053]; Ex. 1008, 1, 7-8. For example, Baig's

content servers 124 include a combination of hardware and software to run the programs that identify user devices 102_p associated with a particular access point and then group those user devices having a common IP address connected to the same access point (AP) hotspot:

> The network 200 of FIG. 2 further includes a vicinity-based community service provider (VCSP) 202 having at least one content server 224 coupled to the Internet 122 in a conventional manner. **The server 224 includes at least one processor, memory and support circuitry for running programs** that, for example, **identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110**. Accordingly, since each hotspot 110 has a unique static IP address, and the range of wireless communications for **any given hotspot is limited, any users accessing the hotspot are deemed to be in vicinity of each other**. For example, any users of mobile devices accessing a hotspot 110 illustratively provided by a public library are deemed to be, and are in fact, in vicinity to each other.

Ex. 1007, [0052] (emphasis added); Ex. 1008, 7-8.

325. Baig discloses using an identified association to cause cross-device actions by offering services that facilitate interactions between users based on an association with a common access point (AP) hotspot. The Baig system provides a

vicinity-based community service provider (VCSP) that identifies mobile devices 102_p and establishes an interconnected association to create vicinity-based communities of mobile devices that are in proximity with one another based upon their access to the same access point (AP) hotspot having a common public IP address:

> A vicinity-based community service is a service provided by the **VCSP which discovers (i.e., identifies) and connects wireless users within physical vicinity of each other at a WiFi hotspot**. Once a "vicinity-based community" at a physical location (i.e., a hotspot) is created, the **users can potentially interact physically or non-physically with each other**. **The VCSP identifies a group of users at a wireless hotspot based upon their common public IP address and interconnects them**, thereby creating a vicinity-based user group. The VCSP may also request the street address or the venue name of the hotspot from the end user in order to correlate the vicinity-based group to a specific geographical location.

Ex. 1007, [0038] (emphasis added); *see also Id.*, [0088]; Ex. 1008, 5, 15.

326. As taught by Baig, each group of users, connected via a common IP address, is offered a variety of online services that enable the users to interact with other users in their vicinity. Ex. 1007, [0038], [0054], [0059], Abstract, FIG. 2; Ex. 1008, 5, 8, 9, Abstract. Baig also explains that the connection of the devices 102_p to

the same access point (AP) hotspot forms "a vicinity-based community," to facilitate vicinity-based services, including providing "vicinity-based targeted advertising" to the community of devices. Ex. 1007, [0038], [0054], [0059]; Ex. 1008, 5, 8, and 9.

327. It is my opinion that a POSA would have understood that content server 124 of Baig's modified system, which is connected to the users' respective devices 102 via the Internet and access point 106, is therefore programmed to use a common IP address to identify and group multiple user devices based on the connection of those devices to the wireless access point 106 having the common IP address. Ex. 1007, [0038], [0054], and [0059]; Ex. 1008, 5, 8, and 9.

328. The proposed combinations thus disclose and render obvious element [1A].

ii. Element [1B]: "(a) with the computer system, creating an electronic database containing a multitude of associations, each indicating an association between device identifiers of two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices, wherein:"

329. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1B].

330. As I show below, Baig's Figure 2 discloses a system that connects two or more mobile devices 102_p (**blue**) through a wireless access point "M" 106 that

provides WiFi hotspot 110 (**green**). A service provider 202, for example, provides a content server 224, which hosts Baig's vicinity-based online service. Ex. 1007, [0052]-[0053], FIG. 2; Ex. 1008, 7-8, FIG. 2. More specifically, Baig's access point 106 connects content server 224 (**red**) with mobile devices 102_1 through 102_5 via the public Internet 122. Baig's modified system thus discloses the claimed "**computer system**," and its mobile devices 102_p, which access the Internet 122, disclose the claimed "**two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices**". Ex. 1007, [0042]-[0044], [0049], FIG. 2; Ex. 1008, 5-7.

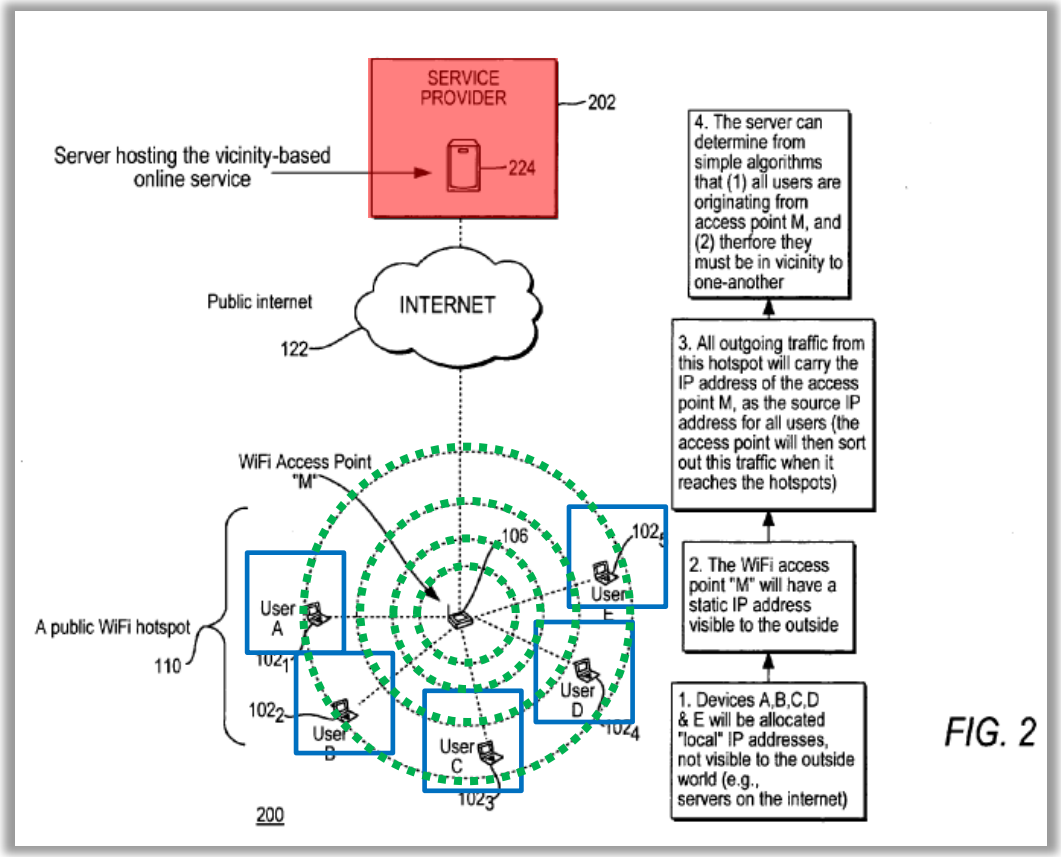


FIG. 2

Ex. 1007, FIG. 2 (annotated); Ex. 1008, FIG. 2.

331. Each mobile device 102 has a device identifier, which includes an IP address transmitted by Baig's access point 106 to the content server 224 over the Internet 122:

> The **WiFi access point 106 has a static IP address that is visible to communication networks external to the hotspot 110**. The NAT router 108 at the **access point 106 replaces the IP address of the source mobile device with the IP address of the access point** in a well known manner. As such, all outgoing traffic from the hotspot 110 carry the IP address of the access point 106 as the source IP address for all users.

Ex. 1007, [0050]; Ex. 1008, 7 (emphasis added).

332. As I show above, the third step ("3") in Baig's Figure 2 states that "[a]ll outgoing traffic from this hotspot will carry the IP address of the access point M, as the source IP address for all users (the access point will then sort out this traffic when it reaches the hotspots)." Ex. 1007, [0050], FIG 2; Ex. 1008, 7, FIG 2. As described above, and as was well-known to a POSA at the time, data packets sent over the Internet included an IP address of the source and destination devices, which is commonly represented as a series of four numbers separated by periods (e.g., aaa.bbb.ccc.ddd, with leading zeros not usually shown):

> The access point 106 utilizes a unique "public" IP address (e.g., 126.22.99.144 illustratively shown in FIG. 1) which relays data between the wireless mobile devices 102 connected to the wireless network 104 and the external or public network, such as the Internet 122. **An IP address is necessary because all data communications takes place in form of data packets. Each packet must contain the IP address of the source device and the IP address of the destination device**.

Ex. 1007, [0044]; Ex. 1008, 6 (emphasis added).

333. As I explain below, the combinations of Baig with Satapati or Zwicky disclose and render obvious the "**device identifiers**" of "**Internet-accessing electronic devices**" as recited in claim 1. Under the proposed combination, the device identifier is the combination of: **(i)** the common IP address of the modified Baig system's access point, and **(ii)** a TCP/IP port number associated with the mobile device of Baig's modified system ("**Internet-accessing electronic device**") that is connected to the access point. Further, as I explain below, the device identifier for respective mobile devices is used to associate two or more of Baig's mobile devices ("**two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices**"). To give an example, the device identifiers of two mobile devices connected to access point 106 having a public IP address of 128.22.99.144 (as shown in Baig's Figure 2) and assigning the mobile devices

respective port numbers of 2027 and 2028 would have taken the form of (1) 128.22.99.144:2027 for the first mobile device and (2) 128.22.99.144:2028 for the second mobile device.

334. Regarding the common IP address of the access point 106, Baig discusses "network address translation" (NAT), which was (and remains) a widely known process, and is implemented by Baig's access point 106 to facilitate communications between the local network 104 formed by the access point 106 and the public network 120 (e.g., the Internet 122). Ex. 1007, [0043], [0045]-[0046], [0049]-[0051]; Ex. 1008, 6-7. Baig explains that the "access point 106 includes a network address translation device 108 that provides network address translations (NAT)" (Ex. 1007, 43), and that the access point 106 has a public-facing IP address while the mobile devices 102_p on the local network 104 are each associated with a local IP address:

> Whenever a mobile device 102 that is connected to a hotspot 110 requests information from the public network (e.g., the Internet) 120, the mobile device 120 sends data packets containing a "local" IP address to the access point 106. **All devices on the internal network 104 use local IP addresses (these local IP addresses are not visible to the public networks). On the other hand, the access point 106 interacts with the public network 120 with a**

> **public IP address, which is visible to all devices on the public internet 122.**

Ex. 1007, [0045] (emphasis added); Ex. 1008, 6.

335. As I explain further below, both Zwicky and Satapati teach NAT techniques, including port address translation techniques, in further detail. See Ex. 1012, pp. 33-37; Ex. 1006, [0004]-[0019]. NAT refers to a set of industry standard techniques for translating "one set of network addresses internally and a different set when dealing with external network" to allow devices to share a single connection to the Internet. Ex. 1012, pp. 33-34; *see also* Ex. 1007, [0044]-[0046]; Ex. 1008, 6-7. NAT typically operates by providing a device (e.g., an access point or router) that intercepts network communications between a local device and a remote device (e.g., connected to the Internet), and then modifies or translates their IP addresses to facilitate those communications. *See* Ex. 1006, [0004]-[0019]. In particular, Baig explains:

> The access point 106 utilizes a unique "public" IP address (e.g., 126.22.99.144 illustratively shown in FIG. 1) which relays data between the wireless mobile devices 102 connected to the wireless network 104 and the external or public network, such as the Internet 122. An IP address is necessary because all data communications takes place in form of data packets. Each packet must contain the IP

> address of the source device and the IP address of the destination device.
>
> Whenever a mobile device 102 that is connected to a hotspot 110 requests information from the public network (e.g., the Internet) 120, the mobile device 120 sends data packets containing a "local" IP address to the access point 106. All devices on the internal network 104 use local IP addresses (these local IP addresses are not visible to the public networks). On the other hand, the access point 106 interacts with the public network 120 with a public IP address, which is visible to all devices on the public internet 122.
>
> The access point 106 (which includes the NAT router 108) replaces the "local" IP address with its own "public" IP address, and forwards the packets to the destination device (e.g., content server) on the Internet or external network 120.

Ex. 1007, [0044]-[0046]; Ex. 1008, 6-7.

336. The translation techniques I discuss above were well-known NAT techniques for allowing multiple devices to communicate over the Internet using a single external (or "public") IP address, and were not invented by Baig. For example, when any of Baig's multiple mobile devices sent packets through the Internet, access point 106 would have replaced the "local IP address" (the source

address) in those outgoing packets with the common "public IP address" of access point 106:

> The WiFi access point 106 has a static IP address that is visible to communication networks external to the hotspot 110. The NAT router 108 at **the access point 106 replaces the IP address of the source mobile device with the IP address of the access point in a well known manner**. As such, all outgoing traffic from the hotspot 110 carry the IP address of the access point 106 as the source IP address for all users.

Ex. 1007, [0050]; Ex. 1008, 7 (emphasis added).

337. Similarly, when any of Baig's multiple mobile devices received packets through the Internet, access point 106 would have replaced the common "public IP address" of access point 106 (the destination address) in those incoming packets with the "local IP address" of the destination devices:

> Similarly, all incoming traffic to the devices 102 connected to the hotspot 110 carry the IP address of the access point 106 as the destination IP address for all users. The NAT router 108 at the **access point 106 replaces the IP address of the access point with the local IP address of the destination mobile device in a well known manner**.

Ex. 1007, [0051]; Ex. 1008, 7 (emphasis added).

338. In my opinion, a POSA would understand that Baig's access point 106 would have used the port numbers assigned to the mobile devices to determine which local IP address to replace the public IP address. To continue the example I provide above, if Baig's access point 106 received a packet with 128.22.99.144:2027 as the destination address, then the access point would have replaced that destination address with the local IP address of the mobile device assigned port 2027; and if access point 106 received a packet with 128.22.99.144:2028 as the destination address, then the access point would have replaced the destination address with the local IP address of the mobile device assigned port 2028. In this way, the combination of the common IP address of access point 106 and an assigned port number allows individual mobile devices to be identified.

339. These disclosures in Baig confirm the existence of "**device identifiers of two or more Internet-accessing electronic devices**," which include the IP address of the access point 106 to which respective mobile devices ("**Internet-accessing electronic devices"**) of the multiple mobile devices are connected.

340. The public IP address of Baig's access point 106 is more than just an identifier for the access point, when combined with a port number assigned to a device that is connected to the access point, the combination of the IP address and port number discloses a **"device identifier"** of an Internet-accessing electronic

device (e.g., Baig's mobile device 102) in view of the well-known network addressing translation (NAT) techniques discussed above.

341. Baig expressly discusses NAT techniques but does not describe them in detail. *See* Ex. 1007, [0043] ("The access point 106 … provides network address translations (NAT)"); *see also* Ex. 1007, [0046]-[0051]; Ex. 1008, 6-7 (referring to "NAT router"). Satapati and Zwicky provide details about standard and well-known NAT techniques that are not discussed in detail by Baig. Accordingly, to the extent it is argued that Baig does not expressly disclose element [1B], the combination of Baig and Satapati and the combination of Baig and Zwicky do.

342. As was well-known and as I discuss above, packets sent over the Internet include not only the **IP addresses** of the source and destination devices, but also source and destination **port numbers**, which are used to identify an endpoint associated with the source and destination IP addresses. See Ex. 1012, pp. 35-37; Ex. 1006, [0004]-[0019]. Port numbers in TCP/IP are commonly represented as a number added to the end of an IP address after a colon; for example, the string "192.123.2.5:2026" would represent an IP address of "192.123.2.5" and a port number of "2026." TCP/IP port numbers (like IP addresses) have been standard information fields in TCP/IP packets since at least the early 1980s. Ex. 1039, p. 21 (§ 3.1).

343. Network address translation (NAT) includes a technique known as "port address translation" that uses port numbers to allow multiple devices to share a common public IP address by using the port numbers to further identify the different devices that use the same public IP address. *See* Ex. 1006, [0002]; Ex. 1012, pp. 33-35. This well-known concept is graphically depicted in Figure 5-4 of Zwicky:

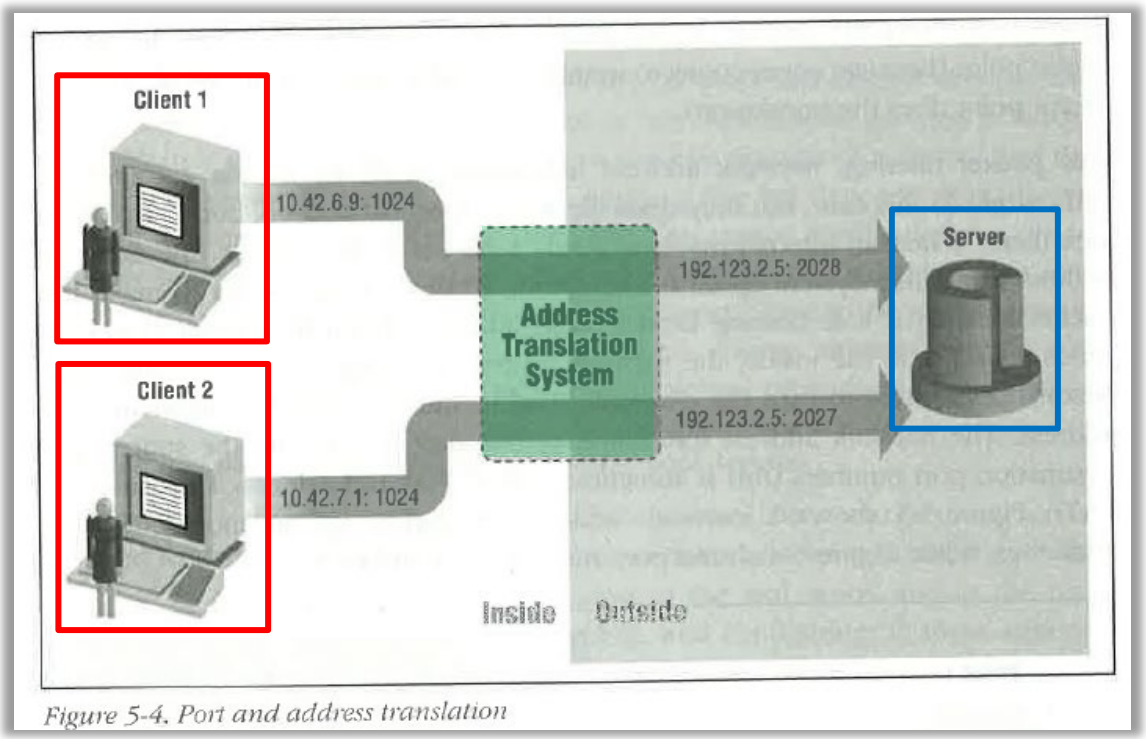
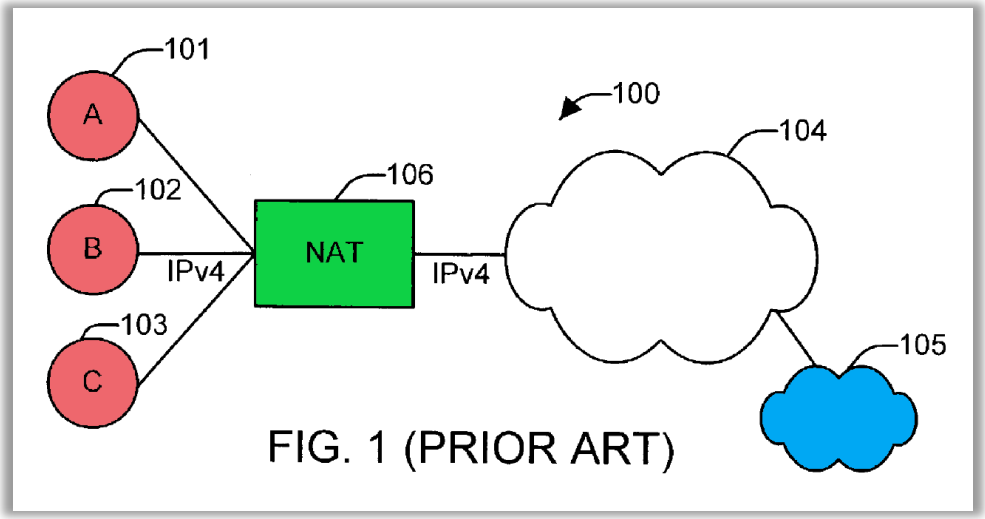


Figure 5-4. Port and address translation

Ex. 1012, FIG. 5-4 (annotated), p. 35.

344. As I show above, Figure 5-4 of Zwicky illustrates Client 1 and Client 2 (**red**) inside a local network with locally-assigned IP addresses (*i.e.*, 10.42.6.9 and 10.42.7.1). Figure 5-4 also shows an intermediary "Address Translation System" (ATS) (**green**) sitting between the clients and a remote server (**blue**) outside the local

network. Like the access point 106 in Baig, the Zwicky ATS (e.g., NAT) replaces the local IP addresses for both "Client 1" and "Client 2" with the same external (e.g., public) IP address (*i.e.*, 192.123.2.5), to allow them to communicate with a server outside the local network (e.g., a remote server). Ex. 1012, p. 35, FIG. 5-4. To differentiate between the packets sent by the client computers, which will have the same public IP address, the Zwicky ATS also assigns distinct TCP/IP port numbers to these computers—2028 for Client 1 and 2027 for Client 2, thus differentiating the two devices from one another. The port number thus allows multiple distinct devices to use a single IP address yet be uniquely identified by port number when communicating over the Internet. Ex. 1012, pp. 36-38, FIG. 5-4; *see* also Ex. 1006, [0004], [0011].



Ex. 1006, FIG. 1 (annotated).

345. Similarly, as I show above in Figure 1 of Satapati, users 101-103 (**red**) are located inside a local network with locally-assigned IP addresses (*i.e.*, 10.1.1.1 to 10.1.1.3). Ex. 1006, [0004]. Figure 1 also illustrates an intermediary network address translator (NAT) 106 (**green**) sitting between the users and remote servers 105 (**blue**). Like Baig's access point 106 (and Zwicky's ATS), Satapati's NAT 106 replaces the local IP addresses for users 101-103 with the same IP address (*i.e.*, 128.1.1.1), to allow them to communicate with the remote servers. Ex. 1006, [0004]. The Satapati NAT also assigns distinct port numbers to these user devices (e.g., 10,000 for User 101 and 20,000 for User 102), thus differentiating them. Ex. 1006, [0004]. The port number thus allows multiple distinct devices to use a single IP address yet be uniquely identified by port number when communicating over the Internet. Ex. 1006, [0004], [0011], FIG. 1.

346. Accordingly, the port number, as described in Zwicky and Satapati, thus allows multiple distinct devices to use a single IP address yet be uniquely identified by port number when communicating over the Internet. Ex. 1012, pp. 33-35; Ex. 1006, [0004]. Zwicky and Satapati thus also demonstrate that the combination of a common IP address and an assigned port number serves as a device identifier that can be used to differentiate between devices that are connected to the same access point and that share a common external (e.g., public) IP address.

347. For purposes of element [1B] of independent claim 1, therefore, the claimed "**device identifiers of two or more Internet-accessing electronic devices**" is disclosed in the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick by the combination of (i) the IP address of the common access point to which a mobile device (one of the "**two or more Internet-accessing electronic devices**") was connected, and (ii) the TCP/IP port number associated with (e.g., assigned to) the mobile device, as taught in Satapati and Zwicky. The combined common IP address of the modified Baig system's access point to which a device was connected and the port number associated with the device (as was a known part of NAT and taught by Satapati and Zwicky) thus provide a "**device identifier**" because, together, they uniquely identify a particular mobile device that seeks to connect with the content server in Baig. Ex. 1007, [0038]-[0039], [0043]-[0047], [0049]-[0052], [0056] FIG. 2; Ex. 1008, 5-8, FIG. 2; Ex. 1012, pp. 33-35; Ex. 1006, [0011].

348. The mapping of the IP address and port number to the claimed "**device identifier**" is consistent with the '015 Patent specification. The '015 Patent specification describes the device identifier in broad terms, stating that the identifier may include any "identifying code or data element" and may be permanently or temporarily assigned to a device. Ex. 1001, 15:32-37. The '015 Patent specifically identifies an "IP address" as one example of the claimed device identifier. Ex. 1001,

e.g., 15:42-47 ("The identifier can include the IP address the STB is using when in contact with the CAS [Central Ad Server], so the next time the CAS and the STB are in contact, the CAS could compare the IP address then used by the STB with the previous IP address used by the STB without looking in a database."). Thus, it appears that the specification and claims of the '015 Patent do not place any specific restrictions on the format of the device identifier. *Id.*

349. It is my opinion that a POSA would have found it obvious to implement port translation techniques (as taught by Satapati and Zwicky) as part of (or in addition to) the network address translation performed by Baig's access point 106 (which includes NAT router 108), thereby allowing multiple devices to use a single IP address and yet be uniquely identified by port number when communicating over the Internet. Using port numbers to uniquely identify multiple devices that share a common IP address ensures that network communications can reach intended destinations (e.g., the intended devices) while advantageously economizing the use of publicly available IP addresses. *See* Ex. 1012, p. 35.

350. In my opinion, a POSA would have found that implementing NAT and port translation techniques, as taught by Satapati and Zwicky, to Baig's system to be the simple combination of prior art elements according to known methods to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include Baig's access point 106 that uses a NAT router 108

to manage the exchange of data between networks. Ex. 1007, [0046], [0049]-[0051], FIGS. 1-2; Ex. 1008, 6-7, FIGS. 1-2. The known methods include programming or configuring Baig's access point 106 to implement assignation of port numbers as taught by Satapati and Zwicky. Ex. 1006, [0004]; Ex. 1012, p. 35, FIG. 5-4. The predictable results include a system in which Baig's content server 124 uniquely identifies and communicates with mobile devices 102_p sharing a common access point IP address based on respective port numbers associated with the mobile devices 102_p.

351. As I note above, the use of port translation techniques to uniquely identify different devices that share a common IP address is consistent with Baig, which already provides network address translations, enabling mobile devices 102_p to connect to the same access point 106 to communicate with Baig's remote server 124. Ex. 1007, [0043]-[0051]; Ex. 1008, 6-7. The routine prior use of port address translations alone would have provided a POSA with a motivation to employ such techniques with Baig. As I explained above, Baig already teaches that multiple devices 102_p may connect to the Internet via AP 106. In my opinion, a POSA would have also been motivated to incorporate port address translation functionality, as taught by Satapati and Zwicky, to route communications from Baig's server 124 to an appropriate or intended device 102. Ex. 1007, [0050]; Ex. 1008, 7. A POSA would have been further motivated to implement port translation techniques in Baig

because, by doing so, the resulting system would be able conserve public IP addresses by allowing multiple devices to share a common public IP address to communicate over the Internet while still being uniquely addressable. *See*, Ex. 1006, [0004], Ex. 1012, 38; *see* also, ¶¶85 and 344-345 of my Declaration above. Additionally, as I explain in more detail below, it is my opinion that a POSA would have been motivated to use port address translation and NAT to protect the privacy of devices 102_p and provide enhanced security within Baig's system—e.g., enforcing firewall control over outbound communications, restricting incoming network traffic, and/or concealing internal network configurations. See Ex. 1012, pp. 35-36.

352. It is my opinion that a POSA would have reasonably expected success in combining Baig with Satapati or Zwicky in arriving at element [1B]. Baig, Zwicky and Satapati are analogous references in the field of providing online access to information over the Internet and/or local networks, and Baig indicates that "variations and modifications" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex. 1007, [0131]; Ex. 1008, 23. Satapati and Zwicky teach a network communication system comparable to (and compatible with) Baig's system—*e.g.*, they each describe transmitting data packets from devices sharing a common IP address within a local network to a remote server located in an outside network, and further describe network address translation techniques.

353. It is my opinion that a POSA would have also appreciated that the well-known port translation techniques of Zwicky and Satapati would likely have been used to enable the system of Baig to function properly. Ex. 1007, [0050]; Ex. 1008, 7 ("The NAT router 108 at the access point 106 replaces the IP address of the source mobile device with the IP address of the access point in a well known manner."). As I discussed above, Baig's access point 106 uses the same IP address for all mobile devices 1012 connected to it when communicating over the Internet. *See*, e.g., Ex. 1007, FIG. 2 (step 3); Ex. 1008, FIG. 2. An additional level of translation would have been beneficial—and likely mandatory—to uniquely identify, differentiate and properly route traffic between individual mobile devices that share a same IP address when communicating over the Internet. This understanding is reinforced by Satapati, which explains that "NAT may use port address translation, where port numbers are used to further identify different devices with the same address." *See* Ex. 1006, [0002].

354. Additionally, in my opinion, a POSA would have had the skills and knowledge to implement port translation techniques, as taught by Zwicky and Satapati, in Baig's system with a reasonable expectation of success. As I note above, Baig contemplates "variations and modifications" being made to its system, and indicates that such "variations and modifications" are within the capabilities of those having ordinary skill in the art. Ex. 1007, [0131]; Ex. 1008, 23. Additionally, as

noted above, Baig already discloses the use of NAT, and the proposed combination simply entails adapting Baig to use well-known and industry-standard NAT techniques, which were well-known and widely deployed by April 2007. See Section VIII.B. In my opinion, a POSA would have implemented the proposed the combination of Baig and Satapati and the combination of Baig and Zwicky using conventional programming techniques, without undue experimentation.

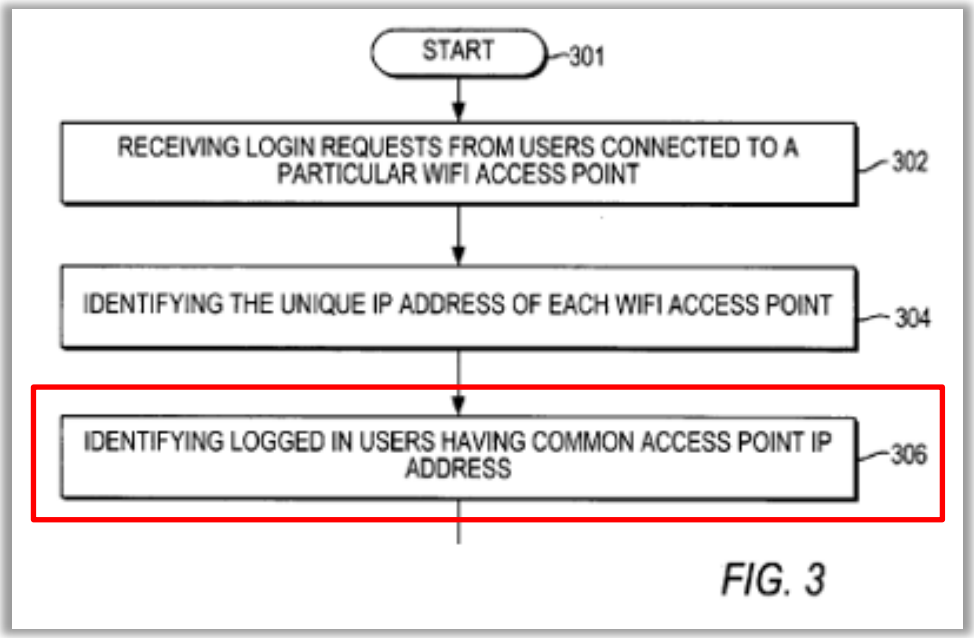
355. Further, port translation techniques for uniquely identifying devices sharing a common IP address would have been implemented in Baig in the same way as in Zwicky and Satapati. The port translation techniques discussed in Zwicky and Satapati were a well-known and industry-standard practice for performing network address translation (NAT), and described in RFC 2663, *IP Network Translator (NAT) Terminology and Considerations*, published in August 1999. Ex. 1040, 11-12, §4.1.2 (describing Network Address Port Translation). Further, Baig, Zwicky and Satapati would have been reasonably pertinent to a number of problems facing the inventors, including how to differentiate devices connected to a common local network using IP addresses and enable those devices to communicate with servers over the Internet. Moreover, Baig's repeated references to NAT techniques (performed by "NAT router 108" within access point 106) provide an express motivation to consult Zwicky or Satapati for further details regarding NAT technology. Ex. 1007, [0043]-[0051]; Ex. 1008, 6-7. It is my opinion that a POSA

would have understood Baig's references to "NAT" as referring to the NAT techniques further described in Zwicky and Satapati. Zwicky also provides several express motivations to use NAT port translation, including "economiz[ing] on address space" and "provid[ing] some security advantages." Ex. 1012, pp. 35-36. Although Zwicky does describe some potential disadvantages of NAT, none of the issues raised by Zwicky would have discouraged or taught away from implementing the above-discussed NAT and port translation techniques in Baig's system under the proposed combination. In my opinion, a POSA would have viewed these issues identified by Zwicky as trivial or "edge cases" that would not have outweighed the other substantial benefits of using NAT and port translation identified by Zwicky. Ex. 1012, pp. 36-37. Thus, in my opinion, a POSA would have reasonably expected success in applying NAT and port translation techniques, as taught by Zwicky and Satapati, to the similar system of Baig.

356. It is my opinion that a POSA would have also found that adapting Baig's system 100 to use NAT and port translation techniques, as discussed in Zwicky and Satapati, to be the simple use of a known technique to improve similar devices in the same way. *See* Section IV, *supra* (exemplary obvious rationale (C) above). The known techniques include assigning distinct port numbers to each device accessing the same access point to uniquely identify the different devices while allowing the devices to share a common public IP address. Ex. 1006, [0004];

Ex. 1012, pp. 34-35, FIG. 5-4. The similar devices include (i) Baig's mobile devices 102_p, access point 106, and content servers 124; (ii) Zwicky's Client 1 and Client 2, Address Translation System (ATS), and Server; and (iii) Satapati's users 101-103, network address translator 106, and remote servers 105. Ex. 1007, [0042]-[0046], FIGs. 1-2; Ex. 1008, 5-7, FIGs. 1-2; Ex. 1012, p. 35, FIG. 5-4; Ex. 1006, FIG. 1. The improvements would have been the ability for Baig's system to assign unique port numbers to the mobile devices 102_p and uniquely identify the mobile devices 102_p accessing the access point 106 and sharing a common access point IP address.

357. Baig next discloses the claimed "**association between device identifiers of two or more Internet-accessing electronic devices**." This is because, after receiving a login request from a mobile device connected to an access point, as discussed above, the server determines, based on network communications involving the common IP address and port number of respective devices, if multiple mobile devices are connected to that same access point and forms a vicinity-based group. This is shown in Step 306 (**red**) of Baig's Figure 3:

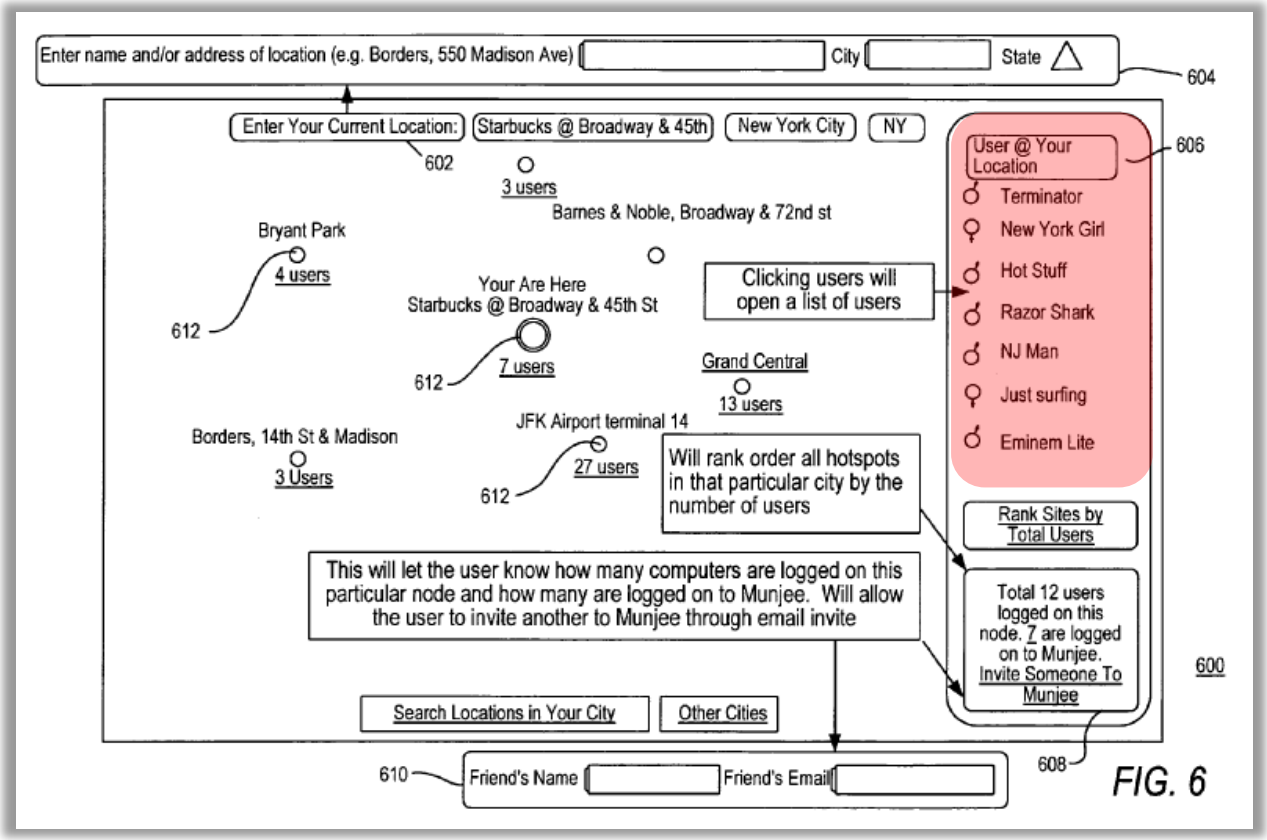


Ex. 1007, FIG. 3 (cropped figure; annotated); Ex. 1008, FIG. 3

358. Baig explains that, "[a]t step 306, the server identifies all the users who have logged in from a common access point (AP) hotspot as having the same access point IP address." Ex. 1007, [0056], FIG. 3 (step 306) Abstract; Ex. 1008, 8, FIG. 3 (step 306). The server 224 in Baig, therefore, determines "**an association between device identifiers of two or more Internet-accessing electronic devices**" when it identifies at least two mobile devices sharing the same access point IP address that are accessing the VCSP and the various services provided via the VCSP website. Ex. 1007, [0038], [0040], [0052], [0056], FIG. 3 (Step 306); Ex. 1008, 5, 7-8; *see* also ¶360 of my Declaration below.

359. In my opinion, it would also have been obvious to a POSA that the content server 124/224 in Baig's modified systems (e.g., Baig-Satapati and Baig-

Zwicky) "**creat[es] an electronic database**" containing a multitude of the claimed associations and that the content "server 224 includes … memory" that is needed to comprise a database and "the VCSP is able to build a database." Ex. 1007, [0039], [0052]; Ex. 1008, 5, 7-8. This is evidenced by the fact that Baig maintains a list of users whose devices are connected using the same access point IP address and a database defined as "any aggregation of data." Ex. 1048, 5 (definition of "database"); Ex. 1049, 5. For example, when the content server determines that the first device has connected to the VCSP using the same access point IP address as an already-connected second device, the server places both devices into a "vicinity-based" group of users. Ex. 1007, [0038], [0052]; Ex. 1008, 5, 7-8. This is shown below in Figure 6 (annotated) depicting webpage 600 presented on a mobile device that shows, among other things, a list 606 of users (**red**) connected to the same access point. Ex. 1007, [0075]-[0076], FIG.6; Ex. 1008, 12-13, FIG. 6.



Ex. 1007, FIG. 6 (annotated); Ex. 1008, FIG. 6.

As I discuss herein, Baig's VCSP offers a combination of various services via its website. *See* e.g., Ex. 1007, ¶¶ [0002], [0052]-[0054], [0067]-[0093], [0112]-[0113], FIGs. 6-13. In my opinion, a POSA would have understood, in the context of Baig's disclosures, that the features discussed in connection with different VCSP services are attributed and related to operations of the same VCSP system, and involve the same website to be presented to users at a hotspot. While Baig refers to certain features as "one embodiment" or "another embodiment" (see e.g., Ex. 1007, ¶¶ [0007]-[0012], [0076]-[0080], [0090]-0093], [0102]-[0113]), a POSA would have understood that Baig is describing various examples of services available

through the same VCSP website. That is, such disclosed features of Baig may be attributed to aspects provided on the same VCSP website. In fact, the webpages of Figures 7-13 all include the same tabs (e.g., the "Chat" tab 706, the "Buy/Sell or Barter" tab 708, the "Share" tab 710, the "Blog Spot" tab 712, the "Location Forum" tab 714, the "Lost & Found" tab 716) identifying services that Baig describes as "embodiments." In my opinion, a POSA would have understood that Baig teaches all VCSP services being accessible from Baig's VCSP website by navigating through these tabs. See Ex. 1007, ¶¶ [0078]-[0093], Figs. 7-13. As such, a POSA would have understood that these various services would all have been available via the webpage tabs and are not mutually exclusive. To the extent that it is argued that these various services in Baig constitute separate and distinct embodiments, a POSA would have found it obvious for each of the services described in Baig to be available in combination to a user of a hotspot or website because it would have been the simple combination of prior elements according to known methods to yield predictable results. Again, Baig plainly teaches how those services and a community website (prior art elements) could be combined and made available through one configuration of the VCSP system and website as Baig already explains (e.g., the website of Figures 7-13). Ex. 1007, ¶¶ [0007]-[0012], [0078]-[0093], Figs. 7-13. In view of the fact that such features are disclosed in adjacent tabs for the same website in Baig, in my opinion, a POSA would have recognized that a leap of inventiveness

was not required to combine them with each other. Programming a website to provide different tabs offering different services would have been well within the skillset of a POSA and thus, the results would have been predictable. A POSA would have been motivated to combine these services because doing so would benefit the user by providing them with a large array of complimentary services when accessing the VCSP and its corresponding webpages, thereby increasing user engagement via the VCSP website. The webpage shown in Figure 6 (above) was generated and transmitted to Baig's mobile device 102 by the content server 224. Ex. 1007, [0074]; Ex. 1008, 12. Webpage 600 shown in Figure 6 includes a list of users 606 whose respective devices were connected to the Internet using the same access point (AP) hotspot. Ex. 1007, [0038], [0052], [0076] ("The web page 600 also displays a list 606 of other users at the present hotspot 110"); Ex. 1008, 5, 7-8, 13. As I discussed above, this list indicates that the mobile devices associated with the users identified in the list 606 were connected to a same AP hotspot using the common IP address of the access point (e.g., access point 106) used to connect to the Internet.

360. The VCSP services provided by Baig's system include instant messaging. Ex. 1007, [0124] ("The chat-room service includes instant messaging, checking profiles, file transfers, among other features."), FIG. 7; Ex. 1008, 22, FIG. 7.

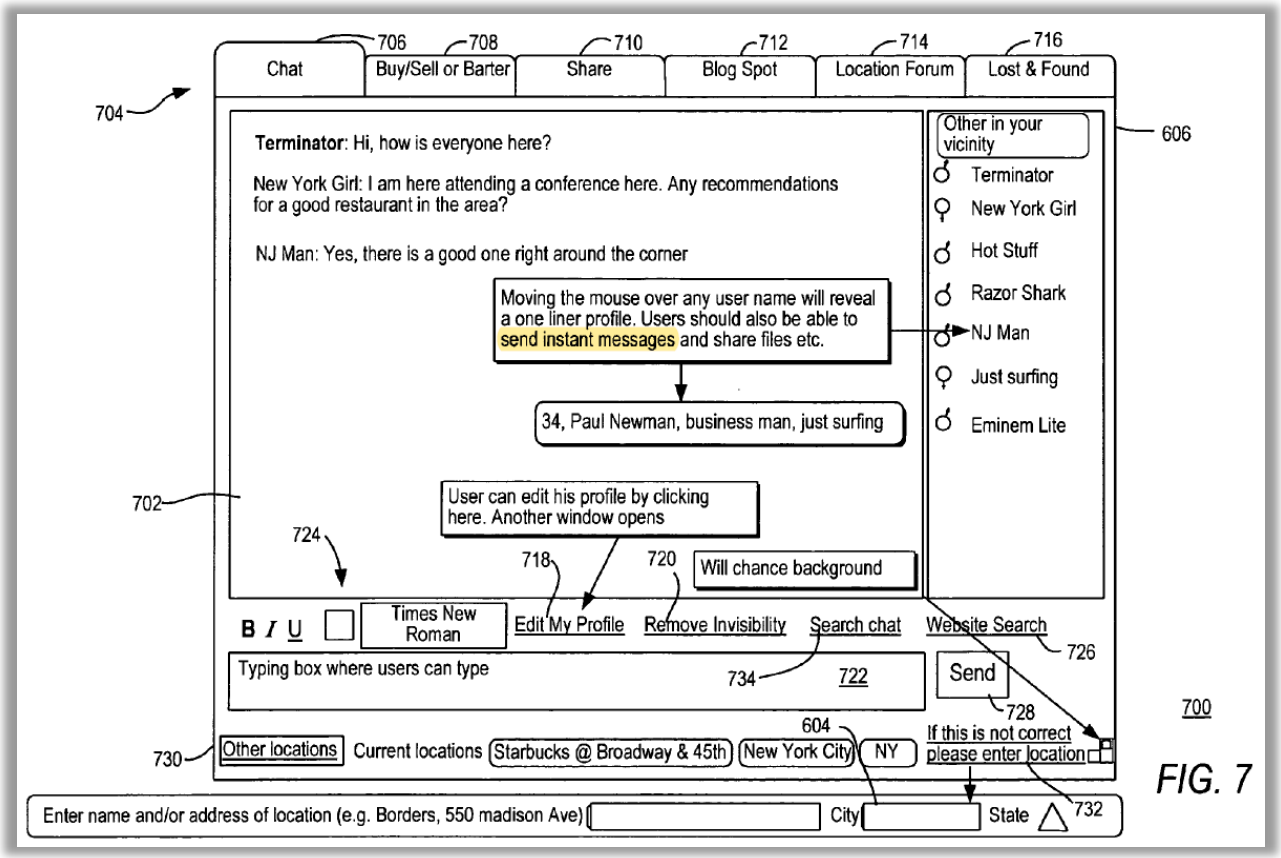


FIG. 7

Ex. 1007, FIG. 7 (annotated); *see also* Ex. 1008, FIG. 7.

It is my opinion that a POSA would have understood that, in order to provide instant messaging services, Baig's system would have needed a mechanism to deliver an instant message received at content server 224 from one of the mobile devices 102_p connected to access point 106 to another one of the mobile devices 102_p connected to the access point. In other words, a POSA would have understood that Baig's content server 224 would have needed a mechanism to properly address an instant message to its intended recipient given that the content server would have routed the instant message across the Internet 122 to be delivered via access point 106. It is

my opinion that a POSA, therefore, would have recognized that, in order to successfully exchange instant messages between senders and recipients, Baig's content server 224 would have needed to store a list of the respective device identifiers (e.g., a combination of IP address and port number) for each connected device, further associating the respective device identifiers. which the content server would have used to address the communications carrying the instant messages back to access point 106 for delivery to the devices of the intended recipients. Baig's system would have needed a same or similar mechanism in order to provide other VCSP services including, among others, bartering and sale services, online-gaming services, lost and found services, and file sharing services. Ex. 1007, [0008]-[0011], [0054], [0059], [0062], [0079]-[0093], [0107]-[0110], [0124]-[0128], FIGs. 7-12; Ex. 1008, 2, 8-10, 12-17, 19-20, 22-23.

361. It is my opinion that a POSA, therefore, would have understood that Baig's list of users would have included respective device identifiers (e.g., IP address and port number) for the users' respective devices that are connected to the same access point having a common IP address. *See*, e.g., Ex. 1007, [0038]; Ex. 1008, 5. Alternatively, a POSA would have understood that Baig's content server 224 maintains a list of device identifiers that corresponds to the users who have logged on to Baig's VCSP website via the same access point. That POSA would have further understood that the device identifiers, which include the common IP

address and unique port number for each respective device, are stored by Baig's system. In particular, the stored list of device identifiers (whether stored with the list of users or in a separate list) would have been used to associate the devices connected to the access point (AP) hotspot using the common access point IP address so as to establish the "vicinity-based" group of users and also used to distinguish between the devices that use the common access point IP address in order to effectuate the routing of information to/from each of the devices connected to a given access point (AP) hotspot. Ex. 1007, [0038], [0052]; Ex. 1008, 5, 7-8.

362. This understanding is further evidenced by Zwicky's and Satapati's teachings. For example, Zwicky teaches using a "fixed mapping from internal addresses to externally visible addresses" and "port mapping so that the multiple internal machines use the same external address." Ex. 1012, p. 35. Similarly, Satapati teaches to use stored lookup tables to "translate the packet source and destination address and ports." Ex. 1006, [0006]. In my opinion, a POSA would have understood that Baig's content server 224, in a similar fashion, would have included a mapping between the intended recipient of an instant message (e.g., identified by username) and the mobile device the instant should be delivered to (e.g., identified using a device identifier such as a combination IP address and assigned port number as I describe above).

363. Baig's content server generates and transmits, to the mobile device, webpage 600 (illustrated in Figure 6 for example), which includes list 606 that identifies several users whose devices were connected using the same access point—and therefore share the common IP address of their access point:

> As described above, once a user registers on the web page illustrated in FIG. 5, and then logs into the VCSP website on the home page as illustrated in FIG. 4, the server 224 presents the web page illustrated in FIG. 6 to the user on his/her mobile device 102.
>
> ...
>
> The web page 600 also **displays a list 606 of other users at the present hotspot 110**. In one embodiment, the list includes the user names associated with users that have logged into the VCSP website. In another embodiment, the list 606 includes the total number of mobile devices having wireless connectivity at the present hotspot 110. Optionally, a link 608 is provided to invite other others at the hotspot 110 to join the VCSP website. If link 608 is selected, then a pop-up window 610 will be displayed to allow the user to invite another user to the VCSP website by entering the invitee's name or email address.

Ex. 1007, [0074]-[0076]; Ex. 1008, 12-13.

364. Baig's system includes multiple, geographically-distributed hotspots 110 that are each associated with a different VCSP group. Ex. 1007, [0058]-[0062], [0065]-[0066], [0077]; Ex. 1008, 9-13. Thus, Baig's server 124 would have maintained multiple lists for multiple VCSP groups associated with different AP hotspots. Ex. 1007, [0038], [0055]-[0060], [0069], [0076]; Ex. 1008, 5, 8-9, 12-13. The list of users with the corresponding device identifiers of their mobile devices generated and stored by the content server in Baig demonstrates that, for each VCSP group, Baig's server 124 associates the users' devices that are connected via a common IP address of a particular AP 106 and are assigned respective port numbers. Ex. 1007, [0074]-[0076]; Ex. 1008, 12-13. Accordingly, Baig's server 124 stores, for each VCSP group, "**an association between device identifiers of two or more Internet-accessing electronic devices**." It is my opinion that it would have been obvious that Baig's content server 124 would have stored such device identifiers in "**an electronic database**," in order to keep track of the users that belong to a vicinity-based user group, to produce a list of current users in the VCSP group that are connected to a particular hotspot (e.g., list 606 in Figure 6), and to ensure that VCSP services are appropriately provided and/or addressed to user devices 102, such as ensuring that instant messages are properly exchanged between the users of a VCSP group.

365. In my opinion, a POSA would have reasonably expected success in implementing an electronic database in Baig's modified systems to store device identifiers. In particular, Baig's system already creates and uses a database to associate the unique public IP address of each access point (AP) hotspot with a corresponding physical address and each wireless device at the physical address is connected to the particular hotspot:

> For example, end-users connected to a hotspot provided by a coffee shop (e.g., STARBUCKS), illustratively located at 100 Madison Avenue, NY, N.Y., **are asked to provide the street address of the STARBUCKS where the WiFi hotspot is located**. End users are also asked other optional data such as age and gender etc. of each user. As the public IP addresses of each hotspot are unique, **the VCSP is able to build a database that associates the unique public IP addresses of each hotspot with the street address of a physical location** (e.g. "280 Park Ave, NY, N.Y." or "Starbucks at 48th and Park, NY, N.Y.").

Ex. 1007, [0039]; Ex. 1008, 5.

> The network 200 of FIG. 2 further includes a vicinity-based community service provider (VCSP) 202 having at least one content server 224 coupled to the Internet 122 in a conventional manner. The server 224 includes at least one processor, memory and support circuitry for running

programs that, for example, identify users that are originating from a particular access point 106 and then groups those users having a common IP address to the same hotspot 110. Accordingly, since each hotspot 110 has a unique static IP address, and the range of wireless communications for any given hotspot is limited, any users accessing the hotspot are deemed to be in vicinity of each other. For example, any users of mobile devices accessing a hotspot 110 illustratively provided by a public library are deemed to be, and are in fact, in vicinity to each other.

Ex. 1007, [0052]; Ex. 1008, 7-8.

Additionally, **all WiFi users who are logged on to the server 224 of the VCSP 202 are requested to input the local street address or the venue name of the hotspot** from where they are accessing the public network (e.g. "650 5th Avenue, NY, N.Y." or "Starbucks at 48th and Park, NY"). In this manner, the VCSP 202 can tag (i.e., correlate) the IP address of each WiFi hotspot with a physical address. Since the IP addresses of WiFi hotspots are mostly static IP addresses, the VCSP 202 can maintain a database of WiFi access point IP addresses with their corresponding physical addresses (i.e. the street address, city, state & zip code). Therefore, the VCSP 202 can maintain a database of IP addresses of public WiFi hotspots with corresponding geographical addresses. For example, if a WiFi access point IP address is

> 254.243.56.33, a user that enters the address for the hotspot as 270 Park Avenue, NY, such address can be added to a designated database field associated with this IP address. Therefore, the next time a user logs in to the website from that specific IP address, the VCSP 202 can correlate this specific IP address with the address.

Ex. 1007, [0064]; Ex. 1008, 10-11.

366. Further, I also note that Satapati's discloses storing a listing of NAT and port translation entries in databases:

> In a preferred embodiment, the router 306 may have a NAT NAT-PT database 330, which is able to hold NAT entries and NAT-PT entries. The NAT NAT-PT database may comprise smaller databases or tables, such as a NAT table for the NAT entries that lists all network address translations for current connections from private IPv4 devices to public IPv4 devices and a NAT-PT table for NAT-PT entries that lists all network address translation-protocol translations for current connections from IPv6 devices to IPv4 devices. An example of a NAT table that lists all network address translations (NAT entries) for current connections from private IPv4 devices to public IPv4 devices is shown in Table 3.
>
> Table 3 shows an existing connection for the first device 308, which is assigned the single public IPv4 address 128.1.1.1, with a port designation of 10,000.

Ex. 1006, [0034]-[0037]; *see also* [0048], [0067].

TABLE 3

	Private				Public			
Protocol	SA	SP	DA	DP	SA	SP	DA	DP
TCP	10.1.1.1	10,000	130.1.1.20	80	128.1.1.1	10,000	130.1.1.20	80

Ex. 1006, Table 3, [0034].

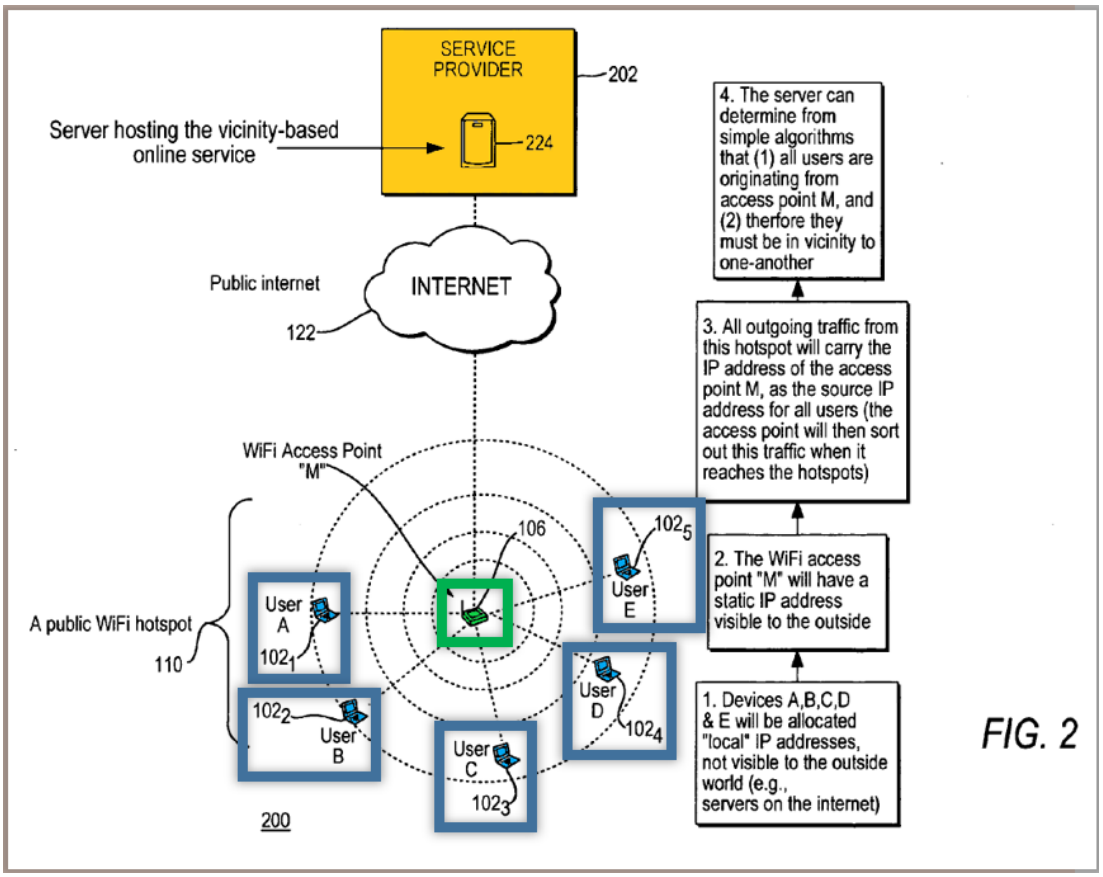
367. The proposed combinations thus disclose and render obvious element [1B].

iii. Element [1C]: "(i) each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising (A) a device identifier of one of the Internet-accessing devices, (B) an IP address through which the one of the devices accessed the Internet, and (C) a timestamp identifying when the one of the devices accessed the Internet;"

368. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1C].

369. Element [1C] requires that data used for determining the previously discussed "**association**" between device identifiers of electronic devices include (1) a device identifier, (2) an IP address for Internet access, and (3) a timestamp for the Internet access. I discuss the use of a common IP address and a device identifier above for element [1B].

370. As I show below with reference to Figure 2 of Baig, WiFi hotspot 110 provided by access point 106 (**green**) enables Baig's mobile devices 102_p (**blue**) to communicate with content server 224 (**orange**) over the Internet 122 via the access point. Ex. 1007, [0042]-[0052], FIGs. 1-2; Ex. 1008, 5-8, FIGs. 1-2.



Ex. 1007, FIG. 2 (annotated).

371. As I explain above for element [1B], Baig's system identifies at least two mobile devices 102 sharing a common access point IP address to provide VCSP services, and in the proposed combination of Baig, Satapati, and Damick and the proposed combination of Baig, Zwicky, and Damick, the system (e.g., server 124) would have used the common access point IP address and the assigned port numbers

("**device identifier**") to identify particular devices (e.g., devices 102), and to associate those devices based on their accessing Baig's server via a common access point. That is, as I show above, in the proposed combination of Baig, Satapati, and Damick and the proposed combination of Baig, Zwicky, and Damick, the "**device identifier**" of one of the Internet-accessing devices is the combination of: **(i)** the common IP address of the access point, and **(ii)** a TCP/IP port number assigned to the mobile device ("**one of the Internet-accessing devices**"):

> At step 304, the at least one server 224 identifies the unique IP address of each WiFi access point. At step 306, the **server 224 identifies all the users who have logged in from a common hot spot as having the same access point IP address**.

Ex. 1007, [0056] (emphasis added), FIG. 3 (Step 306); Ex. 1008, 8, FIG. 3 (Step 306).

372. More specifically, referring to Baig's Figure 2 above, Baig's access point 106 employs network address translation (NAT) to replace the local IP addresses assigned to devices 102_1-102_5 with the IP address of the access point, and forwards data from one or more of devices 102_1-102_5 to content server 224. Ex. 1007, [0043]-[0046], FIG. 2; Ex. 1008, 6-7. It is my opinion that a POSA would have understood that Baig's server 224 would have grouped all users that logged into Baig's VCSP website into the same VCSP group based on the network traffic

from that common access point (AP) hotspot having the same access point IP address as the source of the traffic. Ex. 1007, [0038]-[0040], [0056]; Ex. 1008, 5, 8. In other words, that POSA would have recognized that Baig's server would have looked at the source IP address in the network traffic received from an access point when a user logs into Baig's VCSP website in order to determine which access point a user connected to for Internet access. Ex. 1007, [0016], [0068], [0074], FIG. 4; Ex. 1008, 3, 11, 12. In my opinion, a POSA would have understood that, by looking at the source IP of the network traffic sent during a login request, Baig's server would have been able to associate the common IP address of the access point with the user device logging into Baig's VCSP website. It is my opinion that a POSA would have further understood that Baig's server, in turn, would have been able to detect other user devices that login to Baig's VCSP website and group those user devices with others (e.g., other user devices) that have logged in the vicinity-based user group for that access point. Ex. 1007, [0037], [0038] ("VCSP identifies a group of users at a wireless hotspot based upon their common public IP address and interconnects them, thereby creating a vicinity-based user group"), [0052], [0059] ("when a user at a hotspot logs into the website of the VCSP 202, the user automatically becomes part of the vicinity-based user group"), [0063]; Ex. 1008, 4-5, 7-9. A POSA also would have recognized, for the reasons I explain above for element [1B], that the source IP address of the network traffic from the common access point would have included

the port number assigned to the mobile device at which the network traffic originated and, therefore, the association is determined using the IP address and port number of respective devices.

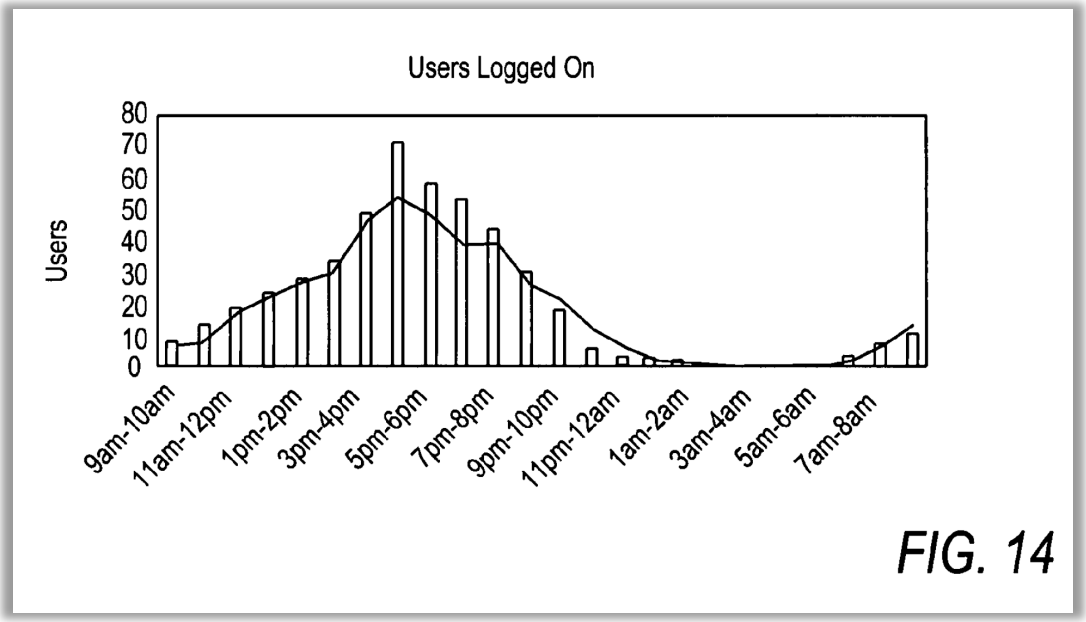
373. It is my opinion that a POSA would have understood, therefore, that Baig's server would have used the common IP address of the access point (e.g., access point 106) to determine that mobile devices logged-in to Baig's VCSP website were connected to the same access point, and would have used the IP address and port number ("**device identifier**")—that the server stores for each mobile device—to associate the devices as being in the same vicinity group based on their connection to the common access point. For instance, as I explained above for element [1B], a POSA would have understood that Baig's server would have stored such device identifiers in Baig's server, for example, to keep track of the users that belong to a VCSP group and/or to appropriately provide VCSP services to users (e.g., to address and send instant messages exchanged between the users of a VCSP group). Thus, when Baig's server adds a new user to a VCSP group, by doing so, Baig's server is determining/creating an association between (i) the device identifier (IP address and port number) of a device associated with the new user and (ii) the device identifiers of the respective devices of the other users that comprise the VCSP group and who have previously had their respective device identifiers stored by Baig's server when connecting to the access point (AP) hotspot. Additionally, as

further evidenced by Satapati and Zwicky and as I explain above for element [1B], well-known port translation techniques are used to facilitate the management of the traffic traversing the access point (e.g., instant messages between Baig's mobile devices) and ensure the network traffic reaches the intended destinations. Ex. 1006, [0002]; Ex. 1012, pp. 33-36.

374. Accordingly, Baig's system would have determined each association, of the multiple associations, using stored data relating to Internet access by devices 102. The stored data used to determine each of the associations includes: the common IP address of the access point ("**each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising…an IP address through which the one of the devices accessed the Internet**") and a TCP/IP port number assigned to one of mobile devices 102 (part of the "**device identifier**"). Ex. 1007, [0043]-[0046]; Ex. 1008, 6-7. Further, the use of the combined common IP address and port number discloses the claimed "**device identifier**," and comports with the disclosure of the '015 Patent, which teaches that the device identifier may include any temporary or permanent "identifying code or data element," including an IP address. Ex. 1001, 15:32-47.

375. Element [1C] also requires that the associations of the device identifiers for Baig's mobile devices be determined using a timestamp identifying when a

device accessed the Internet. As shown in Figure 14 (below) of Baig, to better assist in providing services to users, Baig's system collects time information identifying when devices 102_p access the Internet, including monitoring the quantity of users connected to its AP at hourly increments. Ex. 1007, [0114]-[0115], FIGs. 14-19; Ex. 1008, 20-21, FIGs. 14-19.



Ex. 1007, FIG. 14.

376. Baig also explains that statistical information is determined to improve the VCSP services provided to the users, including using day, time, gender, and/or age to improve targeted advertisements to the user:

> FIGS. 14-19 illustrate **statistical information tracked by the VCSP to better assist in providing services to the users.** Referring to FIG. 14, the chart illustrates that the **average number of users logged into the VCSP website**

> **at particular times** (hourly increments) of the day. The number of users is illustratively at the higher levels between 3:00 pm to 10:00 pm, with the peak number of users occurring approximately between 5:00 and 6:00 pm. **The number of users logging in during the hourly time slots can be monitored** on a **daily**, weekly, monthly or yearly basis, such that an average value is shown in the graph.
>
> Referring now to FIG. 15, the illustrative graph depicts the number of users sorted by gender accessing the website during each hourly timeslot. **Gender information is useful for advertisers who wish to target advertisements directed to either male or female genders**.
>
> Referring now to FIG. 17, the illustrative graph depicts the **number of users sorted by age** groups. The distribution by age groups can be provided for a single hotspot or as an aggregate of numerous hotspots in a particular region.

Ex. 1007, [0114]-[0115], [0117]; Ex. 1008, 20-21 (emphasis added).

377. Additionally, Baig's system monitors the time spent by users in each of the VCSP's services, and improves advertising services using time information and/or user demographics, including demographic profile information:

> Referring now to FIG. 19, the illustrative graph depicts the **time spent by the average user in each of the VCSP's**

> **services**. For example, approximately 50% of the average user's time is spent in the chat room, approximately 10% of the average user's time is spent in the buy/sell & barter service, and so forth.
>
> The statistical information regarding **user demographics and times of accessing the website can be important to the VCSP, the hotspot hosts, and advertisers who want to provide services and/or advertisements to particular users**. For example, the VCSP can allocate additional bandwidth to handle the increased traffic loads during certain times of the day, and advertisers, such as the host of the hotspot or other advertisers, can **post their advertisements based on the demographic profile information to attract more viewers of the advertisements**.

Ex. 1007, [0119]-[0120]; Ex. 1008, 21 (emphasis added).

378. Baig's system, therefore, obtains time information indicating when mobile devices 102_p access the VCSP website via the Internet, as well as the duration of time spent accessing various services provided by the VCSP. Ex. 1007, [0097], [0119]-[0120], FIGs. 14, 16, 18-19; Ex. 1008, 18, 21, FIGs. 14, 16, 18-19. Although the '015 Patent only describes collecting "date" and "time" information, a POSA would find it obvious to identify/store timing information at more granular of a level than on an hourly basis. Ex. 1001, 18:56-19:12. For example, a POSA exercising

ordinary creativity would have been able to extrapolate Baig's disclosures of monitoring the users logged in "on a daily, weekly, monthly, or yearly basis" to shorter timeframes such as on a minute or second basis as compared to the hourly increments shown above in Figure 14. Ex. 1007, [0114]; Ex. 1008, 20-21.

379. To the extent the combination of Baig and Satapati and/or the combination of Baig and Zwicky do not expressly disclose the claimed "**timestamp identifying when the one of the devices accessed the Internet**," or the determining an association using the claimed "timestamp," the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick do.

380. As I explain below, Damick teaches logging or tracking timing information (e.g., date and time) corresponding to when a user's device accesses online content and also teaches controlling the device's access to the Internet for specified periods of time. Ex. 1017, [0062]-[0063], [0069], [0072]-[0073]. In the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick, associations between device identifiers of electronic devices would have been determined based on collected timestamp information that is used to control whether a user may access the VCSP website via the Internet, the duration of time that a user may access the VCSP website via the Internet, as well as the time of day a user may access the VCSP website via the Internet.

381. Damick discloses a process for providing "network access control and logging." Ex. 1017, [0002], [0075]. In Damick, a network interface device 110 (e.g., router) receives instructions from a host computer 114 to grant or deny an access request sent from a client 104 based on access control. Damick provides that the network access control rules determine when and/or how long Internet access is granted to a user of the client—e.g., permitting Internet access for a specific amount of time each day, permitting Internet access during a specific time window, etc. Ex. 1017, [0039]-[0043], [0060]-[0064], [0076]-[0084], FIGs. 3, 7-8. For example, Damick discloses that the access control rules include:

> (i) an option 555 to block all Internet access, which never allows an access request, (ii) an option 560 to **allow Internet access by time of day** which may grant an access request during predetermined times of specified days, (iii) an option 570 to **allow Internet access on particular days** only (Saturday and Sunday are shown in FIG. 5B), (iv) an option 575 to **allow Internet access for a specified amount of time each day** (1 hour is shown in FIG. 5B), (v) an option 580 to allow homework time, which may grant access requests from 4 pm-8 pm to allow use of the Internet for homework, or may block access requests from 4 pm-8 pm so that a user will not be distracted from homework, (vi) an option 585 to allow unlimited access every day, and (vii) an option 590 to allow custom settings, which may **grant access requests according to**

> **a combination of the above access control options** and/or access control options other than those previously mentioned.

Ex. 1017, [0062] (emphasis added).

382. Damick also discloses access control rules directed to content requests, such as limiting access to mature content. For example, Damick's access control rules include "block[ing] objectionable content for all users." Ex. 1017, [0087]. Damick also discloses blocking content being on a per device basis. Ex. 1017, [0058] ("content not suitable for a young teen will be blocked for all users on Kid's PC 538"). Damick also discloses that the access control rules may be applied to unrecognized devices that use the router to access the Internet. Ex. 1017, [0087].

383. Damick's network interface device 110 provides a log of requests from a client to the host. As shown below in Figure 6B, the log of requests includes information indicating the particular URL (e.g., URL 640) visited by the client as well as a time (e.g., time 635) of day at which the client accessed the particular URL:

> Referring to FIG. 6b, a portion 620 of the log report of access requests is illustrated that **shows sites visited** by Kid's PC 538. The portion 620 is displayed in response to an user selecting option 612 to view the sites visited by Kid's PC 538. The portion 620 includes a client log 625. **The client log 625 includes a number of visits**, such as, for example, an entry 630 showing one visit to

www.aolkids.com at 9:12 pm. Each entry (e.g., entry 630) includes a **frequency 635 showing the number of times a client 104 has accessed a particular URL**, **a time 635 showing the time of day at which the client 104 accessed the particular URL**, and a location 640 showing a URL for the web address of the network location accessed by the client 104.

Ex. 1017, [0069] (emphasis added), FIG. 6B. *See also id.*, [0062]-[0063], [0072]-[0073], [0085]-[0087].

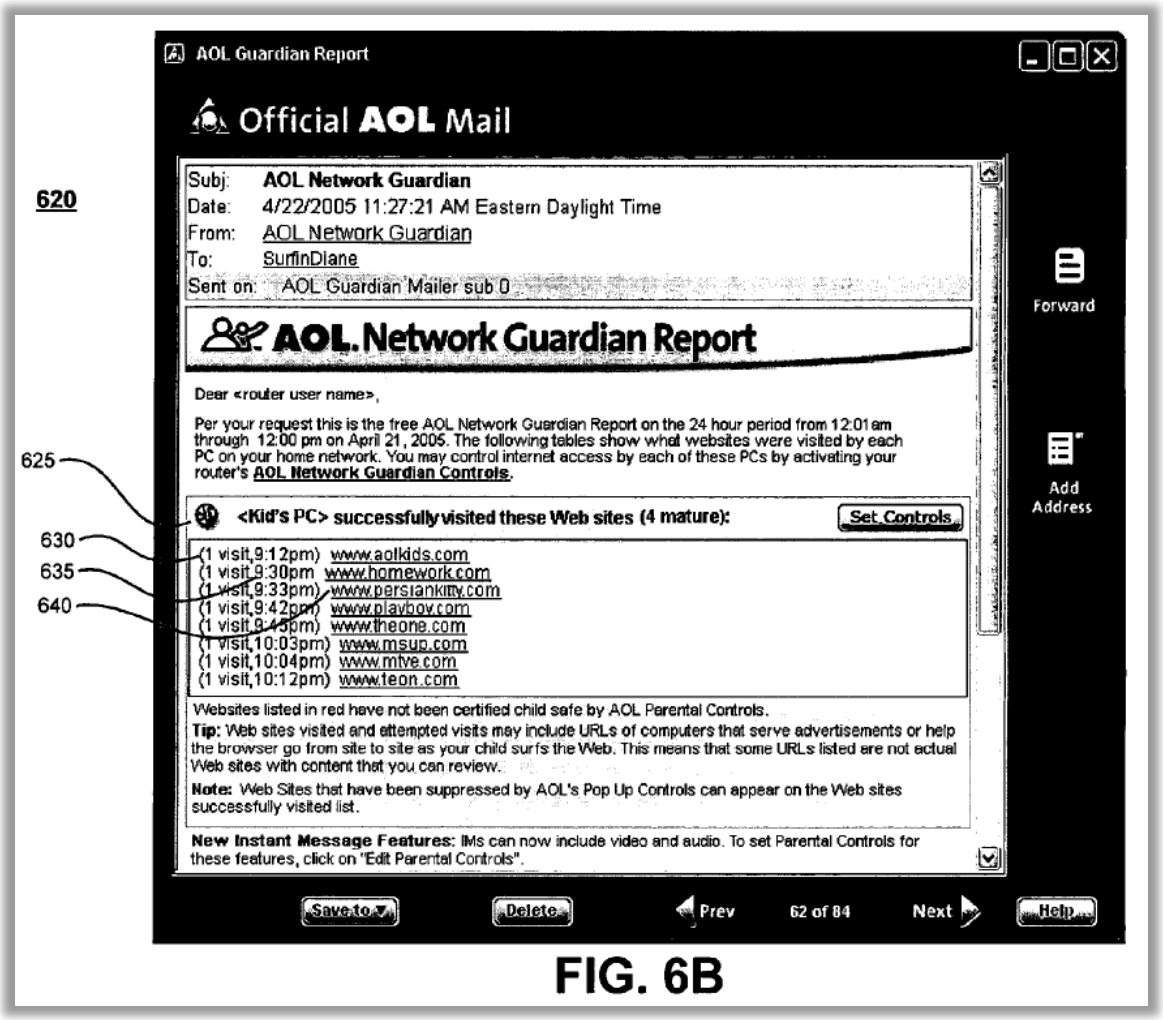


FIG. 6B

Ex. 1017, FIG. 6B.

384. Damick's host computer uses obtained logs of client requests to generate a log report of access requests for multiple clients, and stores the information collected in the log of client requests, as is evidenced by the list shown in Figure 6B. Ex. 1017, [0069]-[0074].

385. It is my opinion that a POSA would have found it obvious to adapt the Baig-Satapati and Baig-Zwicky systems to collect and/or store data indicating Internet access times for a device and to implement network access control rules, as taught by Damick. In particular, it is my opinion that a POSA would have found that incorporating network access control rules and techniques for collecting and storing the Internet access times of electronic devices, as taught by Damick, into the Baig-Satapati and Baig-Zwicky systems to be the simple use of known techniques to improve similar devices in the same way. *See* Section IV, *supra* (exemplary obvious rationale (C) above). The known techniques include Damick's techniques for tracking and storing timing information associated with a client device accessing the Internet as well as the particular content (e.g., webpage) accessed by the client, and implementing network access control rules that govern when and/or how long Internet access is granted to a user of the client device. Ex. 1017, [0039]-[0043], [0060]-[0064], [0069], [0072]-[0087], FIGs. 3, 6B, 7-8. The similar system includes Baig's system that provides Internet access to mobile devices via wireless access

points, including access to services provided by a VCSP website. Ex. 1007, [0006]-[0012], [0038], [0040], [0053]-[0059], [0079], [0085]-[0095], [0107]-[0110], [0114]-[0120], [0124]-[0128], FIGS. 1-2, 6-15, 19, Abstract; Ex. 1008, FIGS. 1-2, 6-15, 19, Abstract. The improvements include: (i) introducing into Baig's system the ability to track at a granular level the date and time that a device accesses the network (including the VCSP website) and the particular content accessed by the device, and (ii) introducing into Baig's system the ability to control a device's access to the Internet, including controlling when and/or how long Internet access is granted to the device and the types of content made accessible to the device, as taught by Damick. Ex. 1017, [0039]-[0043], [0060]-[0064], [0069], [0072]-[0087], FIGs. 3, 6B, 7-8.

386. It is my opinion that a POSA would have had the skills, knowledge, and motivation to incorporate Damick's teachings into the Baig-Satapati and Baig-Zwicky systems. First, Baig contemplates "variations and modifications" being made to its system, and indicates that such "variations and modifications" are within the capabilities of those having ordinary skill in the art. Ex. 1007, [0131]; Ex. 1008, 23. Second, as I explain above, Baig already teaches collecting and using timing information indicating the time when a mobile device 102 is connected to the VCSP website via the Internet. Ex. 1007, [0114]-[0119], FIGs. 14-19; Ex. 1008, 20-21, FIGs. 14-19. Thus, any such changes would be primarily limited to software

modifications, which would have been well within the skill set of a POSA. Third, Baig and Damick are both directed to systems that use device identifiers (e.g., IP address) to monitor and log network communications as well as the timing of such communications, including content accessed from remote servers by devices within a local network. Ex. 1007, [0043]-[0046]; Ex. 1008, 6-7; Ex. 1017, [0002], [0022]-[0024], [0030], [0039], [0076]-[0077], FIG. 1.

387. Baig and Damick are both directed to systems that use device identifiers (e.g., IP address) to monitor and log network communications. For example, Baig's system identifies a group of users at a wireless hotspot based upon their common IP address, which is provided to Baig's server when a user's device attempts to access the VCSP. Baig's system (e.g., access point 106) implements NAT to ensure the proper addressing of information (e.g., data packets) between the user's device and Baig's server over network (e.g., Internet 122). *See*, Ex. 1007, [0043]-[0052], FIGS. 1-2; Ex. 1008, 6-8, FIGS. 1-2. Similarly, in Damick, when a client device (e.g., client 104) access the network, a request is generated containing an identifier of the client, such as a MAC or IP address, and sent to network interface device 110 and host 114 to access network rules for the client that govern the client's access to the network. Ex. 1017, [0002], [0021]-[0024], [0030], [0039], [0076]-[0077], [0081]-[0085], FIG. 1. Additionally, Damick's network access control and Internet access logging techniques are suitable for and would have been applied to a router (network

interface device 110) and/or host computer 114. Ex. 1017, [0021]-[0024], [0081]-[0088], FIGS. 1-2. In my opinion, a POSA, aware of Damick's teachings and employing ordinary creativity, would have been able to extrapolate such teachings and recognize that the network access controls and Internet access logging techniques, taught by Damick, would be suitable for and may be applied to a router and/or host server, such as Baig's access point 106 (which includes NAT router 108) and content server 124/224. *Id*.; *see also* Ex. 1007, [0042]-[0046], [0052], FIGS. 1-2; Ex. 1008, 6-8, FIGS. 1-2. The network communication systems of Damick and Baig both use "conventional" network architecture for coupling several client devices to a network via an access point, and include typical computing components (e.g., processors, memory, and supporting circuitry) for exchanging data over the network, including the monitoring and logging of network communications between client devices and external servers. Ex. 1007, [0042]-[0046], [0049]-[0052], FIGS. 1-2; Ex. 1008, 6-8, FIGS. 1-2; Ex. 1017, [0021]-[0025], [0030]-[0032], [0091]-[0092]. Damick's similar network communication system is illustrated below in Figure 1 (*compare with* FIGS 1-2 of Baig):

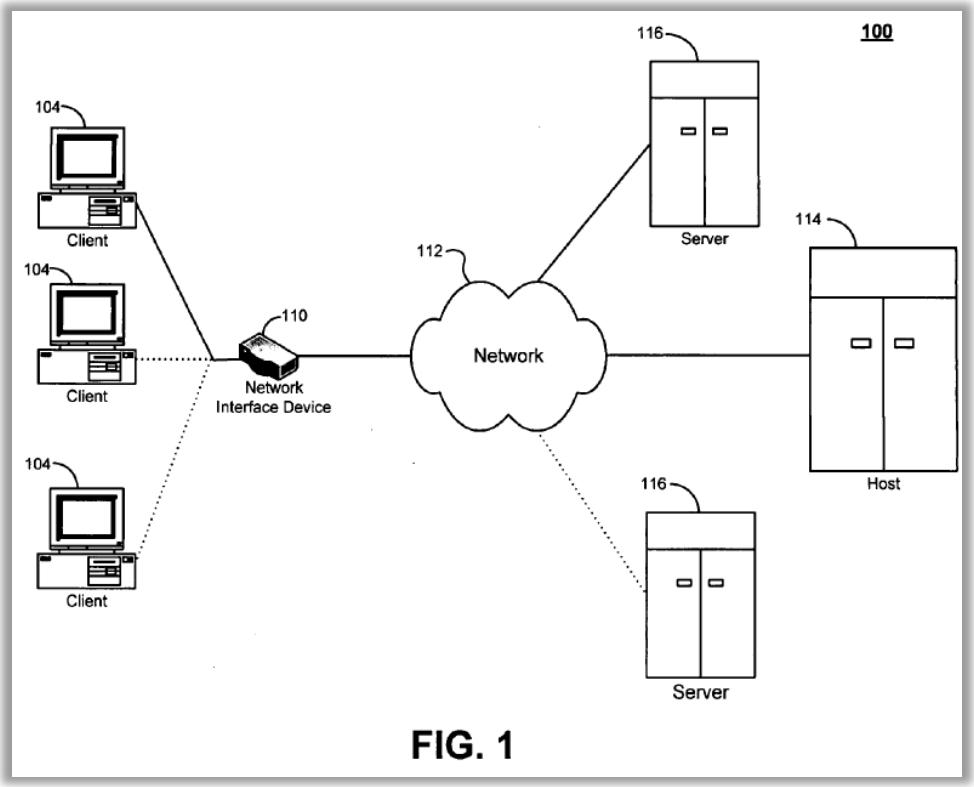


FIG. 1

Ex. 1017, FIG. 1.

388. Damick's techniques for implementing network access controls and logging of device Internet access times have additional benefits not found in Baig. For example, Damick provides network access control rules enabling an administrator to "determine when, or how long, Internet access may be granted to a user," as well as the type of content that a client device may have access via the network. Ex. 1017, [0041]-[0044], [0055]-[0059], [0062]-[0063], [0069]-[0073], [0085]-[0087], FIGs. 5A-6C. In my opinion, a POSA would understand that an administrator would have found it desirable to control and manage a network via access control rules and logging techniques, such as those described in Damick. For

example, by implementing network access controls, an administrator would have been able to better control network access by Baig's devices 102_p—including the types of content that may be accessed via the Internet—and the network behavior of users, thereby improving the provisioning of resources within the network and overall network security. For instance, an administrator can manage and allocate network resources to particular access points within Baig's system based on established network access controls—e.g., provisioning additional resources to access point(s) providing network access to large quantity of user devices during a particular time of day. Likewise, this control over network access and the logging of network access information would provide an administrator with additional tools for tracking and monetizing network services being provided to users, as well as providing more granular and comprehensive statistical and temporal information concerning a user's online behavior, which would be desirable to advertising entities and content service providers that target users with advertisements. *Id.*; *see also* Ex. 1007, [0094], [0114]-[0120], FIGs. 14-19; Ex. 1008, 17, 20-21, FIGs. 14-19.

389. Further, a POSA would understand that a service provider, such as Baig's VCSP, would desire to have the ability to selectively control which devices—having connected to Baig's access point—would have access to the VCSP website, including which content/services would be made available to those devices and for how long. *Id.* For example, the VCSP may desire to place restrictions on the time

of day or the number of hours that a device may access the Internet and/or VCSP services in general. For instance, the VCSP may desire to generate revenue by charging for access to all (or specific) VCSP services and may seek to limit the amount of time that a user has access to the VCSP prior to the user having to paying for such access. As another example, the VCSP may desire to place restrictions on the type of content that may be accessible via the VCSP website, for instance, if the user of the accessing device is below a certain age. Additionally, and as also recognized by Baig (*see* Ex. 1007, [0120]; Ex. 1008, 21), a POSA would understand that several entities, including service providers, would desire to collect and store information indicating the network behavior and access times of mobile devices 102. This collected information may be used in various ways including, among others, determining network access patterns and online behavior patterns of devices 102, provisioning services to users (e.g., based on similar access and behavioral patterns), and advertisement targeting. For example, suppose a VCSP hotspot was at a music venue hosting a music festival of various music artists performing one after another for several days. Knowing the times that a mobile device accessed the hotspot would indicate a user's preference in the types of music and groups they enjoy. An advertiser could then target that particular user with advertising associated with their interests such as available recordings available for purchase or for upcoming concerts and music festivals that would be of interest. Further, an advertiser could

associate users with common music interests so as to advertise clubs or organizations where they might join with other associated users to discuss their common music interests. A POSA would understand that it would be desirable to collect and store timestamp information indicating when individual users or devices accessed specific VCSP services in addition to the duration of time that the device used each service, as this would be valuable information for the VCSP to provide better services to its users. Similarly, this collected timestamp information would be valuable to an advertiser attempting to target users with advertisements based on their respective online behavior, including activities performed while accessing the VCSP. *See* Ex. 1007, [0120], FIG. 19; Ex. 1008, 21, FIG. 19. Consider as an example, it would be valuable for the VCSP to know that ten (10) devices have accessed the VCSP website via a same AP hotspot, as this information could be used to target the entire audience at the hotspot with an advertisement. However, it would also be valuable for the VCSP to determine, based on the network access times of these devices, that five (5) of those ten (10) devices subsequently accessed a particular VCSP service (e.g., a chat room or online game room) at the same time. This more granular and detailed information would be used by the VCSP or an advertiser to provide advertising that is targeted directly to those users that accessed the particular VCSP service and this advertising would be based on the temporal and/or associated behavior of those users (e.g., joining the same chat/game room at the same time).

390. Therefore, based on the above-described similarities between Damick's and Baig's systems, and the additional benefits offered by Damick's known teachings, it is my opinion that a POSA would have been motivated to apply the teachings of Damick to the Baig-Satapati and Baig-Zwicky systems to provide enhanced control over a user's access to the Internet and VCSP services, including the tracking/logging of device network access times. Ex. 1017, [0058], [0062], [0069], [0087]; *see* Ex. 1007, [0120]; Ex. 1008, 21. This enhanced control over user network access would also enable the Baig's modified system, for example, to determine when Internet access is permitted for certain users, to determine the length of time that users may access the Internet each day, and/or to determine when or how long that users may access specific VCSP services provided via service-specific webpages, which would be desirable to a service provider or advertiser, as I explain above.

391. As I discuss above, Baig associates two devices concurrently accessing the Internet via a same access point (AP) hotspot by grouping the two devices into the same VCSP group. Under the proposed combination, the Baig-Satapati/Zwicky-Damick systems would have used the stored timestamp information to determine the "association" in at least two separate ways. Concerning the first way of determining the "association", in my opinion, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have employed time-based network access techniques,

including the use of stored timestamp information indicating network access times, to determine whether two or more devices 102 are concurrently accessing the VCSP via a common IP address (e.g., the IP address of a particular access point). The Baig-Satapati-Damick and Baig-Zwicky-Damick system would have used the collected network access times to determine that two devices 102 are concurrently accessing the VCSP (and/or specific VCSP services via service-specific webpages), for example, by determining that a network access time of a first device that accesses the VCSP website via an AP hotpot overlaps with (e.g., occurs at the same time or near-same time as) a network access time of a second device accessing the VCSP via the same AP hotspot. For instance, as further explained in Section XII.D.2, the concurrent accessing of the VCSP would have been determined using the collected network access time, for example, by determining that a most recent network access time of a first device that accesses the AP hotpot occurs within a specified time period as a most recent access time of a second device accessing the same AP hotspot. This concurrent grouping would be maintained until one of the first or second devices are no longer connected to the VCSP website via the AP hotspot (and/or accessing a specific VCSP service via service-specific VCSP webpages). Consider for example, the Baig-Satapati-Damick and Baig-Zwicky-Damick system would have used the collected network access times to determine that two devices 102 are concurrently accessing a chat feature or on-line gaming service provided via

the VCSP website. Baig's modified systems may determine this concurrent access, for example, by determining that a network access time of a first device accessing a chat room associated with a specific VCSP webpage (or a game room associated with a specific VCSP webpage) via the AP hotspot overlaps with (e.g., occurs at the same time or near-same time as) a network access time of a second device accessing the same chat room (or game room) provided by the VCSP via the same AP hotspot. Ex. 1007, [0062], [0079]-[0083], [0107]-[0110], FIG. 7; Ex. 1008, 10, 13-14, 19-20, FIG. 7. Additionally, the collected/stored timestamp information would have been used to determine that two devices 102 are concurrently accessing the VCSP, for example, by determining that a network access time of a first device that accesses the VCSP website via the AP hotspot occurs after an (initial) network access time of a second device accessing the VCSP via the same AP hotspot. As explained above, an "association" may be determined between the devices 102 after each device accesses the VCSP website via a same AP hotspot. In my opinion, an "association" may be further determined between two devices 102 that have accessed the VCSP website when each device accesses a particular VCSP service provided via the VCSP website. In either instance, as I explain above, the collected network access times would have been used to determine that devices 102 are concurrently accessing the VCSP and/or specific services provided via the VCSP.

392. Concerning the second way of determining the "association, it is my opinion that the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have determined the "association" between the device identifiers of two devices, for example, when the Baig-Satapati-Damick and Baig-Zwicky-Damick systems determine whether access times for devices concurrently connecting to the Internet via a same AP satisfy temporal access rules for accessing the Internet (e.g., accessing the VCSP website). The Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have employed time-based network access techniques—including the use of stored timestamp information indicating network access times and specific network access rules—to determine whether a user is permitted to access the VCSP website and services provided therein. Consider, for example, that network access rules are employed to limit each mobile device 102 to accessing the VCSP website during a specified time period, e.g., between the hours of 9am and 5pm. In this instance, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would determine an association between two devices 102 by using the collected/stored timestamp information of the two devices to determine that the respective access times of each device—that are connecting to the VCSP via a same AP hotspot—satisfy the temporal requirements for accessing the VCSP website (and/or a particular service provided by the VCSP website). Consider, as another example, that network access rules are employed to limit each mobile device 102 to accessing the Internet for a

certain amount of time, e.g., for 1 hour each day. In this instance, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would determine an association between two devices 102 by using the collected/stored timestamp information of the two devices to determine that the respective access times of each device—that are connecting to the VCSP via a same AP hotspot—satisfy the temporal requirements for accessing the Internet, e.g., accessing the VCSP website and/or a particular service provided therein. In other words, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would determine whether the allotted Internet access time for each of the two devices 102 has been depleted. Thus, in my opinion, a POSA would understand that the Baig-Satapati-Damick and Baig-Zwicky-Damick systems disclose using timestamp information to determine an "association" when it determines whether network access times of two or more devices accessing the same AP hotspot indicate that the devices have reached their respective time limit for accessing the VCSP via the Internet. In other words, the associations between Baig's mobile devices 102 grouped together in a same vicinity group would have depended on whether any allotted time for accessing the internet (or VCSP) remained for a given device in order to permit that device to remain a member of the vicinity group. By employing time-based network access control rules and logging/tracking techniques, as taught by Damick, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have used the timestamp information indicating the

respective network access times of mobile devices 102 when determining the associations (e.g., the association between device identifiers of multiple devices connecting/connected to a same access point) ("**each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising … a timestamp identifying when the one of the devices accessed the Internet**").

393. It is my opinion that a POSA would have had the skills and knowledge to carry out the combinations, and would have reasonably expected success in applying Damick's teaching to the similar Baig-Satapati and Baig-Zwicky systems to arrive at the subject matter recited in element [1C], given the above-described similarities between Damick's and Baig's systems. Further, a POSA would have reasonably expected success in achieving the proposed combinations because logging timestamps and using this information for such determinations are routine, straightforward operations. For example, it would have been straightforward for the Baig-Satapati and Baig-Zwicky systems to track/log the date and time at which Baig's mobile device 102 accesses the Internet 122 and, further, to be adapted to use this date and time information to determine whether two or more devices 102 are concurrently accessing the VCSP via a common IP address (e.g., the IP address of a particular access point), thereby determining the "association" between the device identifier (e.g., IP address and port number) of the device seeking access and the

respective device identifiers of other Internet-accessing devices accessing the VCSP (and/or a same service provided by the VCSP website). Additionally, it would have been straightforward for the Baig-Satapati and Baig-Zwicky systems to track/log the date and time at which Baig's mobile device 102 accesses the Internet 122 and, further, to be adapted to use this date and time information to determine whether a device is permitted to access the VCSP website via the Internet, based on predetermined network access rules, thereby establishing and/or maintaining the "association" between the device identifier (e.g., IP address and port number) of the devices 102. Further, as I explain above in ¶386 of my Declaration, because Baig's system already monitors the time during which a mobile device accesses the VCSP website and specific services therein, such changes would be minimal. For example, such changes may primarily be limited to software modifications, which would have been well within the skill set of a POSA. *See* Ex. 1007, [0131] ("It will be apparent to those of ordinary skill in the art that various modifications and variations can be made to the present invention without departing from the spirit and scope of the invention"); Ex. 1008, 23.

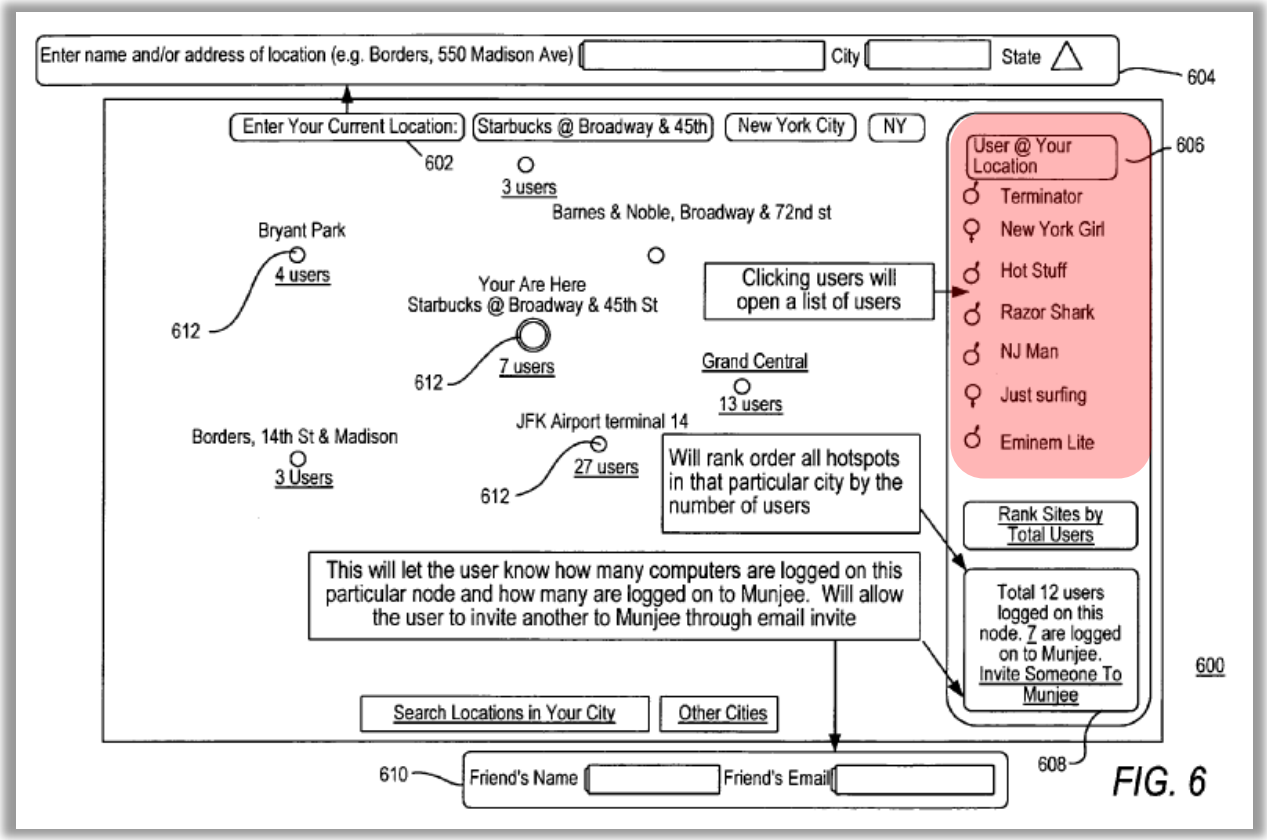
394. The proposed combinations thus disclose and render obvious element [1C].

iv. Element [1D]: "(ii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address at respective times satisfying a predetermined time-relation criterion;"

395. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1D].

396. As I explain above for element [1B], when Baig's server determines that a first device has connected to the Internet using the same access point as an already-connected second device, the server places both devices into a VCSP user group based on those device's respective device identifiers and the devices sharing the common, public IP address of that access point to access the Internet ("**at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address**"). Ex. 1007, [0038], [0052], [0056]; Ex. 1008, 5, 7-8. Moreover, as I explained above for element [1C], the Baig-Satapati-Damick and Baig-Zwicky-Damick systems servers "**determine that both of the at least two devices have accessed the Internet via a common IP address at respective times satisfying a predetermined time-relation criterion**,"

for example, when they identify at least two mobile devices 102 sharing the same access point IP address, having respective device identifiers, that have accessed Baig's VCSP website concurrently and/or are accessing the VCSP website in accordance with temporal requirements of established network access rules. Ex. 1007, [0038], [0056], FIG. 6; Ex. 1008, 5, 8, FIG. 6; Ex. 1017, [0062]. Further, as I explain above for element [1B], Baig's server would have created "**an electronic database**" containing a multitude of the claimed associations between the mobile devices connected to the same access point, as evidenced by Baig's modified systems maintaining a list of users (e.g., list 606) that are currently logged-in to the VCSP website as well as the corresponding device identifiers (IP address and port number) of their mobile devices that were connected to that access point and thus share the same public access point IP address. This is shown in Figure 6 depicting webpage 600 presented on a mobile device that shows, among other things, a list 606 (**red**) of users connected to a same access point:



Ex. 1007, FIG. 6 (annotated); Ex. 1008, FIG. 6.

397. Referring to the first way in which the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have determined the claimed "association" (*see* Section XII.D.1.iii; ¶391 of my Declaration above), the list grouping the users that concurrently access Baig's VCSP website discloses the "**predetermined time-relation criterion**" (i.e., at the same time). Baig's server would have formed a VCSP group, in this example, that includes at least a first device and a second device that are connected at the same time to Baig's VCSP website via the same access point having a common IP address. Ex. 1007, [0038], [0056], FIG. 6; Ex. 1008, 5, 8, FIG. 6. More specifically, the determination that the group of devices have accessed the

network at the same day and time (e.g., accessing the VCSP website concurrently) discloses the claimed "**respective times satisfying a predetermined time-relation criterion**." Here, the claimed "**predetermined time-relation criterion**" is whether the devices' network access times overlap. (*See* Section XII.D.1.iii). In other words, whether the devices are concurrently accessing the VCSP website. It is my opinion that a POSA would have understood that the concurrent accessing of the VCSP website satisfies the requirement in element [1D] that the claimed "**time-relation criterion**" be "**predetermined**" at least because Baig's modified system, in advance of devices connecting to the VCSP website, is configured to identify a group of user devices that concurrently accesses the VCSP website at the same wireless hotspot. Ex. 1007, [0038], [0052], [0056], FIG. 3; Ex. 1008, 5, 7-8, FIG. 3. In other words, Baig teaches configuring its system in advance of users accessing the VCSP to set a condition for adding users to a VCSP group—e.g., grouping users if they are accessing the VCSP at the same time from the same AP hotspot. In forming this VCSP group, as I previously explained, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems' would have used the device identifiers (IP addresses and port numbers) and timestamp information indicating respective network access times for devices 102 to determine that a first mobile device 102 and a second mobile device 102 accessed the Internet via a common IP address (e.g., the IP address of an access point 106) at the same time or near-same time ("**which association is**

determined by using the stored data…"). (*See* Section XII.D.1.iii; ¶391 of my Declaration above).

398. Referring to the second way in which the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have determined the claimed "association" (*see* Section XII.D.1.iii, ¶392 of my Declaration above), the Baig-Satapati-Damick and Baig-Zwicky-Damick systems' use of network access control rules—that define when and/or the amount of time that a client device may access the Internet—also confirms that Baig's modified systems (e.g., server 124/224) would have formed a VCSP group when both the first device and second device accessed Baig's VCSP website via the same access point 106 using the common IP address "**at respective times satisfying a predetermined time-relation criterion.**" Damick teaches providing various network access control rules that determine when, or how long, Internet access may be granted to a user of a client, including an option to "allow Internet access by time of day which may grant an access request during predetermined times of specified days" and/or "allow Internet access for a specified amount of time each day." Ex. 1017, [0062]. Under this second way of determining the "association," the network access control rules that determine when, or how long, Internet access is granted to a client device (*see* Ex. 1017, [0062]) in the Baig-Satapati-Damick and Baig-Zwicky-Damick systems teach the claimed "**predetermined time-relation criterion.**" It is my opinion that a POSA would have

understood that, as I explain above in Section XII.D.1.iii, when such network access control rules are applied, Baig's content server would have used timestamp information indicating when each device 102 accesses the network to determine whether the devices 102 connecting to the same access point 106 to access the Internet do so in a manner that satisfies the temporal requirements of established network access control rules. *See* ¶392 of my Declaration, above.

399. In other words, the determination that at least two mobile devices 102 have accessed the network via a common access point in view of any network access control restrictions implemented by the VCSP and at the same time (e.g., accessing the VCSP website concurrently) discloses the claimed "**respective times satisfying a predetermined time-relation criterion**." Here, the claimed "**predetermined time-relation criterion**" is whether the devices 102 concurrently access the VCSP in a manner that satisfies network access control restrictions, for example, whether a device's allotted Internet access time has expired or whether the device is accessing the Internet during a time window allotted for Internet access. *See* e.g., Ex. 1017, [0062]. It is my opinion that a POSA would have understood that the concurrent accessing of the VCSP website in view of network access control rules satisfies the requirement in element [1D] that the claimed "**time-relation criterion**" be "**predetermined**" because Baig's modified systems (e.g., Baig-Satapati-Damick and Baig-Zwicky-Damick) would have first analyzed any existing network access

control rules that have been established (e.g., a set number of hours that each device may access the Internet), and then applied the predetermined network access control rules to instances of Baig's devices 102_p accessing the VCSP website via a common access point to evaluate whether those instances satisfy the established network access control rules (e.g., determining whether the user has exhausted an allotted amount of Internet access time, determining whether the user is accessing the Internet during a permitted time window, etc.). In other words, the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would be configured in advance of user devices accessing the VCSP to set the conditions for grouping devices 102_p—e.g., grouping user devices if they are accessing the VCSP (and/or specific services provided by the VCSP) from the same AP hotspot at the same time (or near-same time) in accordance with the temporal requirements of predetermined network access control rules.

400. The proposed combinations thus disclose and render obvious element [1D].

v. Element [1E]: "(iii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information; and"

401. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious [1E].

402. As I explain above for element [1D], Baig's content server would have determined that a first mobile device, of multiple mobile devices, connected using the same access point IP address as an already-connected second mobile device, and then placed both the first and second mobile devices into the same group ("**at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices**"). *See also*, ¶¶391-392 and 397-399 of my Declaration above. For example, Baig provides:

> A vicinity-based community service is a service provided by the **VCSP which discovers (i.e., identifies) and connects wireless users within physical vicinity of each other at a WiFi hotspot**. Once a "vicinity-based community" at a physical location (i.e., a hotspot) is created, the users can potentially interact physically or non-physically with each other. **The VCSP identifies a group of users at a wireless hotspot based upon their common public IP address and interconnects them**, **thereby creating a vicinity-based user group**. The VCSP may also request the street address or the venue name of the hotspot from the end user in order to correlate the vicinity-based group to a specific geographical location.

Ex. 1007, [0038]; Ex. 1008, 5 (emphasis added).

403. The ’015 Patent includes explicit definitions for both “personally identifiable information” (PII) and “non-personally-identifiable information” (non-PII):

> **Personally Identifiable Information (PII)**—information that can be used to identify a specific person, including but not limited to: name, Social Security number (SSN), date of birth, street address, email address, static IP address (if any), phone number (home, work, wireless), financial account numbers (bank accounts, credit accounts, or any other financial data), driver's license number, vehicle registration number, vehicle license number, facial photographs, fingerprints, handwriting or signature, or any other information that can assist in identifying a specific person.
>
> **Non-Personally-Identifiable Information (non-PII)**—information about a person that typically cannot be used to specifically identify that person, including but not limited to: city, state, or country of residence, age, gender, race, ethnicity, school or workplace (if sufficiently large), salary or income, hobbies, dynamically assigned IP addresses, online sites visited, online searches conducted, or other information that is useful to know about a person **but done [sic] not by itself allow one knowing the information to identify the particular person**.

Ex. 1001, 6:25-44 (emphasis added).

404. As I explain below, the association between Baig's mobile devices 102 would have been "**determined without use of personally identifiable information.**" As I show above for element [1D], the content server of Baig-Satapati-Damick and Baig-Zwicky-Damick would have determined the associations between device identifiers of at least two mobile devices by using the respective network access times of each device to determine that the mobile devices have connected to the VCSP using the same access point IP address and/or in accordance with established network access control rules. Ex. 1007, [0038], [0056], FIG. 3 (Step 306); Ex. 1008, 5, 8, FIG. 3; Ex. 1017, [0062]. As I also explain above for element [1D], in the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick, the "**device identifier**" of one of the Internet-accessing mobile devices ("**one of the Internet-accessing devices**") is the combination of: **(i)** the IP address of the access point, and **(ii)** a TCP/IP port number associated with the mobile device. In my opinion, a POSA would have understood that neither the public IP address of Baig's access point, nor the port numbers associated with the mobile devices connecting to the VCSP website via the access point constitute PII under the '015 Patent's explicit definition of PII because the access point IP address and port number assigned to a user's mobile device "do [sic] not by [themselves] allow one knowing the information to identify the particular person" Ex. 1001, 6:41-44; *see also* 6:25-26 (defining PII as "information that can

be used to identify a specific person"). Further, the '015 Patent explicitly teaches that dynamically assigned IP addresses constitute "non-personally identifiable information." Ex. 1001, 6:40.

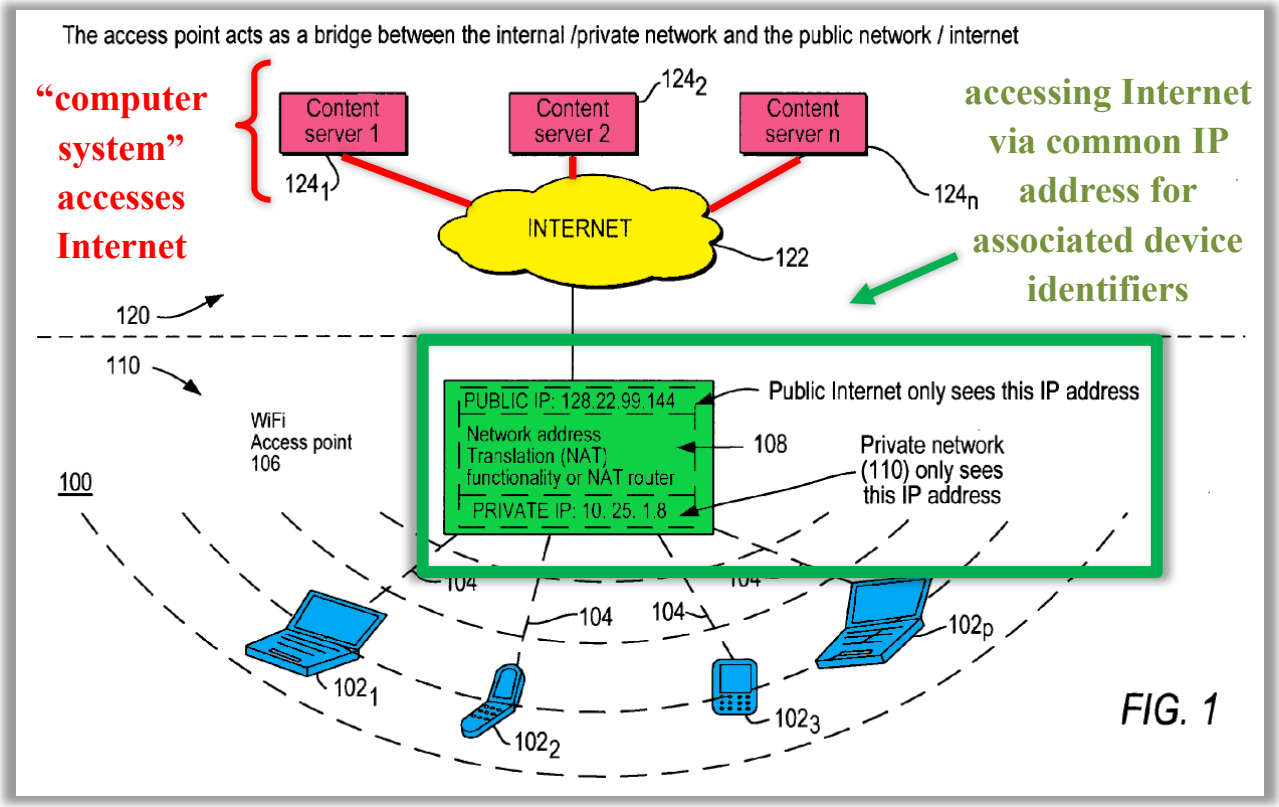
405. As I show above for elements [1C]-[1D], the content server of Baig's modified systems (e.g., Baig-Satapati-Damick and Baig-Zwicky-Damick) would have determined the associations between the device identifiers of devices 102 by using the network access information reported by the common access point (including the IP address of the access point), the device identifiers of the mobile devices, and the date and time of network access. Ex. 1007, [0038], [0052], [0056], FIG. 2 (step 3), Ex. 1008, 5, 7-8, FIG. 2; Ex. 1017, [0062], [0069]-[0072], FIG. 6B. The associations between the device identifiers of devices 102 in Baig's modified systems thus would have been determined without using PII ("**at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information**").

406. The proposed combinations thus disclose and render obvious element [1E].

vi. Element [1F]: "(iv) the computer system determining the associations accesses the Internet without using any of the common IP addresses of the associations identified in part (ii); and"

407. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1F].

408. Again, referring to Baig's Figure 1 (below), content server(s) 124 ("**the computer system determining the associations**") communicate through public Internet 122 (**yellow**) in order to connect to devices 102_p (**blue**) that reside in local network 104 and similarly access the Internet 122 via access point 106 (**green**).



Ex. 1007, FIG. 1 (annotated); Ex. 1008, FIG. 1.

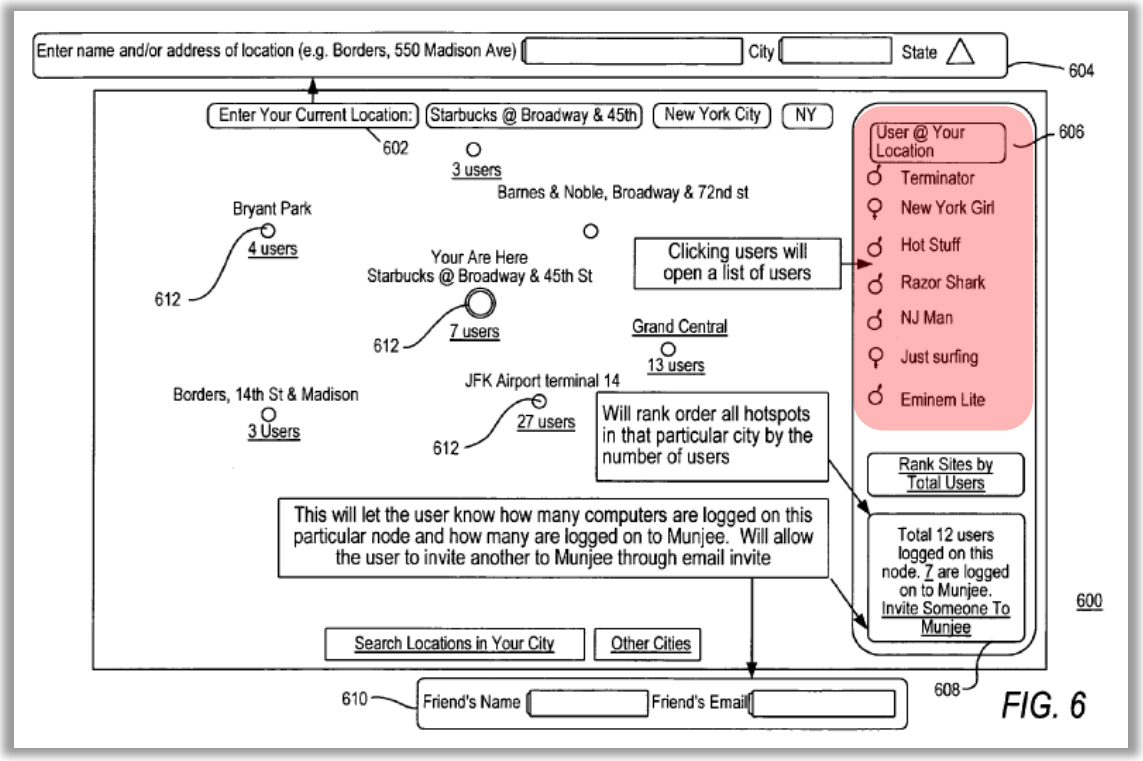
409. Figure 1 of Baig shows that each content server (124_1 through 124_n) is directly connected (**red**) to the Internet 122 using access other than access point 106 (**green**). In other words, the content servers $124_{1\text{-}n}$ ("computer system") can access the Internet for many purposes other than communicating to the mobile devices, for example communicating between content servers $124_{1\text{-}n}$. By contrast, multiple mobile devices (e.g., devices 102_1 through 102_p) (**blue**) connect to the Internet 122 via access point 106 (**green**) using the same public access point IP address, thereby enabling Baig's modified systems to detect and associate the devices as belonging to the same "vicinity-based" group of users. Moreover, Baig teaches that access point 106, and not server 124, uses the public IP address to relay data between the mobile devices and the Internet. Ex. 1007, [0043]-[0045], FIGs. 1-2; Ex. 1008, 6. As shown above in Figure 1, Baig's content server 124 thus "**accesses the Internet without using any of the common IP addresses of the associations identified in part (ii)**.

410. The proposed combinations thus disclose and render obvious element [1F].

vii. Element [1G]: "(b) when the computer system and a first device identified in a first association are in communication with one another, with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association to cause an automatic action to be taken with respect to the first device, wherein:"

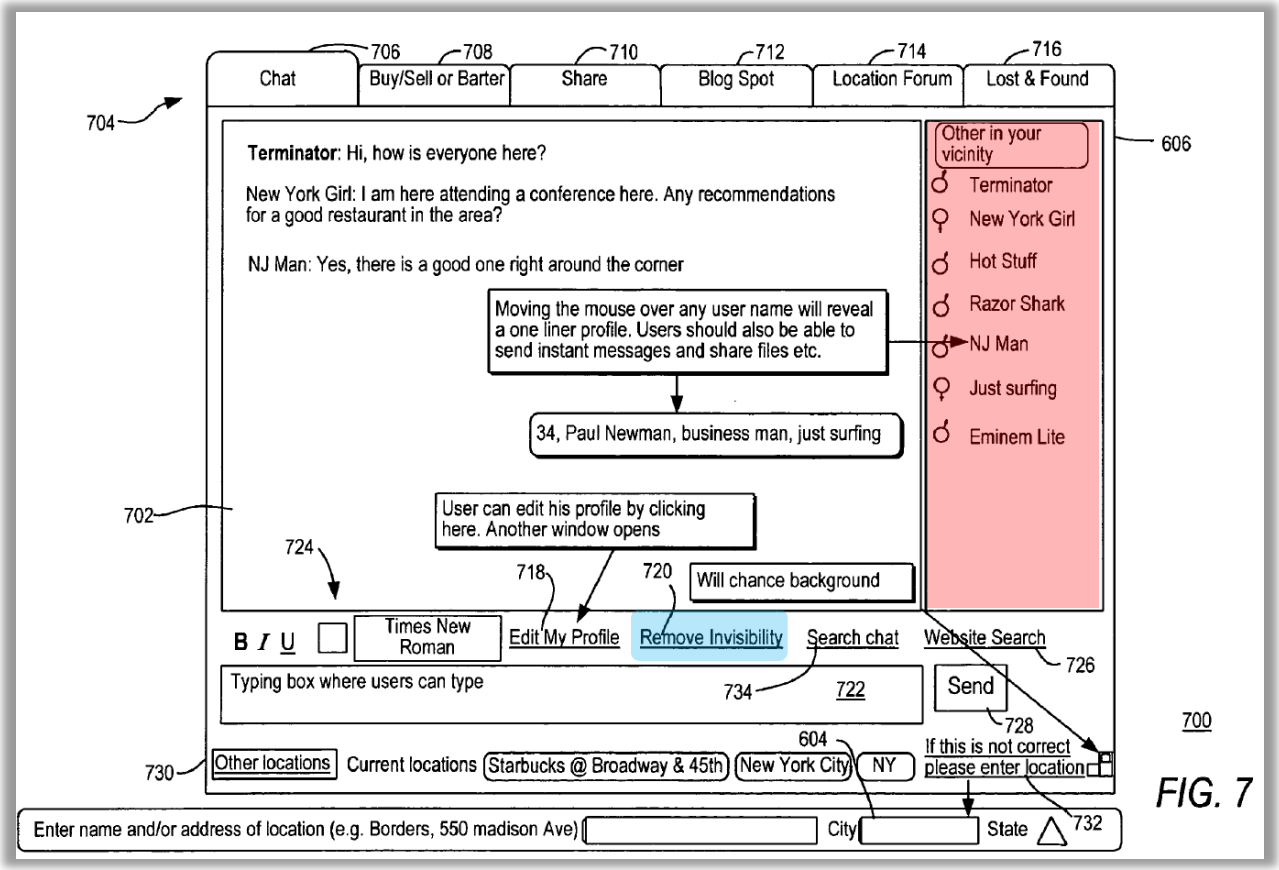
411. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1G].

412. As I show above for element [1B], after a user logs into the VCSP website, and as illustrated below in Baig's Figure 6, webpage 600 provides a list 606 (**red**) of other users connected to the same access point (AP) hotspot. Ex. 1007, [0038], [0052], [0056], [0074] ("As described above, once a user registers on the web page illustrated in FIG. 5, and then logs into the VCSP website on the home page as illustrated in FIG. 4, the server 224 presents the web page illustrated in FIG. 6 to the user on his/her mobile device 102"), FIG. 6; Ex. 1008, 5, 7-8, 12, FIG. 6.



Ex. 1007, FIG. 6 (annotated); Ex. 1008, FIG. 6.

413. Baig's list 606 includes seven other users and their genders who are logged on to Baig's VCSP website (*e.g.* "Terminator," "New York Girl," "Hot Stuff," "Razor Shark," "NJ Man," "Just surfing," and "Eminem Life"). The genders of the users are indicated by either a male or female gender symbol next to each user as shown in Figure 6 above. The list 606 of users (**red**) also appears in Figure 7 of Baig, as shown below, which illustrates a webpage 700 that allows users to engage in chat conversations (under chat tab 706) with other users. Ex. 1007, [0080]-[0082], FIG. 7; Ex. 1008, 14, FIG. 7. The webpage provided under chat tab 706 provides a link 720 (**blue**) that enables the user "to remove their concealment (i.e., invisibility) to other users." Ex. 1007, [0081], FIG. 7; Ex. 1008, 14, FIG. 7.



Ex. 1007, FIG. 7 (annotated); Ex. 1008, FIG. 8.

414. The transmission and display of list 606 discloses and renders obvious element [1G]. With regard to element [1G], it is my opinion that the claimed "**communication**" refers to the communication between the claimed "**computer system**" and the claimed "**first device**" that causes the claimed "**automatic action**," for example, a communication indicating an instance or occurrence of information being updated (list 606 refreshed), such as profile information updates concerning a "**second device.**" This is clearly shown by the plain language of element [1G], which recites "when the computer system and a first device … are in communication with

one another, with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device … to cause an automatic action to be taken with respect to the first device." See Ex. 1001, 24:63-25:2. This reading of claim 1 and interpretation of the claimed "communication" is consistent with the '015 Patent, which describes that a first device (e.g., STB) communicates with the CAS 40 to cause delivery of an advertisement. Ex. 1001, 19:55-20:5, 20:46-48, 20:63-21:3. For example, the '015 Patent expressly states:

> An STB communicates with the Google CAS to check whether a STB user has used another computer or mobile device to search on Google (the Google CAS uses the STB's common IP address to find those other computers or mobile devices, as explained above), and if Google finds such searches were made, it arranges for delivery of targeted TV ads, sold by Google to its advertisers, to the STB of users who made such searches.

Ex. 1001, 20:63-21:3)

415. Thus, in Baig, while a user accesses Baig's VCSP services provided by Baig's server 124 via the Internet ("**when the computer system and a first device identified in a first association are in communication with one another**"), Baig's modified systems take an **automatic action** with respect to a first device 102, e.g., displaying on the first device a list 606 of other users and their genders. Further, a

POSA would understand that to provide VCSP services in real-time, Baig's VCSP website would have automatically updated or refreshed the webpage (e.g., the webpages shown in Figure 6 and Figure 7 of Baig) being displayed to a user, which would have included a current and up-to-date list 606 of users currently connected to the AP hotspot and/or chat room. Such updates would occur periodically or after a user joins/leaves the VCSP group (and/or joins/leaves a particular VCSP service). *See*, e.g., Ex. 1007, [0005]-[0006], [0009], [0076]-[0078], [0079]-[0082] (chat services), [0085]-[0087] (bartering services), [0091] (blog services), [0092] (Location Forum), [0093] (lost and found), [0107]-[0110] (online gaming). For example, a POSA would understand that a user participating in the chat room shown in Figure 7 of Baig would not be required to take specific action in order for webpage 700 to be updated/refreshed to indicate that another user has entered/left the chat room and/or to display a communication from a different user in the chat room. That POSA's understanding is further supported by the fact that automatically displaying and/or updating information presented via a web browser was conventional web-based technology and well known at the time the '015 Patent was filed. See, e.g., Ex. 1042, 48-49, 69 (1996 text book describing automatic updates to web pages); Ex. 1054, [0010]-[0016], [0022]-[0024], [0044]-[0047], [0054], [0062], Abstract; Ex. 1055, [0005]-[0006], [0011]-[0018], [0024]-[0025], [0028], [0050]-[0060], Abstract.

416. To display the list 606 on the first device, Baig's modified system would have used the device identifier of the first device 102 (e.g., the access point IP address and assigned port number) as well as user profile information of a second mobile device (e.g., the gender or visibility preference of the user of the second mobile device) to generate the list 606 of users—each of whom are in the same vicinity group—and send the VCSP webpage containing the list 606 to the first device 102 for display ("**with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association to cause an automatic action to be taken with respect to the first device.**"). In my opinion, a POSA would have understood that Baig's modified system would have used the access point IP address and port number of the first device 102 ("**device identifier**") to address the network communications used to deliver the VCSP webpage with the user list 606, from Baig's server 124, to the first device 102 via the access point 106.

417. As an example, suppose a first user, "Terminator," illustrated in Baig's Figures 6-7 shown above, connected to the VCSP using his mobile device ("**a first device**"), Baig's server would have added "Terminator" to the VCSP vicinity group for that access point and sent a webpage that included a list of the users in that VCSP vicinity group (e.g., list 606) to the Terminator's device as well as to the devices of any other user that was a member of the VCSP group. Then, when another/second

user, "Razor Shark," connected to the VCSP website via the same access point using his mobile device ("**a second device**"), Baig's server would have automatically sent the "Terminator" mobile device ("**first device"**), without requiring specific action being taken by Terminator, a webpage (or an update to the webpage) that includes on list 606 the gender information of "Razor Shark" who has connected to the VCSP website using the second device having the access point IP address and port number discussed above ("**user profile information associated with a device identifier of a second device"**). In this way, Baig's server would have automatically updated (refreshed) the list 606 whenever a new mobile device connected to the shared access point, logged into Baig's VCSP website, and joined the VCSP vicinity group—including when Razor Shark took these steps using his device (second device). This webpage with the updated list 606 (or the update to the webpage or list) would have been automatically sent while the first mobile device was logged into and accessing the services provided by Baig's VCSP website ("**when the computer system and a first device identified in a first association are in communication with one another**"). It is my opinion that a POSA would have understood, therefore, that the webpage providing the updated list 606 that is automatically communicated by Baig's server to the first device discloses that the server ("**computer system**") and the first mobile device ("**first device**") are "**in communication with one another**."

418. It is my opinion that a POSA would have understood that Baig's modified systems (e.g., Baig-Satapati-Damick and Baig-Zwicky-Damick) would have used the device identifier of the first mobile device ("**with the computer system using a device identifier of the first device**") in order to direct the webpage that is provided to the first mobile for presentation to its user. As I note above, to automatically send (or update) the webpage displaying the list of users that are currently members of the VCSP vicinity group, the server of Baig's modified systems would have used "**a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association**" as claimed because the list 606—which is sent to the first mobile device in a network communication(s) addressed to the first mobile device using its device identifier (e.g., the combination of the access point IP address and assigned port number)—identifies the gender of the other logged-in users based on the gender information stored in their respective profiles. Ex. 1007, [0039], [0061], [0070] ("the illustrative registration form includes … [a] "Gender" field 508"), [0093], [0096], FIG. 15; Ex. 1008, 5, 10, 12, 16-17, FIG. 15. Moreover, Baig's modified systems "**us[e] a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association**" since Baig's server generates the list 606 based on the mobile devices being associated with each other in the same VCSP vicinity group due to

those devices accessing the Internet via a common access point. Regarding the gender information stored in Baig's user profiles, I note, for example, that the respective entry of the user of the "**second device"** in list 606 (i.e., "Razor Shark") includes a gender symbol ("♂") indicating that the user "Razor Shark" has indicated via his profile information that he is male. Ex. 1007, [0039], [0070], FIGS. 6-7; Ex. 1008, 5, 12, FIGS. 6-7.

419. As I note above, because the list 606 identifies the gender information that a user, of a device connected to the VCSP via a common access point, specifies for their profile ("**user profile information**"), Baig's list uses "**user profile information associated with a device identifier of a second device.**" I also note that the '015 Patent broadly describes profile data as including "demographic or behavioral information," such as information "concerning the user's characteristics or the user's activities," which a POSA would understand to include the age or gender of a user. *See* Ex. 1001, 6:3-16.

420. Baig discloses a second way in which user profile information associated with a second device causes an automatic cross-device action on a first mobile device. Baig's user profile data also includes a user's decision of whether or not to be visible on the VCSP website to other users. Ex. 1007, [0070] ("the illustrative registration form includes … [a] "Do Not Reveal Actual User Name" check box field 512"), [0080], [0124]; Ex. 1008, 12, 14, 22. For example, as I

explain above, Baig discloses that a "link 720 can also be provided to remove [the user's] concealment (i.e. invisibility) to other users," and that "[a]ll users who are logged on can see the other users in the chat-room, unless a user options out from being visible to other users." Ex. 1007, [0081], [0124], FIG. 7; Ex. 1008, 14, 22, FIG. 7. It is my opinion that a POSA would have recognized that toggling a user's visibility in the VCSP group would have automatically triggered an update to the list 606 in the VCSP webpage(s) displayed on the respective mobile devices of VCSP group members to reveal or conceal the username of the user that toggled the visibility setting. As explained above, a POSA would understand that a user participating in the chat room shown in Figure 7 of Baig would not be required to take specific action for webpage 700 to be updated/refreshed to indicate that another user has entered/left the chat room and/or to show a communication from a different user in the chat room; nor would specific action be required by the user to reveal or conceal the username of a different user that has toggled their visibility setting. See e.g., 1042, 48; see also ¶415 of my Declaration, above.

421. Like I note above, to automatically send (or update) the webpage displaying the list of users when users toggle their visibility setting, Baig's server would have used "**user profile information associated with a device identifier of a second device … to cause an automatic action to be taken with respect to the first device**," as claimed because the list 606 would have been updated based on the

current visibility setting in the user profile associated with the second device and because the webpage with the current list of visible users (or an update to the list) would have been sent to the first mobile device in a network communication addressed to the first mobile device using its device identifier (access point IP address and assigned port number).

422. In my opinion, a POSA would have understood, for example, that such a network communication would have been automatically transmitted to the first mobile device ("Terminator's" device) based on the user, "Razor Shark", when toggling his visibility setting to allow himself to be visible to other users. Ex. 1007, [0081], [0124], FIG. 7; Ex. 1008, 14, 22; Ex. 1042, 48; *see also* ¶415, *supra*. Notably, the list 606 that is transmitted to the first device will only include "Razor Shark" (who is connected using access point IP address associated with the second device), if "Razor Shark" has allowed himself to be visible to other users. *Id.* In other words, the fact that "Razor Shark" appeared in list 606 sent to the first device reflects the fact that "Razor Shark" allowed himself to be visible to other users. Moreover, as I explain above, the '015 Patent makes clear that profile data can include information about user "behavioral information" or "activities." Ex. 1001, 6:11-16. Razor Shark's decision to make himself visible or invisible qualifies as "**user profile information**" because it reflects his decisions with respect to whether

he will be presented to other users. Ex. 1007, [0070], [0080], [0124]; Ex. 1008, 12, 14, 22.

423. Baig discloses a third way in which Baig's server automatically causes a cross-device action with respect to a first of Baig's mobile devices using the device identifier of the first mobile device (the combined access point IP address and assigned port number) and user profile information associated with a second of Baig's mobile devices. Baig discloses that advertisers may advertise online through the VCSP website based on the profile information (e.g., gender, age) of users connected to a particular access point (AP) hotspot.

> ...The vicinity-based service permits advertisers to target particular geographical locations. Advantageously, **the advertisers can target the audience of a particular hotspot according to the profile, e.g., age/gender etc. of the users** and/or a particular time of the day. As users register online on the VCSP website, profile information about our users, such as age, gender, occupation, interests and the like are requested during the registration process and securely stored by the VCSP 202....

Ex. 1007, [0093]; Ex. 1008, 17 (emphasis added); *see also* Ex. 1007, [0058]-[0062], [0093]-[0106]; Ex. 1008, 9-10, 16-19.

424. For this third example, the claimed "**automatic action**" is a targeted advertisement that Baig's modified systems (e.g., the systems of Baig-Satapati-

Damick and Baig-Zwicky-Damick) automatically provide to a mobile device based on that mobile device (first device) being associated with another mobile device (second device) in VCSP group via their device identifiers (e.g., access point IP address and assigned port number) as I show above for elements [1B]-[1D]. A POSA would understand that a user connected to Baig's VCSP would not be required to take specific action in order for the VCSP to select a targeted advertisement or for a VCSP webpage to be updated/refreshed to display the targeted advertisement. See Ex. 1042, 48; see also ¶415 of my Declaration. Additionally, in Baig, advertisers target advertisements at audiences connected to particular AP hotspots both in real-time and during certain times of the day (Ex. 1007, [0093]-[0094], [0099], [0103]-[0105]; Ex. 1008, 16-19), which would not require specific user action to be taken. Baig teaches that its advertisements are provided via Baig's VCSP website. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. It is my opinion that a POSA would have appreciated that the targeted advertisements were provided to the devices of Baig's users automatically because they were provided based on age, gender, traffic patterns, and/ or in real time according to a bidding system. Ex. 1007, [0011]-[0012], [0054], [0058]-[0059], [0061]-[0062], [0093]-[0095], [0098]-[0106]; Ex. 1008, 2, 8-10, 16-19.

425. To automatically, select, send, and display advertisements to subsets of the VCSP vicinity groups (e.g., based on age and/or gender), Baig's server would

have used "**user profile information associated with a device identifier of a second device … to cause an automatic action to be taken with respect to the first device**," as claimed because an advertisement would have been transmitted to the first mobile device ("Terminator's" device), for example, using an average age (and/or gender distribution) of the users connected to the common access point and grouped together in the VCSP vicinity group—which would include the age (or gender) of the user of the second device ("Razor Shark")—and, further, because the advertisements would have been sent to the mobile devices that satisfy the demographic criteria for the advertisement (e.g., the age/gender criteria) in network communications addressed to those devices using their respective device identifier (the combined access point IP address and assigned port number). *See e.g.*, Ex. 1007, [0011], [0061], [0093]-[0099]; Ex. 1008, 2, 10, 16-18. As I note above, the age and gender information, stored in the user profiles associated with the mobile devices connected to Baig's access point and logged in to the VCSP website, disclose "**user profile information.**" Ex. 1007, [0070] ("the illustrative registration form includes … [a] "Gender" field 508 … [an] "Age" field 514"); Ex. 1008, 12.

viii. Element [1H]: "(i) the first association is one of the associations identified in part (a)(ii); and"

426. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1H].

427. As I show above for elements [1B]-[1D] and [1G], the claimed "**first association**" is disclosed by the Baig-Satapati-Damick and Baig-Zwicky-Damick systems use of the common IP address of the access point, the assigned port numbers of mobile devices connected to that access point, and the network access timing information for determining/identifying associations between the mobile devices—via their respective identifiers—that belong to the same VCSP vicinity group. Such associations are illustrated, for example, by list 606 shown in Baig's FIGS. 6-7. The association between these identifiers, therefore, discloses the claimed requirement that "**the first association is one of the associations identified in part (a)(ii)**" as recited in element [1H]. See also my comments regarding elements [1B]-[1D] above.

428. The proposed combinations thus disclose and render obvious element [1H].

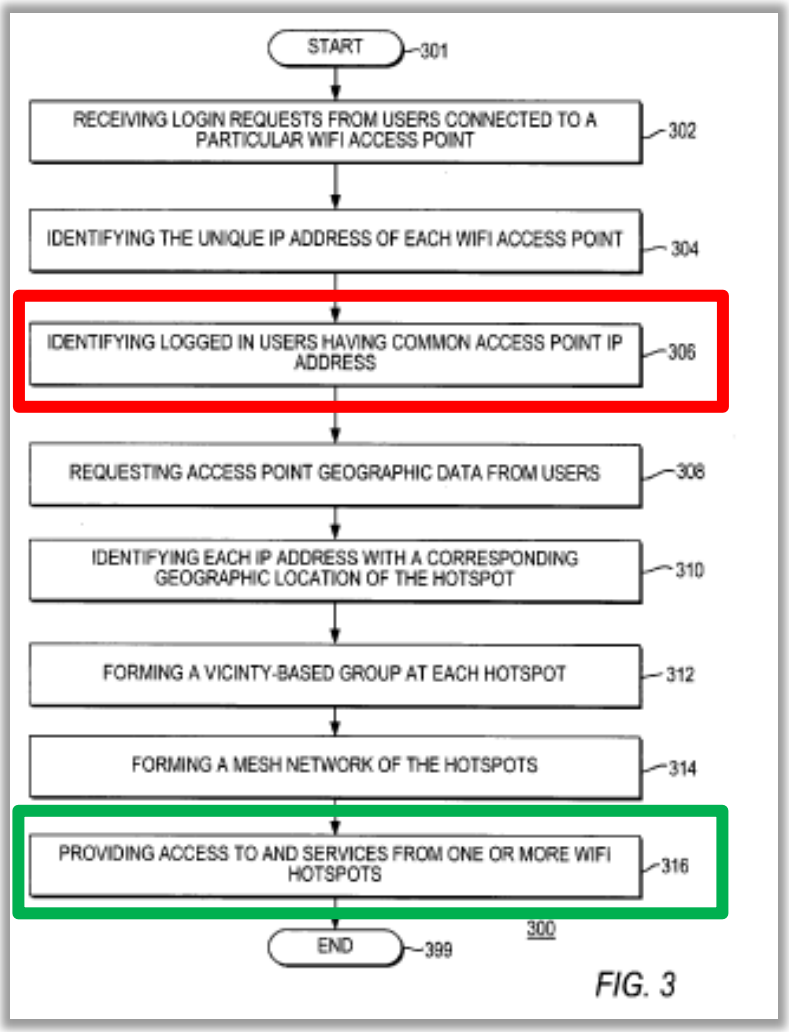
ix. Element [1I]: "(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)."

429. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious element [1I].

430. It is my opinion that a POSA would have found it obvious that the server of Baig's modified systems "**creat[es] an electronic database**" containing a

multitude of the claimed "**associations**." See, for example, my comments regarding elements [1B]-[1D] and [1G] above. Ex. 1048, 5 (defining "database" as "any aggregation of data"). Referring to the example I provide above for element [1G], Baig's database would have stored the list of users (e.g., list 606), such as "Terminator" and "Razor Shark", connected to Baig's server via the same access point to access the VCSP services using the common IP address of the access point ("**the first association was stored in the electronic database described in part (a)**").

431. As I explained in Section XII.D.1.vii, for element [1G], the claimed "**communication**" refers to the communication between the "computer system" and "first device" that causes the claimed "**automatic action**." As shown below in step 306 of Baig's Figure 3, the "first association" would have been stored in the database "**prior to the computer system and the first device being in communication with one another as described in part (b)**."



Ex. 1007, FIG. 3 (annotated); Ex. 1008, FIG. 3.

432. As I show above in Figure 3 of Baig, at step 306 (**red**), Baig's server 124/224 determines the claimed "**the first association**" when it identifies two of Baig's mobile devices 102 (e.g., the first and second devices) sharing a common IP address due to being connected to the VCSP using the same access point at the same time and/or in accordance with established network access rules. Ex. 1007, [0038], [0056], FIG. 3 (Step 306); Ex. 1008, 5, 8, FIG. 3; Ex. 1017, [0062].

433. Baig also explains that, at step 316 (**green**), Baig's server "enables users to access and receive services from one or more WiFi hotspot" via the VCSP website. For example, a mobile device 102 may communicate with Baig's server in order to access the VCSP website and receive webpage content as shown in Baig's Figures 6 and 7. Ex. 1007, [0060]; Ex. 1008, 9-10. Accordingly, Baig's server is "in communication" with the users' mobile devices 102 to provide the VCSP services, such as list 606 or a targeted advertisement. Ex. 1007, [0053], [0060], [0076], [0101], FIGS. 3, 6-7; Ex. 1008, 8-10, 13, 18, FIGS. 3, 6-7. The association between the first and second mobile devices, therefore, would have been stored in the electronic database "**prior to the computer system and the first device being in communication**" to provide services via the VCSP website, including the transmission and/or display of list 606 on the first mobile device. It is my opinion that a POSA would have understood that the "first association" would have been stored "**prior to**" the transmission and/or display of: an advertisement to the mobile devices connected to the access point, or an updated list 606 in response to a user's toggling of their visibility setting to change whether or not they are visible to other users in the VCSP vicinity group. Ex. 1007, [0054], [0059], [0061]-[0062], [0080], [0099], [0124]; Ex. 1008, 8-10, 14, 18, 22. In sum, the formation of the VCSP group using the device identifiers (e.g., access point IP address and assigned port numbers) of mobile devices having connected to the VCSP website at the same time and/or in

accordance with set network access rules using a same access point 106, prior to the provisioning of VCSP services and transmission of VCSP webpages to the first mobile device based on user profile information of a second mobile device, therefore discloses the claimed requirement that "**the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)**" as recited in element [1I].

434. The combinations of Baig-Satapati-Damick and Baig-Zwicky-Damick disclose another example of "(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)." Baig recognizes that users may inadvertently lose wireless connectivity when connected to the Internet via an access point, and teaches that information from a previous session can be maintained for a predetermined period of time "to prevent accidental deletion" during a connectivity failure. *See* Ex. 1007, [0055], [0076], [0125] ("[t]he Buy & Sell or Barter service allows users to post any item or service for sale" and "items can remain posted for a predetermined time (e.g., 5 minutes) after the user has logged off to prevent accidental deletion of the item in the event of accidental failure of connectivity"); Ex. 1008, 8, 13, 22. See Figure 1 below that I made to illustrate Baig's barter advertisement example concerning element [1I].

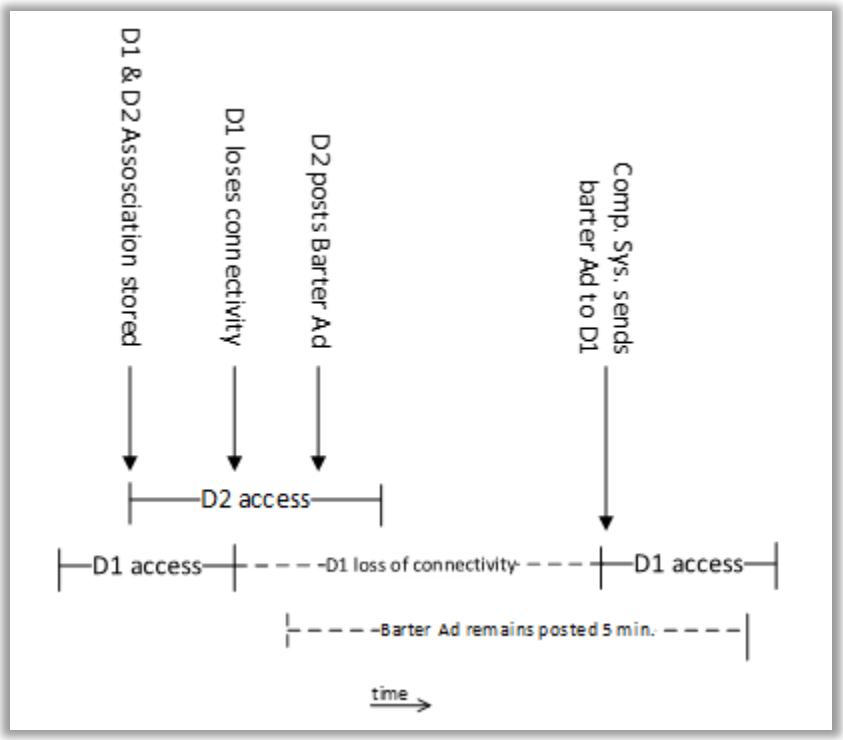


Figure 1: Example Figure for Ground D, [1I] discussion

Referring to Figure 1 shown above, the "**first association**" between devices D1 and D2 are "**stored in the electronic database**" when both D1 and D2 are connected to the VCSP. As Baig discloses, device D1 (in this specific example) may lose connectivity to Baig's server, and may no longer be connected to the VCSP of Baig's modified system (e.g., the respective systems of Baig-Satapati-Damick and Baig-Zwicky-Damick) ("**the computer system**"). Device D2 may then post any item or service for sale as part of the barter and sale service provided by the VCSP. Ex. 1007, [0008], [0054], [0061], [0079], [0085]-[0088], [0125], FIGs. 7-8, 20; Ex. 1008, 2, 8, 10, 13-15, 22, FIG. 7-8, 20. This barter advertisement remains posted via the VCSP website for a predetermined period of time, 5 minutes in this example, as

described by Baig. Ex. 1007, [0125]; Ex. 1008, 22. Device D1 may then reconnect to the VCSP of Baig's modified system ("**the computer system**"). The barter advertisement that was posted by device D2 would be sent to the device D1 and the item for sale along with additional information concerning the item or service for sale would be automatically be displayed on the screen of device D1 ("**automatic action**" … "**as described in part (b)**"). Further, in view of Baig's teachings, in my opinion, a POSA would have recognized that, after losing connectivity to Baig's access point hotspot (or by a user simply logging-off of the VCSP website), the first mobile device (e.g., D1) may regain Internet access and rejoin the VCSP website (e.g., by reconnecting to the same hotspot 110 and access point 106 and logging back in to the VCSP website), which would have resulted in the first device reestablishing communication with Baig's server and the user of the first device being added back to the same VCSP vicinity group. Ex. 1007, [0055]-[0059], FIGS. 3, 6; Ex. 1008, 8-9, FIGS. 3-6. The first device would be added back to the same VCSP vicinity group when the first device reconnects to the same access point 106 associated with that VCSP group. It is my opinion that a POSA thus would have recognized that the initial association between the first mobile device (e.g., D1) and the second mobile device (e.g., D2), which occurs before the first device loses connectivity or logs off the VCSP website, would have been stored in the database "**prior to"** the first device reconnecting to the VCSP website and being in communication with

Baig's server upon reconnecting to the VCSP via the access point. As a result, the first device would, again, be able to receive and subsequently display the list 606 comprising gender information of other users, an indication of whether a user has concealed their identity, and/or a targeted advertisement generated based on the profile information of other users (e.g., the barter item advertised as shown in Baig's Fig. 20 selling the "used mobile phone"), as I discuss herein and above concerning element [1G] ("**automatic action**" … "**as described in part (b)**").

435. The proposed combinations thus disclose and render obvious element [1I].

2. Dependent Claim 2: "The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

436. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 2, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

437. As I show above for element [1D], the content servers of Baig-Satapati-Damick and Baig-Zwicky-Damick would have "**determine[d] that both of the at least two devices have accessed the Internet via a common IP address at**

respective times satisfying a predetermined time-relation criterion," when they determine that a second mobile device, of multiple mobile devices, has connected to Baig's access point and logged-in to Baig's VCSP website using a same access point IP address at the same time as an already-connected first device and/or having satisfied any established network access requirements, thereby placing the first and second devices in the same VCSP vicinity group. *See* Ex. 1007, [0038], [0052], [0056], FIG. 3; Ex. 1008, 5, 7-8, FIG. 3; Ex. 1017, [0062].

438. In this example, the first mobile device ("**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**") would have accessed the Internet 122 via the access point 106 within a specified length of time from when the second device accessed the Internet via the access point, in this case, within whatever the smallest unit of time is used by the system for comparing access times, because the first and second devices are joined into a same VCSP group if they both are concurrently accessing the Internet via the access point 106 ("**accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet"**). Baig's modified systems (e.g., the systems of Baig-Satapati-Damick and Baig-Zwicky-Damick) would determine the difference between the most recent access times of two devices (e.g., the first and second devices) and further would determine whether that difference is less than "a specified

length of time" (e.g., the threshold amount of time that the difference in access times must be within to indicate concurrent accessing of the VCSP). For example, referring to the diagram that I created shown below in Figure 2, if the most recent access times for the second device (D2) and the first device (D1) are compared by Baig's modified systems on a second-by-second basis, then the specified length time (TH) in this instance would be one second, which is the interval of time used by Baig's modified systems to capture/determine matching access times for the devices. In this example, Baig's modified systems would determine that the first and second devices are concurrently accessing the same AP and thus include the devices in the same VCSP group if |t2-t1| < TH. Thus, this concurrent connection by the devices and Internet access via a common AP 106 also discloses the claimed "**predetermined time-relation criterion**" disclosed in dependent claim 2.

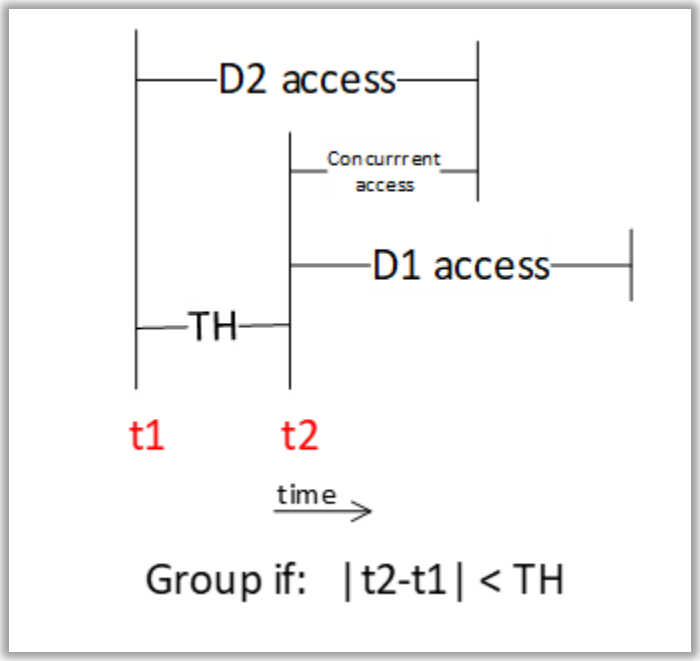


Figure 2: Example Figure for Ground D, Claim 2 discussion

439. Additionally, by implementing network access control rules that establishes a set amount of time and/or a time of day that a device 102 in the Baig-Satapati-Damick and Baig-Zwicky-Damick systems may access the Internet, the VCSP website, and/or specific VCSP services, as I discussed above concerning elements [1C]-[1D], each mobile device 102 in a VCSP vicinity group would have accessed the Internet within a specified length of time of another mobile device. For example, if a network access control condition was implemented to limit each device 102 to one hour of Internet access, in this case, the "**specified length of time**" would be no greater than one hour since each mobile device may only access the Internet (and/or the VCSP website) for that specified amount of time. As such. The mobile device would only be associated with other devices, as members of a VCSP group, within that set duration of time. As another example, suppose a first user ("Terminator") accessed the VCSP website via access point 106 using a first device at 9:00am and is allowed three hours of Internet access by the access point hotspot 110. A POSA would understand that if a second user ("Razor Shark") accessed the Internet using a second device via the same access point 106 and is added to the same VCSP group as "Terminator"—e.g., as evidenced by both users being included on a list 606 of users within the VCSP group—then the Razor Shark must have accessed the Internet before 12:00pm ("**within a specified length of time"** after a

time when Terminator accessed the Internet) because both the first and second devices are accessing the VCSP website and the allotted three hours of Internet access time for Terminator's device has not expired. Thus, the "association" between the device identifiers Terminator's device and Razor Shark's device would only be determined when Terminator's device accesses the VCSP while Razor Shark's device is still connected to the VCSP website—in other words, within the three-hour time window that Razor Shark's device is permitted access to the VCSP website via the Internet.

440. The proposed combinations thus disclose and render obvious dependent claim 2.

3. Dependent Claim 3: "The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

441. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 3, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

442. Claim 3 recites a "**predetermined time-relation criterion**" requiring that predetermined time-relation criterion comprises the criterion that one of two

devices referenced in part (a)(ii) of claim 1 "**accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**." I have been asked to consider a scenario where Claim 3's "**predetermined time-relation criterion**" requires that one device (first device) accessed the Internet "**between two times**" when the other device (second device) accessed the Internet, wherein the claimed "**between two times**" means within a time window defined by two separate times. To the extent that it does, as discussed in further detail below, Baig-Satapati/Zwicky-Damick teach claim 3. Rather than using a "specified length of time" after one of the two devices accesses the Internet as the criterion for determining an "association" with another device as recited in claim 2 (see Section XII.D.2), claim 3 specifies two times defining the upper and lower bounds of a time window as the criterion for determining the claimed "first association." I created the diagram shown below in Figure 3 to illustrate this point. An association may be determined if one of the two devices D1 accesses the Internet within a threshold time t1 before the other device D2 accesses the Internet (a first time of the claimed "two times"), or within a threshold time t2 after the other device D2 accesses the Internet (a second time of the claimed "two times"). In my opinion, using a time window that includes the network access time of one device (second device D2) to determine whether that device D2 is associated with another device (first device D1) (see claim 3) would

have been an obvious variation of simply determining whether the first device accessed the Internet within a specified length of time after the second device accessed the Internet (see claim 2).

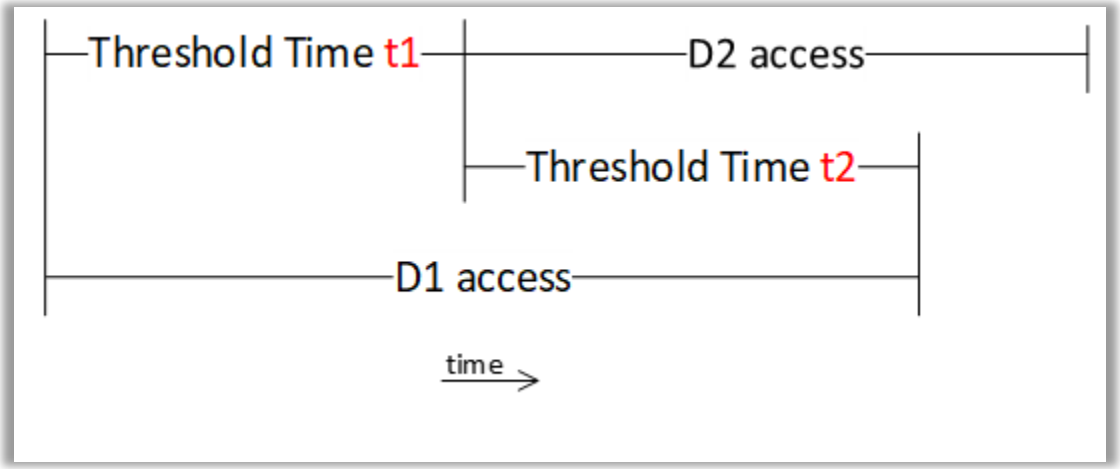


Figure 3: Example Figure for Ground D, Claim 3 discussion

443. As discussed above in Section XII.D.2, Baig's modified system determines whether the first device ("**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**") accessed AP 106 via the Internet 122 within a specified length of time (e.g., the smallest unit of time is used for comparing access times) from when the second device accessed the AP as shown in my example Figure 2 (see ¶438 of my Declaration above). Additionally, as discussed above in Section XII.D.1.iii, Baig's modified system may determine whether two devices should be joined within a VCSP group by determining that the most recent network access time of a first device accessing the AP hotpot occurs within a specified time period as a most recent access time of a second device accessing the same AP

hotspot. In my opinion, a POSA would have looked to expand the timing for comparing device network access times, for example, so as not to require exact matching of access times. Therefore, in my opinion, a POSA would have implemented the Baig-Satapati/Zwicky-Damick systems to determine concurrent Internet access via a common AP 106 by using upper and lower time boundaries ("**the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet"**). Additionally, by implementing network access control rules that establish a set amount of time or a time of day that a device in the Baig-Satapati-Damick and Baig-Zwicky-Damick systems may access the Internet, the VCSP website, and/or specific VCSP services, each mobile device 102 in a VCSP vicinity group would have accessed the Internet between two times when another mobile device accessed the Internet. Referring to the diagram in Figure 4 below that I made to illustrate another example, if a network access control condition was implemented to limit each device 102 to accessing the Internet between the hours of 4:00pm and 8:00pm, the first device and the second device would only be permitted to access the VCSP website within that specified window of time. In this instance, the determining of an association between the device identifiers of the first and second devices using

the stored data (e.g., common IP address, device identifiers, timestamp information) would require that the first device D1 access the VCSP website via the Internet between a first time t1 (4:00pm) and a second time t2 (8:00pm) when the second device D2 accessed the VCSP website via the Internet ("**between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**").

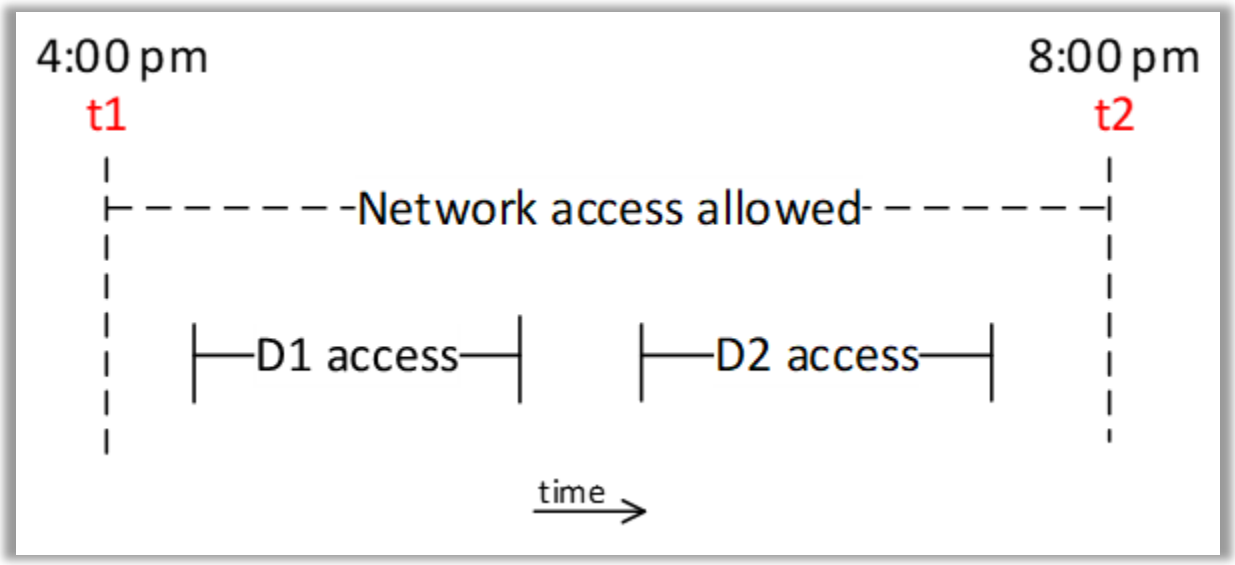


Figure 4: Example Figure for Ground D, Claim 3 discussion

444. I have also been asked to consider a scenario where Claim 3's "**predetermined time-relation criterion**" requires that one device (first device) accessed the Internet between two separate instances of another device (second device) having accessed the Internet. To the extent that it does, as discussed in further detail below, Baig-Satapati/Zwicky-Damick still teach claim 3. Referring to the example I discuss above for dependent claim 2, the user, "Razor Shark," shown

in Figure 6, may connect to Baig's server using his mobile device (**the second device; "one of the two or more Internet-accessing electronic devices"**) after a time when another user ("Terminator") has already connected to the content server using their mobile device (**the first device; "another one of the two or more Internet-accessing electronic devices**") via a shared access point having a common IP address. Ex. 1007, [0038], [0043]; Ex. 1008, 5-6. Thereafter, the mobile device of the user, "Terminator," ("**first device**") may temporarily disconnect from Baig's server, for example, by inadvertently losing its connection to the access point or temporarily connecting to a different access point as I show above for element [1I]. This loss of connection would sever the initial association between the two devices. After the user, "Terminator," reconnects to the VCSP website via the same access point (AP) hotspot, Baig's server would identify the user, "Terminator," and the user ("Razor Shark") of the second mobile device ("**second device**") as being connected to the same access point 106 having a common IP address and would therefore associate the device identifier of the first device with the device identifier of the second device by grouping the two mobile devices 102 together in a same VCSP vicinity group (**"the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part**

(a)(ii) accessed the Internet"). Ex. 1007, [0052], [0056], FIGS. 2-3, 6; Ex. 1008, 7-8, FIGS. 2-3, 6.

445. It is my opinion that a POSA also would have understood that the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious dependent claim 3 based on an additional example in which the user, "Terminator," shown in Baig's Figure 6, connects to Baig's content server using his mobile device (**the first device; "one of the two or more Internet-accessing electronic devices**") after a time when another active user ("Razor Shark") has already connected to Baig's server using their mobile device (**the second device; "another one of the two or more Internet-accessing electronic devices"**), thereby joining Terminator in the same VCSP vicinity group as Razor Shark. In this additional example, where Razor Shark joined the VCSP group prior to Terminator, the mobile device of Razor Shark ("**the second device**") may temporarily disconnect from Baig's server, as I noted above for element [1I]. Upon reconnecting to Baig's access point 106 using the second mobile device, Razor Shark would rejoin the same VCSP vicinity group for the access point, which would still include the Terminator. Thus, Terminator's mobile device in this example discloses the "**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**" recited in claim 3 and would have accessed the Internet between two times when Razor Shark used their mobile device to access the Internet,

which satisfies the predetermined time-relation criterion that the second mobile device "**accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet**" as recited in claim 3

446. The proposed combinations thus disclose and render obvious claim 3.

4. Dependent Claim 4: "The computer system of claim 1 wherein the first association of part (b) is one of the associations identified in part (a)(iii)."

447. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 4, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

448. As I show above for elements [1E] and [1G]-[1I], none of the "**associations**" discussed herein are determined using PII. Therefore, the claimed "**first association**" I discuss above for elements [1G]-[1I] satisfy the requirement of element [1E] that the association between device identifiers of two devices (e.g., the first mobile device and second mobile device) is determined without using PII.

449. For example, as I explain above for element [1G], the server of Baig's modified systems use the device identifier (access point IP address and the assigned port number) of a first mobile device to send a webpage to the first mobile device that includes a list 606 indicating the gender of other logged-in users—e.g., the user,

"Razor Shark," associated with one of the mobile devices that are connected to the same access point and belong to the same VCSP vicinity group as the first mobile device:

> The web page 600 also **displays a list 606 of other users at the present hotspot 110**. In one embodiment, **the list includes the user names associated with users that have logged into the VCSP website**. In another embodiment, the list 606 includes the total number of mobile devices having wireless connectivity at the present hotspot 110. Optionally, a link 608 is provided to invite other others at the hotspot 110 to join the VCSP website. If link 608 is selected, then a pop-up window 610 will be displayed to allow the user to invite another user to the VCSP website by entering the invitee's name or email address.

Ex. 1007, [0076] (emphasis added), FIG. 6; Ex. 1008, 13, FIG. 6.

450. The Baig-Satapati-Damick and Baig-Zwicky-Damick systems, therefore, would have determined the associations between the device identifiers of the first and second mobile devices without using PII as required by "**part (a)(iii)**" in element [1E] thus satisfying the requirement that "**the first association of part (b) is one of the associations identified in part (a)(iii)**" as recited in claim 4. See my comments regarding element [1E].

451. The proposed combinations thus disclose and render obvious claim 4.

5. Dependent Claim 5: "The computer system of claim 1 wherein the second device of part (b) comprises a mobile device that accessed the Internet both via the common IP address of the first association and via at least one different IP address, and wherein the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address."

452. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 5, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above. In particular, Baig-Satapati-Damick and Baig-Zwicky-Damick disclose and render obvious claim 5 for the same reasons as I explained above concerning the Baig-Banga507-Banga690-McFarland combination. *See* Section XII.A.5, *supra*; Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIGS. 3, 5; Ex. 1008, 5, 7, 8-10, 14, 16-17, FIGS. 3-5.

453. For purposes of providing an example, as shown above in my example provided for element [1G], the user, "Razor Shark," shown in Baig's Figure 6 would have connected to Baig's server using his mobile device ("**the second device"**)—via the access point 106 having a public IP address (e.g., the IP address of a first AP hotspot) —after another user ("Terminator") has already connected to the Internet via the same IP address of the access point ("**a mobile device that accessed the Internet both via the common IP address of the first association**"). Ex. 1007, [0039], [0047], [0056]-[0060], FIGS. 3, 6; Ex. 1008, 5, 7, 8-10, FIGS. 3, 6.

454. Baig teaches that users may connect to its system from multiple access point (AP) hotspots:

> For example, end-users connected to a hotspot provided by a coffee shop (e.g., STARBUCKS), illustratively located at 100 Madison Avenue, NY, N.Y., are asked to provide the street address of the STARBUCKS where the WiFi hotspot is located. End users are also asked other optional data such as age and gender etc. of each user. As the **public IP addresses of each hotspot are unique**, the VCSP is able to **build a database that associates the unique public IP addresses of each hotspot** with the street address of a physical location (e.g. "280 Park Ave, NY, N.Y." or "Starbucks at 48th and Park, NY, N.Y.").
>
> At step 310, the server correlates the **geographic locations of the hotspots** to their unique IP addresses. In this manner, the VCSP 202 can determine the **locations and geographical distributions of hotspots** in a particular region. For example, in a five-block radius in a particular metropolitan city, **there may be a dozen hotspots that are available for users to access the Internet**. Such information can be utilized by the VCSP 202 to provide particular services to users accessing a particular hotspot 110. For example, the owner of a music store who has logged in to the VCSP 202 can choose to advertise discount coupons to other users logged on the hotspots in his store's vicinity. As will be discussed below in further

> detail, other services can be provided to users at **particular hotspots** 110.

Ex. 1007, [0039], [0058] (emphasis added); *see also id.*, [0047], [0056]-[0057], [0059]-[0060], [0065], FIG. 3; Ex. 1008, 5, 7, 8-10, 11, FIG. 3.

455. Baig further teaches that the VCSP may "creat[e] a mesh network of WiFi hotspots" and provide services to users accessing geographically-distributed access point (AP) hotspots, wherein each AP hotspot is associated with a unique IP address:

> At step 314, the server 224 **forms a mesh network of the WiFi hotspots**. In particular, the server connects other **similar hotspots (i.e. hotspots where users have logged onto the VCSP website) to one another, thereby creating a mesh network of WiFi hotspots**. At step 316, the server enables users to access and receive services from one or more WiFi hotspots. That is, the VCSP 202 creates a vicinity-based user network by creating WiFi-hotspot based mesh networks. In this manner, WiFi users at **one hotspot can be linked to users at other hotspots, thereby allowing them to browse through the list of available WiFi hotspots on the VCSP network and log on to other hotspots**. The method 300 then proceeds to step 399, where method 300 ends.

Ex. 1007, [0060], FIG. 3; Ex. 1008, 9-10; *see also* Ex. 1007, [0065]; Ex. 1008, 11.

456. Given Baig's teachings that multiple AP hotspots are available for its users to connect to using their mobile devices (e.g., a "first device" and a "second device"), in my opinion, a POSA thus would have understood Baig to contemplate using a mobile device (e.g., a "second device") connected to a first AP hotspot having a first IP address to create a user profile during a registration process and, once registered, modifying the user profile using the mobile device while it is connected to a second AP hotspot having a second, different IP address. The mobile device connected to the first AP hotspot used during the registration process thus discloses the claimed "**mobile device that accessed the Internet … via the common IP address of the first association**" as recited in claim 5. That mobile device, when updating the user profile after registering while connected to a different AP hotspot with a different IP address, would have "**accessed the Internet … via at least one different IP address**" and would have satisfied the claimed requirement that "**the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address**" as also recited in claim 5. Ex. 1007, [0039], [0047], [0056]-[0060], [0081], [0093]; Ex. 1008, 5, 7, 8-10, 14, 16-17.

457. Referring back to the example provided for element [1G], after Razor Shark uses the second mobile device to connect to an AP hotspot (e.g., to register with Baig's VCSP website), Razor Shark would have been able to connect to a

different hotspot with a different IP address using the second mobile device and log-in to Baig's VCSP website via that different/second AP hotspot ("**a mobile device that accessed the Internet both via the common IP address of the first association and via at least one different IP address**"). That POSA also would have understood that, once logged into Baig's VCSP website via the different/second AP hotspot, Razor Shark would have been able to edit his profile information (e.g., age, gender, visibility, etc.) ("**wherein the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address**"). Ex. 1007, [0039], [0060], [0065], [0070], [0081], FIGS. 3, 5; Ex. 1008, 5, 9-12, 14, FIGS. 3, 5.

458. After the user ("Razor Shark") reconnects to Baig's server via the first/initial access point (AP) hotspot, the user's mobile device (second device) would have been able to subsequently connect to Baig's VCSP website via that first/initial AP hotspot. Thereafter, as I explain for element [1G], a webpage, such as webpage 600 shown in Baig's Figure 6, would have been transmitted to the first mobile device (e.g., Terminator's device) displaying a list of users (e.g., list 606) that are connected to the first AP hotspot, including the user (e.g., "Razor Shark") along with his updated profile information (e.g., age, gender, visibility) that was collected while connected to the second/different AP hotspot having a different IP

address. Ex. 1007, [0038]-[0039], [0055]-[0058], [0075]-[0076], FIGS. 3, 6; Ex. 1008, 5, 8-9, 13, FIGS. 3, 6.

459. The proposed combinations thus disclose and render obvious claim 5.

6. Dependent Claim 6: "The computer system of claim 5 wherein the user profile information of part (b) was collected after the computer system has determined the first association, and wherein the first association of part (b) is one of the associations identified in part (a)(iii)."

460. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 6, which depends from dependent claim 5. See my comments regarding elements [1A]-[1I] and dependent claim 5 above.

461. As I show above for claim 5 (see Section XII.D.5), Baig teaches using one of its mobile devices 102 to create and update a user profile from different access point (AP) hotspots. Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIG. 3, FIG. 5; Ex. 1008, 5, 7, 8-11, 14, 16-17, FIG. 3, FIG. 5. It is my opinion that a POSA would have found it obvious for Baig's modified system to receive modifications to a user profile at the user's discretion whenever the mobile device 102 is connected to an AP 106. That POSA, therefore, would have further found it obvious for Baig's modified systems (e.g., the respective systems of Baig-Satapati-Damick and Baig-Zwicky-Damick) to receive user profile updates both before and after a user (e.g., Razor Shark) joins a VCSP group (e.g., the VCSP group

that includes the Terminator) by accessing a particular AP hotspot, thereby associating device identifiers of the respective mobile devices for Razor Shark and Terminator. In my opinion, a POSA would have appreciated that profile updates would have included updates about a user, including their age, gender information, visibility preference, among other profile/preference options. Ex. 1007, [0039], [0061], [0070], [0093], [0096], FIG. 15; Ex. 1008, 5, 10, 12, 16-17, FIG. 15. Receiving updates to the user profile, for example, after Razor Shark joins the same AP hotspot and VCSP group as Terminator thus satisfies the claimed requirement that "**the user profile information of part (b) was collected after the computer system has determined the first association**" as recited in claim 6. See my comments regarding elements [1B]-[1D] and [1G] above.

462. More specifically, referring to the example that I discuss concerning claim 5, it is my opinion that a POSA would have recognized that, after Razor Shark uses his second mobile device to connect to the same AP hotspot as another user (e.g., "Terminator"), for a first time, an association ("**first association**") would have been formed between the device identifiers of the first mobile device ("**the first device**") and Razor Shark's mobile device ("**the second device**"). That POSA also would have understood that, after Razor Shark subsequently connects to Baig's server, via a different/second AP hotspot having a different IP address, he may register and/or update his profile information, e.g., age, gender, or visibility

("**wherein the user profile information of part (b) was collected after the computer system has determined the first association"**), as I note above for dependent claim 5. Additionally, as I further note above concerning claim 5, "Razor Shark" may subsequently reconnect to the first/initial AP hotspot to rejoin the VCSP group that also includes Terminator. Ex. 1007, [0039], [0060], [0065], [0070], FIGS. 3, 5; Ex. 1008, 5, 9-12, FIGS. 3, 5.

463. Further, as I note above for element [1E] and dependent claim 4, under the proposed combinations, the claimed "**device identifier**" of a mobile device (e.g., the first/second mobile device) would have included the IP address of the access point, and the port number assigned to that mobile device, neither of which can be used to identify a specific person. Accordingly, Baig's modified systems would have determined the associations between the device identifiers ("**the first association**") of the Terminator's (first) mobile device and Razor Shark's (second) mobile device without using PII.

464. The proposed combinations thus disclose and render obvious claim 6.

7. Dependent Claim 7: "The computer system of claim 5 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet."

465. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 7, which depends from dependent claim 5. See my comments regarding elements [1A]-[1I] and claim 5 above.

466. I note that dependent claim 7 recites the same language as dependent claim 3. The proposed combination, therefore, discloses and renders obvious the requirements of claim 7 at least for the same reasons as claim 3. See my comments regarding claim 3 above regarding a user's (Terminator's) mobile device connecting to an AP hotspot between two times when another user's (Razor Shark's) mobile device connected to the AP hotspot. See Section XII.D.3; Ex. 1007, [0038], [0055]-[0056], [0076], [0125], FIGS. 3, 6; Ex. 1008, 5, 8-9, 13, 22, FIGS. 3, 6. The dependency of claim 7 from claim 5 does not impact how claim 7 is met as described above for dependent claim 3.

467. The proposed combinations thus disclose and render obvious claim 7.

8. Dependent Claim 9: "The computer system of claim 1 wherein the user profile information of part (b) was collected after the computer system has determined the first association."

468. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 9, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

469. I note that dependent claim 9 recites the same language as dependent claim 6. The proposed combination, therefore, discloses and renders obvious the requirements of claim 9 at least for the same reasons as claim 6. See my comments regarding claim 6 above. See Section XII.D.6; Ex. 1007, [0039], [0047], [0056]-[0060], FIGS. 3, 6; Ex. 1008, 5, 7, 8-10, FIGS. 3, 6.

470. The proposed combinations thus disclose and render obvious claim 9.

9. Dependent Claim 10: "The computer system of claim 1 wherein the automatic action of part (b) comprises selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information associated with the device identifier of the second device, and causing the selected advertisement to be directed to the second device."

471. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 10, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

472. As I explain above for element [1G], Baig's modified systems (the respective systems of Baig-Satapati-Damick and Baig-Zwicky-Damick) would have collected profile information (e.g., age, gender, etc.) from individual users and would have used that profile information to provide VCSP services to members of the vicinity-based user group.

473. As I show above for element [1G], Baig also teaches that the VCSP may provide vicinity-based targeted advertising to group members, including scheduled and/or real-time advertising, that offers "the ability to advertise to an audience at a particular WiFi hotspot based upon the profile (e.g., age or gender) of the user (among other profile information)" ("**selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information"**). Ex. 1007, [0058]-[0062], [0093]; *see also Id.*, [0011]-[0012], [0054], [0094]-[0106], [0115], [0120], FIG. 22; Ex. 1008, 2, 8-10, 16-19, 21, FIG. 22. It is my opinion that a POSA would have recognized that the advertisement selected as the targeted advertisement in Baig's modified systems would have been selected from among multiple possible advertisements. Baig, for example, contemplates that multiple advertisers can provide respective advertisements and bid on the opportunity to provide those advertisements to Baig's mobile devices. Ex. 1007, [0011] (multiple "advertising entities can bid to provide advertising to the end users at a given wireless hotspot"), [0012] (multiple

"advertisements associated with the selected entity are provided"), [0054] ("bidding system for [multiple] advertisers"), [0062], [0093], [0094] ("flow diagram is shown for providing [multiple] advertisements to a particular hotspot 110"), [0095] (multiple "advertisements delivered"), [0099] ("VCSP provides [multiple] advertisements from [multiple] advertisers"), [0102] ("multiple advertisers can bid"), [0103] (multiple "online advertisements"); Ex. 1008, 2, 7-8, 16-19, 21. It is my opinion that a POSA would have understood, therefore, that the targeted advertisement selected in Baig's modified systems would have been selected "**from among a plurality of possible advertisements**" as claimed.

474. Further, as I also show above for element [1G], Baig's modified systems would have selected an advertisement sent to the first mobile device based on user profile information associated with the device identifier of another mobile device (second mobile device) operated by a user who is a member of the same VCSP group and whose second mobile device is connected to the same AP hotspot as the first mobile device, which discloses the that "**the automatic action of part (b) comprises selecting an advertisement … based at least in part on at least a portion of the user profile information associated with the device identifier of the second device**" as recited in claim 10. More specifically, it is my opinion that a POSA would have understood that the user profile information used to select the advertisement would have been "**associated with the device identifier of the**

second device" as claimed. This is because the Baig-Satapati-Damick and Baig-Zwicky-Damick systems would have selectively targeted advertising through the VCSP website to users' mobile devices at a particular access point (AP) hotspot (having a unique IP address assigning device-specific port numbers to each of the mobile devices) based on their profile information and because each mobile device ("**second device**") would have been identified by a combination of the access point IP address and a TCP/IP port number assigned to the mobile device ("**device identifier**") as I explain above for element [1G]. Ex. 1007, [0058]-[0062], [0093]; *see also Id.*, [0011]-[0012], [0054], [0094]-[0106], [0115], [0120], FIG. 22; Ex. 1008, 2, 8-10, 16-19, 21, FIG. 22. Additionally, in my opinion, a POSA also would have understood that the Baig-Satapati-Damick and Baig-Zwicky-Damick servers "**caus[e] the selected advertisement to be directed to the second device**" at least because Baig discloses that entities advertise the selected/targeted advertisements online via the VCSP website, thereby causing the advertisement to be provided, from Baig's content server(s) 124/224, to the mobile device of particular users or to each of the devices for the entire hotspot audience. Ex. 1007, [0012], [0054], [0059]-[0062], [0093]-[0094], [0099], [0104]-[0105], FIGs. 1, 21; Ex. 1008, 2, 8-10, 17-19, FIGs. 1, 21.

475. The proposed combinations thus disclose and render obvious claim 10.

10. Dependent Claim 13: "The computer system of claim 1 wherein the device identifier of the first device of part (b) and the device identifier of the second device of part (b) include no personally identifiable information pertaining to a user of the first device or the second device."

476. In my opinion, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious claim 13, which depends from independent claim 1. See my comments regarding elements [1A]-[1I] above.

477. As I describe above for element [1E], under the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick, the "**device identifier**" for each of Baig's Internet-accessing devices 102_p is the combination of: **(i)** the IP address of the access point that the device connects to, and **(ii)** a TCP/IP port number associated to the device ("**one of the Internet-accessing devices**"). As would be understood by a POSA, and consistent with the '015 Patent, neither the IP address of Baig's access point, nor the port number(s) assigned to Baig's mobile device(s) 102 would have identified a specific person, and thus would not have included any PII. Accordingly, the device identifier for both the first and second devices "**include no personally identifiable information pertaining to a user of the first device or the second device**," as recited in claim 13. See my comments regarding element [1E] above.

478. The proposed combinations thus disclose and render obvious claim 13.

11. Independent Claim 14 and Dependent Claims 15-20, 22-23, and 26

479. As I note above for Ground A, independent claim 14 is the counterpart tangible data storage medium claim to independent claim 1, and any differences from independent claim 1 are non-substantive. See Claims Appendix. The combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick also teaches independent claim 14 for the same reasons as for claim 1.

480. Regarding independent claim 14, I note that this claim recites substantially the same claim language as independent claim 1. I also note that any differences between claim 1 and claim 14 are not substantive. Compare, for example, the language of claim 1, which recites a "computer system," and the language of claim 14, which recites an "article comprising a tangible data storage medium." Baig's non-transitory computer memory of its servers (e.g., server 124, server 224) storing computer programs and software discloses the claimed "**article comprising a tangible data storage medium that is not a transitory propagating signal encoding computer-readable instructions**" in independent claim 14. Ex. 1007, [0042]-[0043], [0052], FIG. 1; Ex. 1008, 5-6, 8, FIG. 1. It is my opinion that a POSA would have understood that those computer programs and that software would have performed the steps recited in independent claim 14 for the same reasons I explain above for independent claim 1. As would have been understood by a POSA, the computer programs and software in Baig's modified systems would also

have been encoded on a "**tangible data storage medium that is not a transitory propagating signal**" as claimed (e.g., non-transitory computer memory for storing computer programs and software). Ex. 1007, [0052]; Ex. 1008, 8.

481. Therefore, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious independent claim 14 and dependent claims 15-20, 22-23, and 26 for the same reasons as claims 1-7, 9-10, and 13.

E. Ground F and G: Claims 8 and 21 Are Obvious Over Baig in view of Satapati/Zwicky, Damick, and Costa

482. As I show above for Grounds D and E (see Section XII.D), the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky, and Damick disclose and render obvious at least claims 1, 7, 14 and 20. As I explain below, the combinations of Baig, Satapati, Damick and Costa, and the combination of Baig, Zwicky, Damick and Costa disclose and render obvious claims 8 and 21.

12. Element [8A]: "The computer system of claim 7 wherein: (A) the first device of part (b) is a television set-top box;" and Element [21A]: "The article of claim 20 wherein: (A) the first device of part (b) is a television set-top box;"

483. In my opinion, the combinations of Baig, Satapati, Damick and Costa, and the combination of Baig, Zwicky, Damick and Costa disclose and render obvious element [8A] in dependent claim 8, which depends from dependent claim 7, and element [21A] in dependent claim 21, which depends from dependent claim

20. See my comments regarding elements [1A]-[1I] and claims 7, 14, and 20 above. Moreover, the combinations of Baig, Satapati, Damick and Costa, and the combination of Baig, Zwicky, Damick and Costa disclose and render obvious elements [8A] and [21A] for the same reasons as I explained above in Ground B since the reasoning for adding an STB, such as Costa's STB, to Baig's modified systems is the same. See Section XII.B. The rationale for this proposed combination is explained in further detail below.

484. Baig discloses various types of mobile computing devices 102_p. Ex. 1007, [0043], [0123]; Ex. 1008, 6, 22. Baig teaches that its mobile devices 102_p, that connect to its publicly available AP hotspot, can include laptop computers, PDAs, "and the like." Ex. 1007, [0043]; Ex. 1008, 6. As I explain above for elements [1D]-[1E], each mobile device 102 has its own local (private) IP address and can wirelessly connect to a particular access point to join Baig's VCSP network with other devices already connected to that access point. Ex. 1007, [0043], [0049], [0055]-[0056], FIGS. 2, 3; Ex. 1008, 6-8, FIGS. 2, 3. Baig, however, does not explicitly disclose that its mobile devices 102_p include set-top boxes.

485. Costa, however, shows that it was known to provide a television and a set-top box in a network environment that includes a public wireless hotspot:

> The UPnP network 104 (or similar networking technology) allows devices to exchange data in a local environment 110. **The local environment 110** typically

> includes a home or office, although it will be appreciated that **other environments may provide UPnP connectivity**, including automobiles, airplanes, boats, **public wireless hotspots**, etc. The UPnP network 104 may couple consumer electronics devices 112, including televisions 114, audio systems 116, computers 118, telephones 120 (e.g., analog phones, digital phones, cordless phones, SIP phones), **digital media centers 122** (e.g., **set-top boxes**, MP3 jukeboxes, personal video recorders, media hubs), printers 124, cameras 126, and other devices, represented by generic UPnP device 128.

Ex. 1011, [0036]-[0037] (emphasis added).

486. As I explain above for Ground B, in my opinion, a POSA would have found it obvious to include a set-top box with a corresponding television, as taught by Costa, as one of the devices connected to the publicly available hotspot at the access point 106 in Baig's modified systems, which disclose the claimed "**first device of part (b) is a television set-top box**" as recited in elements [8A] and [21A]. In my opinion, that POSA would have been motivated to apply Costa's teachings to Baig's modified systems and include a set-top box and television in Baig's network environment (e.g., in Baig's coffee shop or any other AP hotspot location) because, by doing so, Baig's modified systems would have been able to advantageously provide VCSP services, including displaying targeted advertisements to the audience present at the access point (AP) hotspot location, as well as a list of users

that are connected to access point. *See* Ex. 1007, [0061]-[0062], [0076], [0081], [0093], [0103] (discussing providing targeted advertisements to an audience at a particular AP hotspot); Ex. 1008, 10, 13-14, 16-18. It is my opinion that a POSA also would have recognized that, by connecting the set-top box to the access point in Baig, the set-top box would have been able to receive the targeted advertisements and VCSP web content from, for example, one of Baig's content servers 124_n. Ex. 1007, [0042]- [0043], FIG. 1; Ex. 1008, 6, FIG. 1; Ex. 1011, [0036]-[0037] (teaching universal plug-and-play network (UPnP) connectivity at a local network environment).

487. It is my opinion that a POSA would have understood that Costa's set-top box would have included a device identifier (e.g., an IP address) based on its teachings that its UPnP network relies on the Internet Protocol for network communications, including Internet communications:

> Various contributors publish UPnP device and service descriptions, thus creating a way to easily connect devices and simplifying the implementation of networks. **UPnP is designed to work in many environments, including** the home, businesses, public spaces, and **on devices attached to the Internet**. The UPnP standard is an open architecture that leverages Web technologies and is designed to provide ad-hoc networking and distributed computing.

The **UPnP model** is designed to support zero-configuration networking and automatic discovery for a wide variety of device categories. This allows a device to dynamically join a network, **obtain an IP address**, convey its capabilities, and learn about the presence and capabilities of other devices. Other Internet protocols such as Dynamic Host Configuration Protocol (DHCP) and Domain Name Service (DNS) may optionally included in a UPnP network, although they are not required. A device can leave a UPnP network smoothly and automatically without leaving any unwanted state behind.

The **UPnP network 104 may also be configured to provide communications outside the local environment 110**. For example, an **Internet Gateway Device (IGD) 130 may provide communications to networks outside the local environment, such as the Internet 134**. The IGD 130 is an IP addressable device typically residing at the edge of a home or small-business network. The IGD 130 includes **a WAN interface capable of accessing the Internet 134** and other external networks. The **IGD 130 is configured to provide external network access to elements of the UPnP network 104**. The IGD 130 may also provide **local addressing and routing services between one or more LAN segments in the local environment 110**. The IGD 130 can be located in a specific home device to provide external connectivity to

> all devices in the home network. In some cases, a mobile device 105 (e.g., mobile phone 106) can also act as IGD 130. Such devices 105 may have access to external wireless networks such as 3G, GPRS, UWB, etc.

Ex. 1011, [0006], [0007], [0038] (emphasis added). It is my opinion that a POSA would have found it obvious to add a set-top box, which accesses the Internet via a same AP 106 at the same time as other devices 102_p, to a VCSP group associated with the AP 106. See my comments regarding elements [1B]-[1G] above. More specifically, that POSA would have recognized that, by adding the set-top box to the VCSP group, Baig's modified system would have been able to provide the set-top box with VCSP services, including displaying various webpages of the VCSP website (e.g., see Ex. 1007, FIGs. 6-13; Ex. 1008, FIGs. 6-13), and sending a targeted advertisement to the set-top box for display to the audience of users (and non-users) present at Baig's access point (AP) hotspot. Ex. 1007, [0061]-[0062], [0076], [0081], [0093], [0103]; Ex. 1008, 10, 13, 14, 16-18. That POSA would have recognized that a television set-top box would have been a suitable recipient of VCSP services in view of Baig's teachings that the VCSP services may include targeted advertisements, video gaming services, movie information and the like. Ex. 1007, [0058]-[0059], [0062], [0090], [0093], [0103]; Ex. 1008, 9-10, 15-18.

488. Further to my comments above concerning Ground B, a POSA would have found that adding a set-top box, as taught by Costa, to the Baig-Satapati-

Damick and Baig-Zwicky-Damick systems would have been merely a simple combination of prior art elements according to known methods to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include Costa's set-top box and Baig's modified systems (e.g., the systems of Baig-Satapati-Damick and Baig-Zwicky-Damick), including communications network 100, access point 106, and public WiFi hotspot 110. Ex. 1011, [0035]-[0037], [0007], FIG. 1; Ex. 1007, [0042]-[0043], FIG. 1; Ex. 1008, 5-6, FIG. 1. The known methods include Costa's teaching of including a set-top box in a local networking environment. Ex. 1011, [0036]-[0037]. The predictable results include a communications system having a set-top box that can connect to the Internet via a publicly available hotspot and receive targeted advertisements in the form of video, as well as other VCSP services and content. Further, adapting the Baig-Satapati-Damick and Baig-Zwicky-Damick systems to include a set-top box, as taught by Costa, would have respectively resulted in a system with a set-top box connected to Baig's access point having its own assigned port number and IP address (e.g., the IP address of the access point that the STB is connected to) that is associated other mobile devices 102 that are connected to the same access point.

489. As I show above, Baig describes "creating vicinity-based communities over the Internet by a vicinity-based community service provider (VCSP) for wireless mobile devices of end-users that have accessed the VCSP via a wireless

access point at a wireless hotspot." Ex. 1007, [0038]; Ex. 1008, 5. Similarly, Costa teaches that wireless hotspots at public environments (such as a coffee shop, which is an example environment specifically contemplated in Baig) may include consumer electronic devices such as set-top boxes and televisions as part of a local network provided by an access point. Both Baig and Costa, therefore, teach systems operating in public environments with public access point hotspots. Ex. 1007, [0006], [0039], [0101], Abstract; Ex. 1008, 2, 5, 18; Ex. 1011, [0006], [0035]-[0037].

490. It is my opinion that a POSA would have had the skills, knowledge, and motivation to incorporate a set-top box, as taught by Costa, into the Baig-Satapati-Damick and Baig-Zwicky-Damick systems. Baig and Costa both describe access point (AP) hotspots that provide Internet access to computing devices. Ex. 1007, [0042]-[0043], FIG. 1; Ex. 1008, 6; Ex. 1011, [0035]-[0037]. In my opinion, a POSA would have understood that Costa's techniques of using a UPnP network would have been able to be applied to a router, such as that used in Baig's modified systems. Ex. 1007, [0043], [0046], [0049]; Ex. 1008, 6-7; Ex. 1011, [0007], [0038]. It is my further opinion that a POSA also would have recognized that Costa's inclusion of additional consumer electronic devices, such as a set-top box, would have had additional benefits of more widely available device types at a particular access point. Further, because Baig already discusses providing various types of

content to particular access points (e.g., music, video, etc.) as well as content that would have been suitable for display at a television, e.g., video gaming services, advertisements, and movie information, in my opinion, a POSA would have easily considered including other devices such as a television and corresponding set-top box to provide additional media content to users at an access point. Ex. 1007, [0058]-[0059], [0062], [0090], [0093], [0103]; Ex. 1008, 9-10, 15-18.

491. Based on these similarities between Costa's and the Baig-Satapati/Zwicky-Damick systems, in addition to the additional benefits offered by Costa, in my opinion, a POSA would have been motivated to apply the teachings of Costa to Baig's modified systems to implement a set-top box at the access point of the Baig-Satapati-Damick and Baig-Zwicky-Damick systems to provide television content, as well as VCSP services, to users at that access point. For example, in a coffee shop environment, which was specifically contemplated by Baig, a POSA would have considered including a set-top box and television at a coffee shop to provide television content to its users. This would provide the additional ability and benefit to provide targeted/tailored television content (including television advertisements), using the Baig-Satapati/Zwicky-Damick-Costa systems, to the users present in the environment (e.g., coffee shop) based on their corresponding profile information.

492. As another example, it is my opinion that a POSA, exercising ordinary creativity, would have considered including a set-top box and television at a hotspot location (e.g., a coffee shop) to display useful information, content, and other VCSP services to patrons of the hotpot location, including VCSP users and non-VCSP users. For instance, Baig teaches that a variety of services may be offered by the VCSP to registered users, including bartering services, chat services, blogging services, location forum services, lost & found services, and online gaming. Ex. 1007, [0005], [0008]-[0011], [0054], [0079]-[0093], [0107]-[0110], [0122]-[0128], FIGs. 7-12, 23; Ex. 1008, 1-2, 8, 13-17, 19-20, 22-23, FIGs. 7-12, 23. It is my opinion that a POSA would have understood that by registering a set-top box with the VCSP, the owner or operator of the hotspot location would be able to provide their patrons access to the various services offered by the VCSP.

493. For example, it is my opinion that a POSA, exercising ordinary creativity, would have recognized that an STB located at the hotspot location and connected to the VCSP may be used to display posts by VCSP members offering various goods or services in exchange for some form of remuneration. *See* Ex. 1007, [0085]-[0086], FIG. 8; Ex. 1008, 14-15, FIG. 8. As another example, it is my opinion that a POSA, exercising ordinary creativity, would have recognized that the STB may be used to display posts using a "Location Forum" service that allows users to post information associated with describing or defining a mood or social

rating of the hotspot location. *See* Ex. 1007, [0092], FIG. 11; Ex. 1008, 16, FIG. 11. As yet another example, it is my opinion that a POSA, exercising ordinary creativity, would have recognized that the STB may be used to display posts indicating lost and/or found items (e.g., a wallet lost at the coffee shop). *See* Ex. 1007, [0093], FIG. 12; Ex. 1008, 16-17, FIG. 12. It is my further opinion that a POSA would have understood that the VCSP services provided to patrons of the hotspot location, via the STB, would be useful to both VCSP users and non-users present at the hotspot location. Moreover, that POSA would have recognized that, by including the set-top box in the VCSP group of the other mobile devices that are concurrently accessing the AP hotspot, Baig's modified systems would have been able to send a targeted advertisement to the set-top box for display to the audience of users present at Baig's access point (AP) hotspot, for example, based on the profile information of the patrons that are members of the VCSP group. See my comments above concerning element [1G] and sending targeted advertisements based on the profile information associated with other devices. *See* Ex. 1007, [0061]-[0062], [0093], [0103] (discussing advertising to an audience); Ex. 1008, 10, 16-18.

494. It is my opinion that a POSA would have had the skills and knowledge to combine the teachings of Baig and Costa with a reasonable expectation of success in arriving at the subject matter recited in element [8A]. In my opinion, a POSA would have found that adding a set-top box to Baig's modified systems would have

been straightforward in that a set-top box would have been able to be connected to Baig's access point, as taught by Costa, in the same manner as the various other computing devices. Given that Costa teaches its set-top box is suitable to be connected to a local networking environment, a POSA would have been able to successfully connect a set-top box to the access point in Baig's modified systems. Ex. 1011, [0036]-[0037].

495. Additionally, in my opinion, a POSA would have understood that a set-top box would have operated in Baig's modified systems in a same manner as the various other computing devices (e.g., devices 102_p) in Baig's modified systems (e.g., the Baig-Satapati-Damick system and the Baig-Zwicky-Damick system). It was well known to a POSA during the relevant time frame that a STB may be Internet-enabled and capable of displaying webpage content. *See*, e.g., Ex. 1043, [0011], [0058], [0071]-[0072], [0083]-[0084], [0096], FIGS. 7-20; Ex. 1045, [0004], [0007], [0024], [0069], [0089]; Ex. 1044, [0029], [0043], [0047], [0135]-[0139], [0172], [0190]; Ex. 1047, [0042]-[0043], FIG. 2; Ex. 1046, 6:12-25, FIG. 4. Accordingly, in my opinion, a POSA would have understood that an STB being added to Baig's modified systems would have been capable of displaying the various webpages and web content provided by the Baig VCSP. For instance, it is my opinion that a POSA, exercising ordinary creativity, would have considered including a set-top box and television at a hotspot location (e.g., a coffee shop) to

output for display (e.g., via an operatively connected television) a list of users (e.g., list 606 of webpage 600) that are present at and have connected their respective devices to the access point (AP) and, further, would have been capable of automatically displaying—via the STB and television—an updated list as users join or leave the hotspot and or as users change their profile settings. *See*, e.g., Ex. 1007, [0076], [0081], FIGs. 6-7; Ex. 1008, 13-14, FIGs. 6-7. As an example, it is my opinion that a POSA, exercising ordinary creativity, would have considered including a set-top box and television to display, to patrons present at an AP hotspot, a lost and found webpage (e.g., Baig's webpage 1200) that allows users to post lost and/or found items on a particular date for a specific location (e.g., a wallet lost at the AP hotspot the previous day). It is my opinion that a POSA would understand that using the STB to provide VCSP services at the AP hotspot would benefit end-users in the vicinity-based community and non-users alike. Further, in my opinion, a POSA would have appreciated that changes to the Baig-Satapati-Damick and Baig-Zwicky-Damick systems that associate Baig's computing devices 102_p at an access point would have been minimal, if any, and would have been well within the skill set of a POSA. Ex. 1007, [0090], [0103]; Ex. 1008, 15-16, 18.

496. The proposed combinations thus disclose and render obvious elements [8A] and [21A].

13. Element [8B]: "(B) the second device of part (b) is an online user interface device;" and Element [21B]: "(B) the second device of part (b) is an online user interface device;"

497. In my opinion the combinations of Baig, Satapati, Damick and Costa, and the combination of Baig, Zwicky, Damick and Costa disclose and render obvious element [8B] and element [21B].

498. The '015 Patent expressly defines an "**online user interface device**" as "any user interface device used to access a remote network such as the Internet, including … a cell phone or mobile handset." Ex. 1001, 2:52-56. Baig teaches that its mobile devices 102_p connected to its access point 106 include laptops, PDAs, and cellular telephones. Ex. 1007, [0043], FIG. 1 (illustrating telephone 102_2); Ex. 1008, 6, FIG. 1. The mobile devices in Baig's modified systems thus satisfy the '015 Patent's definition of the claimed "**online user interface device**." Ex. 1007, [0042]-[0043], FIGS. 1-2; *see also Id.*, [0005]; Ex. 1008, 1, 5-6.

499. The proposed combinations thus disclose and render obvious elements [8B] and [21B].

14. Element [8C]: "(C) the user profile information of part (b) was collected after the computer system has determined the first association; and" and Element [21C]: "(C) the user profile information of part (b) was collected after the computer system has determined the first association; and"

500. In my opinion, the combinations of Baig, Satapati, Damick and Costa, and the combination of Baig, Zwicky, Damick and Costa disclose and render

obvious elements [8C] and [21C] at least for the same reasons as dependent claim 6. See Section XII.D.6.

501. As I show above for claim 5, Baig teaches using one of its mobile devices 102_p to create and update a user profile from different access point (AP) hotspots. See my comments regarding claim 5 above. Ex. 1007, [0039], [0047], [0056]-[0060], [0065], [0081], [0093], FIGs. 3, 5; Ex. 1008, 5, 7, 8-11, 14, 16-17, FIGs. 3, 5. As I explain above for claim 6, in my opinion, a POSA would have found it obvious for Baig's modified systems to receive updates to a user profile at the user's discretion whenever the mobile device is connected to one of multiple AP hotspots geographically distributed throughout a region, which would have included user profile updates received both before and after a user (e.g., Razor Shark) joins a VCSP group (e.g., the VCSP group that includes the Terminator) by accessing a particular AP hotspot— that includes a set-top box's device as I described above for element [8A]—thereby associating device identifiers of the respective mobile devices of both users (e.g., Razor Shark and Terminator). Receiving updates to a user profile for one of the users, after joining the respective mobile devices of both users into a VCSP group, thereby associating the device identifiers of both mobile devices thus satisfies the claimed requirement that "**the user profile information of part (b) was collected after the computer system has determined the first association.**" Stated another way, it is my opinion that a POSA would have

understood that, after initially connecting to Baig's content server 224 via the same access point IP address as a first mobile device (e.g., the device of "Terminator"), a user (e.g., "Razor Shark") may connect to Baig's server, via a different (second) access point (AP) hotspot having a different access point IP address, to register and/or update their profile information, e.g., age or gender ("**the user profile information of part (b) was collected after the computer system has determined the first association**"). See my comments regarding elements [1B]-[1D] and claim 6 above.

502. The proposed combinations thus disclose and render obvious elements [8C] and [21C].

15. Element [8D]: "(D) the first association of part (b) is one of the associations identified in part (a)(iii)." and Element [21D]: "(D) the first association of part (b) is one of the associations identified in part (a)(iii)."

503. In my opinion, the combinations of Baig-Satapati-Damick in view of Costa, and Baig-Zwicky-Damick in view of Costa disclose and render obvious elements [8D] and [21D].

504. As I show above for element [1E], the server of Baig's modified systems would have determined that a first mobile device, of multiple mobile devices connected to access point 106, has connected to the VCSP website using the same access point IP address as an already-connected second mobile device, and

then would have placed both the first and second mobile devices into the same VCSP vicinity group. Further, the associations between those mobile devices would have been created without using PII as required by "**part (a)(iii)**" in element [1E] thus satisfying the claimed requirement that "**the first association of part (b) is one of the associations identified in part (a)(iii)**" as recited in elements [8D] and [21D]. See my comments regarding element [1E] above.

505. The proposed combinations thus disclose and render obvious elements [8D] and [21D].

F. Ground H and I: Claims 11 and 24 Are Obvious Over Baig in view of Satapati, Damick, and Ashbaugh and Baig in view of Zwicky, Damick, and Ashbaugh

506. As I show above for Grounds D and E, the combination of Baig, Satapati, and Damick and the combination of Baig, Zwicky and Damick disclose and render obvious independent claims 1 and 10. As I explain below the combination of Baig, Satapati, Damick, and Ashbaugh and the combination of Baig, Zwicky, Damick, and Ashbaugh disclose and render obvious dependent claims 11 and 24 for the same reasons I explain above for Ground C. *See* Ex. 1019, 3:41-46, 8:67-9:9, 9:36-9:38, 10:1-9, 10:21-43, 11:43-66, FIGS. 1, 3; Ex. 1050, 5, 13-15, 17, FIG. 1, FIG. 3; Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18.

507. In my opinion the combination of Baig, Satapati, Damick, and Ashbaugh and the combination of Baig, Zwicky, Damick, and Ashbaugh disclose

and render obvious dependent claims 11 and 24, which respectively depend from dependent claims 10 and 23. See my comments regarding dependent claims 10 and 23 above. Dependent claims 11 and 24 each require that "**part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement**."

508. More specifically, none of Baig, Satapati, Zwicky, or Damick specifically discloses receiving delivery of an advertisement through redirection. However, as I note above for Ground C, Ashbaugh teaches a networked content exchange that includes a network appliance 10 (e.g., a personal computer, terminal, web TV, mobile phone, etc.) that may communicate with an exchange controller 14, a content server 34, and advertising servers 36, 38, via network 12:

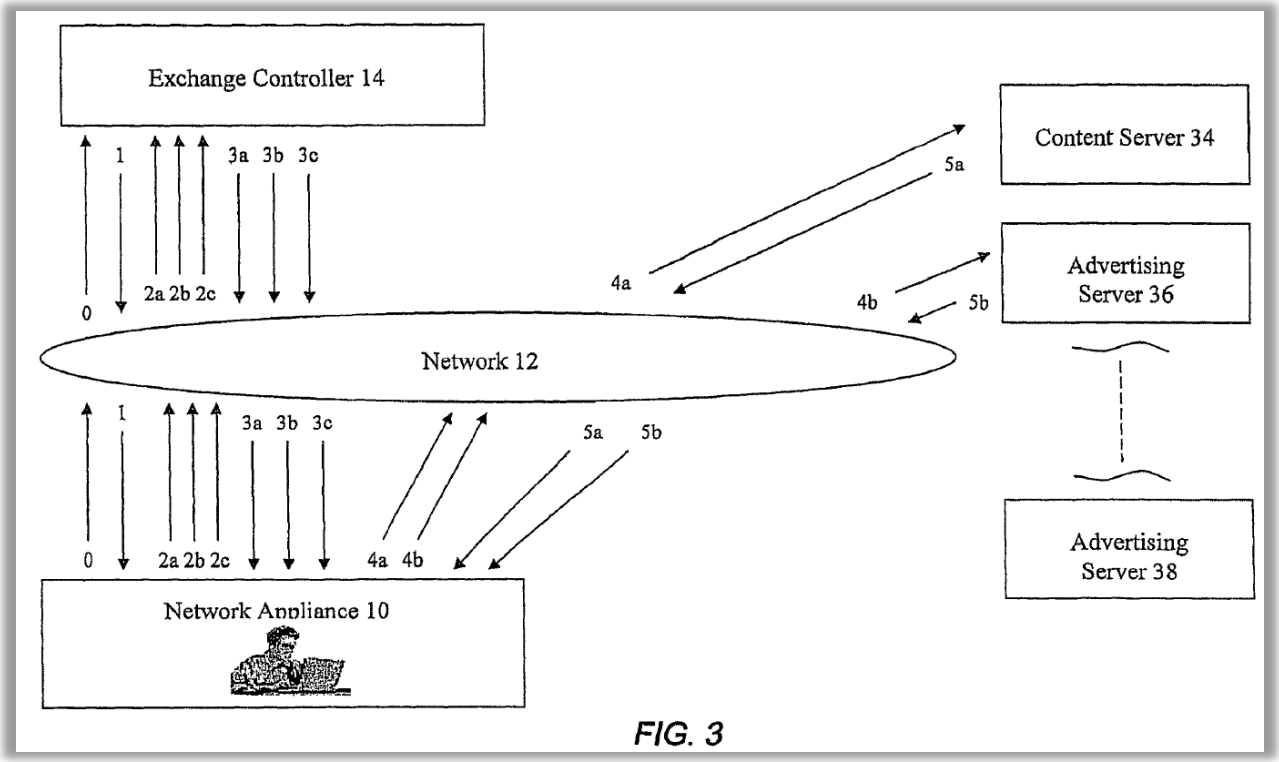


FIG. 3

Ex. 1019, FIG. 3; Ex. 1050, FIG. 3.

509. Ashbaugh also teaches using a redirect feature of HTTP in order to request advertisements for display in an advertising frame of a webpage, including describing advertising frame for a webpage:

> In a similar manner, the **network appliance 10 sends a request 2c to an advertising server 36 that provides the advertising information that appears in the advertising frame 26**. In response to requests 2b and 2c, content server 34 sends a message 3b which may contain the XHTML or HTML code for the content to appear in the frame 24, and the **advertising server 36 transmits a message 3c, which**

> **may contain the XHTML or HTML code for the advertisement appearing in the frame 26**.

Ex. 1019, 10:1-9 (emphasis added), *see also id.*, 9:36-38, FIG. 1; Ex. 1050, 14-15, FIG. 1.

510. As I also note above for Ground C, Ashbaugh teaches requesting advertisements for display in an advertising frame of a webpage using the redirect feature of HTTP:

> The **concurrent display of** content, **advertising**, and/or other information in a single window **can be implemented for the purposes of advertising** or other purposes **with as few as two frames**, one of which displays the requested content and **the other of which displays the advertising** or other content, and/or one of which displays navigation. Furthermore, the locations of the primary content frame and the primary advertising frame and/or any other frames can be swapped without impact to any of the frames' functions or usefulness.
>
> In the example of FIG. 3, therefore, each of the messages 2a, 2b and 2c is transmitted to the server 14. As in the example of FIG. 1, if the server 14 is the provider of the content for the navigation frame 28, this content can be directly returned to the network appliance 10, in the form of message 3a. In response to requests 2b and 2c, the **server 14 transmits HTTP Location header redirect**

requests to the browser on the network appliance 10. These header redirect requests are represented as messages 3b and 3c in the example of FIG. 3.

Briefly, **the "redirect" feature of the HTTP protocol provides redirection status codes that a server can employ to indicate to a browser device that it should look for a desired page at another URL**. This other URL is specified in the "Location" HTTP header. Therefore, in the example of FIG. 3, messages 3b and 3c contain redirection status codes and Location headers that identify the URLs associated with the content server 34 and advertising server 36. **Upon receiving these header redirect messages, the browser on the network appliance 10 sends new requests 4a and 4b to the content server 34 and advertising server 36**, in accordance with the URLs in the Location headers of the messages 3b and 3c, respectively. **In response, the servers 34 and 36 return** the desired content 5a for the content frame 24, and **the advertisement data 5b for the advertising frame 26**, respectively. Thus, as long as the browser, or other XHTML-rendering module, supports HTTP header redirects, the appropriate information will appear in the respective frames of the display area.

Ex. 1019, 8:67-9:9, 11:43-12:3 (emphasis added); *see also id.*, 9:36-38 (discussing Ashbaugh's frames 24, 26, and 28 with reference to Ashbaugh's Figure 1), 10:1-9

(describing an "advertising frame" for a webpage), FIG. 1, FIG. 3; Ex. 1050, 13-15, 17, FIG. 1, FIG. 3.

511. For the same reasons I explain above for Ground C, in my opinion, a POSA would have found it obvious to apply Ashbaugh's teachings to Baig's modified systems, which are configured to present advertisements on its vicinity-based website to the users connected to its access point (AP) hotspot. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. Specifically, in my opinion, a POSA would have found it obvious to apply an advertising frame, as taught by Ashbaugh, in the webpages of Baig's VCSP website and use HTTP's redirect feature to receive the targeted advertisements sent to Baig's AP hotspot users via the VCSP website as I explained above for [1G]. Ex. 1007, [0059], [0099], [0101]; Ex. 1008, 9, 18. Ashbaugh's teachings about the benefits of using advertising frames and redirection would have motivated a POSA to further modify Baig's modified systems to include such features. For example, Ashbaugh teaches that its advertising frame and redirection techniques provided better resistance to known ad-blocking techniques due to the use of native HTML and HTTP features that were not easily circumvented without detracting from the user's web browsing experience:

> … In an embodiment, **framesets are utilized** as an underlying presentation method, **because other methods** of content presentation, **particularly for the purposes of advertising**, are **more readily blocked by modern**

browser software, thus preventing display of some or all of the intended content or advertising to the target user. …

The use of a frameset to present advertising provides a number of advantages. As discussed previously, prior techniques for displaying advertising typically employed browser-based scripting language to generate new logical layers for the ad space, e.g., items with new windows or stacking order considerations, pop-up windows, or XHTML divisions, layers, or other more susceptible tags or constructs. As a result, it became easy to separately identify and intercept the scripting or layers associated with various forms of web-oriented advertisement, and block them from being displayed. In contrast, **by using a frame to display the advertising, the code that is sent to the rendering device, such as a browser, is native to the XHTML and HTML core language specification** at a most granular and atomic level, and operates without developing a new primary layer or window. As such, **it becomes significantly more difficult to determine advertising streams and thus more difficult to prevent the display of the intended website or equivalently formatted advertising**. In order to do so, it would become necessary to change the international language specification for XHTML and HTML, to support disabling the display of frames, which is highly unlikely, as it would negatively impact the entire World Wide Web.

Ex. 1019, 3:41-46, 10:21-43 (emphasis added); Ex. 1050, 5, 15.

512. It is my opinion that a POSA would have found this to be the simple use of a known technique to improve similar devices in the same way or applying known technique to a known device ready for improvement to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationales (C) and (D) above). The known technique includes Ashbaugh's use of redirection to an advertisement server to obtain advertisements to present in an advertisement frame of a webpage. Ex. 1019, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17. The known or similar device includes Baig's vicinity-based website that presents targeted advertisements. Ex. 1007, [0059], [0099]; Ex. 1008, 9, 18. The improvement to Baig's vicinity-based website includes better resistance to known ad-blocking techniques as described in Ashbaugh and noted above.

513. The predictable results include the websites in Baig's modified systems (e.g., the respective systems of Baig-Satapati-Damick-Ashbaugh and Baig-Zwicky-Damick-Ashbaugh) using advertising frames in the webpages sent to the mobile devices that display the targeted advertisements selected as I show above for element [1G] (and claim 8) and using redirection to obtain the targeted advertisements to display in those frames. Using redirection to obtain the targeted advertisements included in the webpages sent to mobile devices in Baig's modified systems thus disclose the requirement that "**part (b) takes place when the first device is**

redirected to the computer system to receive delivery of an advertisement" as recited in dependent claims 11 and 24.

514. The proposed combinations thus disclose and render obvious dependent claims 11 and 24.

G. Grounds J and K: Claims 12 and 25 Are Obvious Over Baig-Satapati-Damick-Banga507 and Baig-Zwicky-Damick-Banga507

515. As I show above for Grounds D and E, the combination of Baig, Satapati, and Damick and combination of Baig, Zwicky, and Damick disclose and render obvious independent claims 1 and 14. Claim 12 depends from independent claim 1, and claim 25 depends from independent claim 14. The combinations of Baig-Satapati-Damick-Banga507 and Baig-Zwicky-Damick-Banga507 disclose and render obvious dependent claims 12 and 25 for the same reasons I explain above for Ground A. *See* Ex. 1015, [0007], [0031]; Section XII.A.10. Dependent claims 12 and 25 each require that "**at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system**."

516. As I show above for element [1B], the claimed "**device identifier**" recited in claims 1 and 14 are disclosed in the Baig-Satapati-Damick and Baig-Zwicky-Damick systems by the combination of: **(i)** the common IP address of the access point that a mobile device is connected to, and **(ii)** a TCP/IP port number

assigned to the mobile device. To the extent that Baig-Satapati-Damick and Baig-Zwicky-Damick do not expressly disclose a device identifier that "**is stored in a cookie readable by the computer system**," Banga507 does.

517. Banga507 teaches that its "network access device 110 may be identified by a hybrid cookie/device identifier combination." Ex. 1015, [0031]. I note that, while Banga507 acknowledges certain drawbacks associated with cookies, it nevertheless explains that using a "cookie/device identifier combination" would have helped ease the transition away from a cookie-only advertising system for advertisers that still relied on cookies for Internet advertising:

> In alternative embodiments, **cookies may still be placed on the network access device 110**. Because most of the current advertisement industry is based on using cookies, **the use of a cookie and/or a device identifier will assist in transitioning the advertisement industry away from the current cookie-only system**. As a result, each network access device 110 may be identified by a **hybrid cookie/device identifier combination**.

Ex. 1015, [0031] (emphasis added); *see also Id.*, [0007] (providing background information on the use of cookies).

518. Banga507 further teaches that cookies stored on users' network access devices were capable of storing any type of information such as identifiers and user preferences:

> … A cookie is a small text file or program that certain Internet sites attach to the user's hard drive within the computing device. **A cookie can contain information such as a user identifier**, user preferences, shopping information, personally identifiable information, and a list of web sites previously visited. As the user revisits a content provider's web site, the content provider can retrieve the cookie to identify the user and then update the cookie as appropriate. …

Ex. 1015, [0007] (emphasis added).

519. Given that Banga507 teaches a cookie can store a "user identifier," a POSA, aware of Banga507's teachings and employing ordinary creativity, would have been able to extrapolate such teachings and recognize that a cookie would have been able to store the same information included in Baig's device identifier. More specifically, in my opinion, a POSA would have recognized that a cookie would have been able to store/include the information included within Baig's device identifiers, namely, the common IP address of the access point a mobile device is connected to and the TCP/IP port number assigned to that mobile device, which satisfies the claimed requirement that "**at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system**" as recited in claim 12.

520. It is my opinion that a POSA would have had the skills and knowledge to carry out these combinations, which would have merely required combining prior art elements according to known methods to yield predictable results. *See* Section IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include the Baig-Satapati/Zwicky-Damick systems, including their VCSP services, and Banga507's teaching of a hybrid cookie/device identifier combination. The known methods include storing and retrieving cookies containing unique device identifiers. The predictable results include allowing a content provider, such as Baig's VCSP, to retrieve a cookie to identify a user and then update the cookie as appropriate. Moreover, it is my opinion that a POSA would have appreciated that the proposed modifications would have predictably yielded a combination in which the constituent elements provide the same functionalities as they do separately. In my opinion, a POSA would also have been motivated to apply Banga507's teachings to Baig's modified system because Banga507teaches that its "cookie/device identifier combination" would have benefitted advertisers that still rely on cookies for Internet advertising in systems that transition away from cookie-only approaches and incorporate alternatives. Ex. 1015, [0031]. A POSA, therefore, would have understood that providing such functionality would have been desirable to subscribers/users of the online VCSP services provided by the Baig-Satapati-

Damick-Banga507 and Baig-Zwicky-Damick-Banga507 systems. Ex. 1015, [0007], [0031]; Ex. 1007, [0040], [0054], [0125]; Ex. 1008, 5, 8, 22.

521. The proposed combinations thus disclose and render obvious dependent claims 12 and 25.

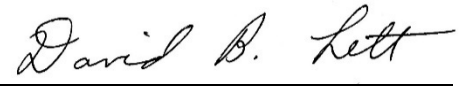
XIII. EVIDENCE OF NON-OBVIOUSNESS

522. It is my understanding that in order for evidence of non-obviousness or secondary considerations to be relevant, there must be a nexus between the claimed invention and the evidence. I am not aware of any evidence of non-obviousness or secondary considerations.

XIV. CONCLUSION

523. All of the statements made in this declaration of my own knowledge are true. All statements made based on information and belief are believed to be true. Further, these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

Date: 3/1/2024



David B. Lett

APPENDIX A

References I considered include:

Ex. 1001:	U.S. Patent No. 11,564,015 ("the '015 Patent")
Ex. 1004:	Certified Prosecution History for U.S. Patent No. 11,564,015
Ex. 1005:	Excerpts from Case Docket of *Meta Platforms Inc v. AlmondNet Inc et al.*, IPR2022-00773 (March 28, 2022)
Ex. 1006:	U.S. Patent Application Publication No. 2004/0076180 ("Satapati")
Ex. 1007:	U.S. Patent Application Publication No. 2008/0113674 ("Baig")
Ex. 1008:	U.S. Provisional Patent Application No. 60/858,204 ("Baig Provisional")
Ex. 1009:	Redline Comparison Between Baig (Ex. 1016) and Baig Provisional (Ex. 1008)
Ex. 1011:	U.S. Patent No. Application Publication No. 2006/0128364("Costa")
Ex. 1012:	Excerpts from E. D. Zwicky *et al.*, *Building Internet Firewalls* (2d ed. 2000) ("Zwicky")
Ex. 1015:	U.S. Patent Application Publication No. 2006/0265507 ("Banga507")
Ex. 1016:	U.S. Patent Application Publication No. 2006/0271690 ("Banga690")
Ex. 1017:	U.S. Patent Application Publication No. 2006/0242294 ("Damick")
Ex. 1018:	U.S. Patent No. 9,123,071 ("McFarland")
Ex. 1019:	U.S. Patent No. 8,930,239 ("Ashbaugh")
Ex. 1021:	Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)

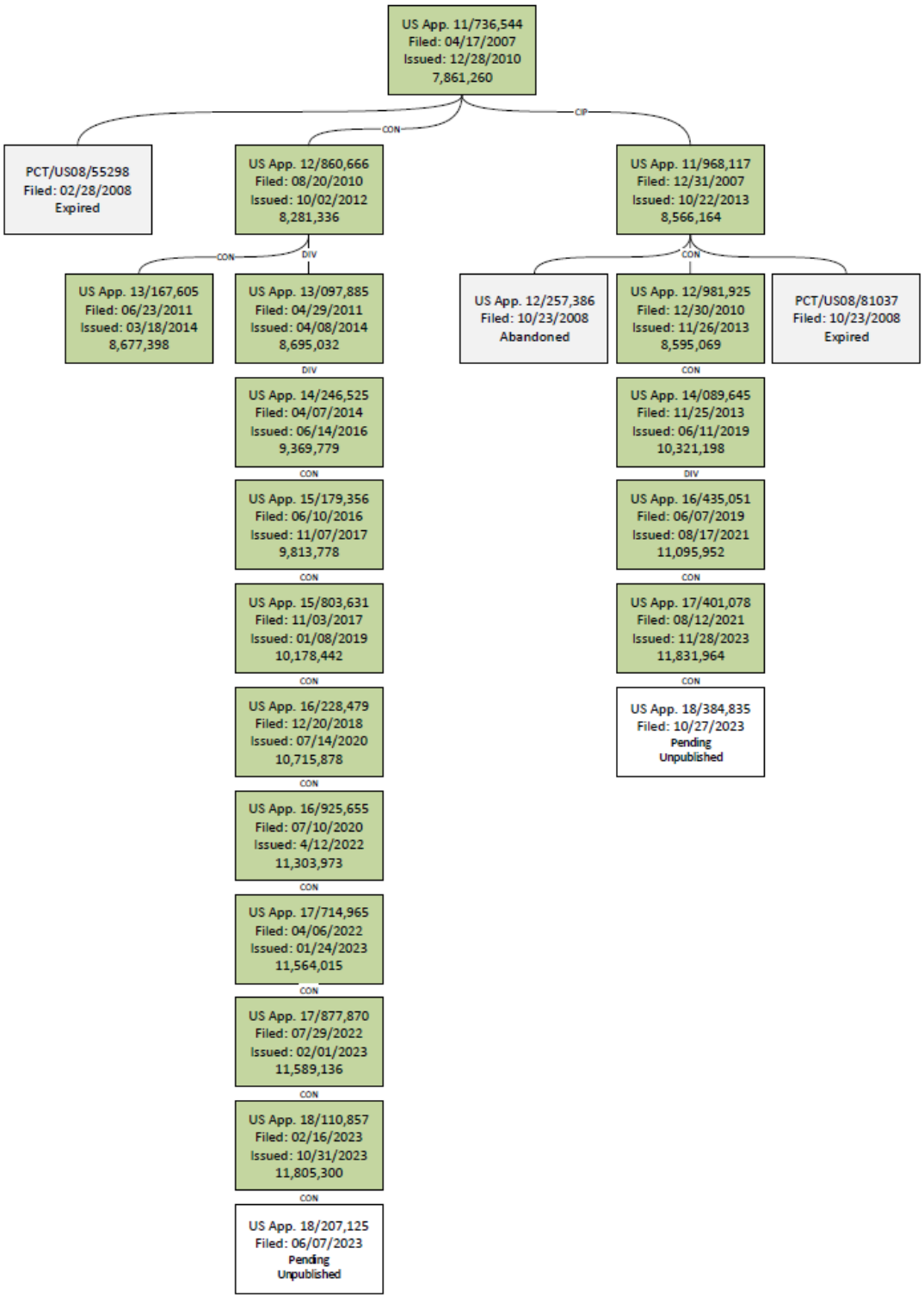
Ex. 1022:	U.S. Patent No. 8,180,674 ("Madhavan")
Ex. 1029:	Excerpts from Downing *et al.*, *Dictionary of Computer and Internet Terms* (8th ed. 2003)
Ex. 1030:	Excerpts from Newton, *Newton's Telecom Dictionary* (21st ed. 2005)
Ex. 1031:	U.S. Patent No. 6,282,548 ("Burner")
Ex. 1032:	U.S. Patent No. 6,036,601 ("Heckel")
Ex. 1033:	U.S. Patent Application Publication No. 2005/0096978 ("Black")
Ex. 1035:	Hagel *et al.*, *Net Worth: Shaping Markets When Customers Make the Rules* (1999) ("Hagel")
Ex. 1036:	Request for Comments: 1631, "The IP Network Address Translator (NAT)" (1994) ("RFC 1631")
Ex. 1037:	Zeff *et al.*, *Advertising on the Internet*, (2nd ed. 1999) ("Zeff")
Ex. 1039:	Request for Comments: 793, "Transmission Control Protocol" (1981) ("RFC 793")
Ex. 1040:	Request for Comments: 2663, "IP Network Address Translator (NAT) Terminology and Considerations" (1999) ("RFC 2663")
Ex. 1041:	ANSI/IEEE Std 802.11, 1999 Edition, "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications"
Ex. 1042:	Excerpts from Harley Hahn, *The Internet Complete Reference* (2d ed. 1996) ("Hahn")
Ex. 1043:	U.S. Patent Application Publication No. 2003/0066085 ("Boyer")
Ex. 1044:	U.S. Patent Application Publication No. 2007/0217436 ("Markley")
Ex. 1045:	U.S. Patent Application Publication No. 2006/0230427 ("Kunkel")

Ex. 1046:	U.S. Patent No. 6,543,052 ("Ogasawara")
Ex. 1047:	U.S. Patent Application Publication No. 2002/0145621 ("Nguyen")
Ex. 1048:	Excerpts from *Computer Dictionary*, Microsoft Press (2d ed. 1994)
Ex. 1049:	Excerpts from *Webster's New World Computer Dictionary* (10th ed. 2003)
Ex. 1050:	International Publication No. WO 2007/078283 for International Patent Application No. PCT/US2005/047230 to Ashbaugh ("Ashbaugh PCT")
Ex. 1051:	Claim Chart (Exhibit 8) Accompanying Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
Ex. 1052:	Notice of Allowance mailed on August 20, 2013, in U.S. Patent Application No. 13/167,605
Ex. 1053:	Notice of Allowance mailed on December 9, 2021, in U.S. Patent Application No. 16/925,655
Ex. 1054:	U.S. Patent Application Publication No. 2005/0108418 ("Bedi")
Ex. 1055:	U.S. Patent Application Publication No. 2004/0177147 ("Joshi")
Ex. 1056:	Mapping Between Baig Provisional (Ex. 1008) and Baig (Ex. 1007)
Ex. 1058:	Institution Decision from *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2023-01281, Paper 7 (February 21, 2024)
Ex. 1063:	US Pat. App. Pub. No. 2002/0083445 ("Flickinger")
Ex. 1064:	US Pat. App. Pub. No. 2008/0040742 ("Howcroft")
Ex. 1065:	Jakob Nielsen, *Request Marketing* (Oct. 2000), https://www.nngroup.com/articles/request-marketing/

Ex. 1066:	Bettina Fabos, The Commercial Search Engine Industry and Alternatives to the Oligopoly (Mar. 2006) EastBound Journal
Ex. 1067:	Susan Young, Getting the Message: How the Internet is Changing Advertising (May 16, 2000), https://hbswk.hbs.edu/item/getting-the-message-how-the-internet-is-changing-advertising
Ex. 1068:	US Pat. App. Pub. No. 2002/00998842 ("Jennings")
Ex. 1069:	US Pat. App. Pub. No. 2002/0123928 ("Eldering")
Ex. 1070:	US Pat. No. 7,634,789 ("Gerba")
Ex. 1071:	U.S. Pat. App. Pub. No. 2007/0180147 ("Leigh")

APPENDIX B

Family Tree



APPENDIX C

U.S. Pat. No. 11,564,015

Designation	Claim Language
Claim 1	
[1A]	1. A computer system comprising at least one hardware server computer, wherein the computer system is programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action, the method comprising:
[1B]	(a) with the computer system, creating an electronic database containing a multitude of associations, each indicating an association between device identifiers of two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices, wherein:
[1C]	(i) each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising (A) a device identifier of one of the Internet-accessing devices, (B) an IP address through which the one of the devices accessed the Internet, and (C) a timestamp identifying when the one of the devices accessed the Internet;
[1D]	(ii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address at respective times satisfying a predetermined time-relation criterion;
[1E]	(iii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information; and

Designation	Claim Language
[1F]	(iv) the computer system determining the associations accesses the Internet without using any of the common IP addresses of the associations identified in part (ii); and
[1G]	(b) when the computer system and a first device identified in a first association are in communication with one another, with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association to cause an automatic action to be taken with respect to the first device, wherein:
[1H]	(i) the first association is one of the associations identified in part (a)(ii); and
[1I]	(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b).
Claim 2	
2	2. The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 3	
3	3. The computer system of claim 1 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 4	
4	4. The computer system of claim 1 wherein the first association of part (b) is one of the associations identified in part (a)(iii).

Designation	Claim Language
Claim 5	
5	5. The computer system of claim 1 wherein the second device of part (b) comprises a mobile device that accessed the Internet both via the common IP address of the first association and via at least one different IP address, and wherein the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address.
Claim 6	
6	6. The computer system of claim 5 wherein the user profile information of part (b) was collected after the computer system has determined the first association, and wherein the first association of part (b) is one of the associations identified in part (a)(iii).
Claim 7	
7	7. The computer system of claim 5 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 8	
[8A]	8. The computer system of claim 7 wherein: (A) the first device of part (b) is a television set-top box;
[8B]	(B) the second device of part (b) is an online user interface device;
[8C]	(C) the user profile information of part (b) was collected after the computer system has determined the first association; and
[8D]	(D) the first association of part (b) is one of the associations identified in part (a)(iii).
Claim 9	
9	9. The computer system of claim 1 wherein the user profile information of part (b) was collected after the computer system has determined the first association.

Designation	Claim Language
Claim 10	
10	10. The computer system of claim 1 wherein the automatic action of part (b) comprises selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information associated with the device identifier of the second device, and causing the selected advertisement to be directed to the second device.
Claim 11	
11	11. The computer system of claim 10 wherein part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement.
Claim 12	
12	12. The computer system of claim 1 wherein at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system.
Claim 13	
13	13. The computer system of claim 1 wherein the device identifier of the first device of part (b) and the device identifier of the second device of part (b) include no personally identifiable information pertaining to a user of the first device or the second device.
Claim 14	
[14A]	14. An article comprising a tangible data storage medium that is not a transitory propagating signal encoding computer-readable instructions that, when applied to a computer system comprising at least one hardware server computer, instruct the computer system to perform a method comprising:
[14B]	(a) with the computer system, creating an electronic database containing a multitude of associations, each

Designation	Claim Language
	indicating an association between device identifiers of two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices, wherein:
[14C]	(i) each of the associations is determined using stored data relating to Internet access by various of the multitude of devices, the stored data comprising (A) a device identifier of one of the Internet-accessing devices, (B) an IP address through which the one of the devices accessed the Internet, and (C) a timestamp identifying when the one of the devices accessed the Internet;
[14D]	(ii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address at respective times satisfying a predetermined time-relation criterion;
[14E]	(iii) at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined without use of personally identifiable information; and
[14F]	(iv) the computer system determining the associations accesses the Internet without using any of the common IP addresses of the associations identified in part (ii); and
[14G]	(b) when the computer system and a first device identified in a first association are in communication with one another, with the computer system using a device identifier of the first device and user profile information associated with a device identifier of a second device identified in the first association to cause an automatic action to be taken with respect to the first device, wherein:
[14H]	(i) the first association is one of the associations identified in part (a)(ii); and

Designation	Claim Language
[14I]	(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b).
Claim 15	
15	15. The article of claim 14 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet within a specified length of time after a time when another of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 16	
16	16. The article of claim 14 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 17	
17	17. The article of claim 14 wherein the first association of part (b) is one of the associations identified in part (a)(iii).
Claim 18	
18	18. The article of claim 14 wherein the second device of part (b) comprises a mobile device that accessed the Internet both via the common IP address of the first association and via at least one different IP address, and wherein the user profile information of part (b) was collected when the mobile device accessed the Internet other than via the common IP address.
Claim 19	
19	19. The article of claim 18 wherein the user profile information of part (b) was collected after the computer

Designation	Claim Language
	system has determined the first association, and wherein the first association of part (b) is one of the associations identified in part (a)(iii).
Claim 20	
20	20. The article of claim 18 wherein the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet.
Claim 21	
[21A]	21. The article of claim 20 wherein: (A) the first device of part (b) is a television set-top box;
[21B]	(B) the second device of part (b) is an online user interface device;
[21C]	(C) the user profile information of part (b) was collected after the computer system has determined the first association; and
[21D]	(D) the first association of part (b) is one of the associations identified in part (a)(iii).
Claim 22	
22	22. The article of claim 14 wherein the user profile information of part (b) was collected after the computer system has determined the first association.
Claim 23	
23	23. The article of claim 14 wherein the automatic action of part (b) comprises selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information associated with the device identifier of the second device, and causing the selected advertisement to be directed to the second device.

Designation	Claim Language
Claim 24	
24	24. The article of claim 23 wherein part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement.
Claim 25	
25	25. The article of claim 14 wherein at least one of the device identifier of the first device of part (b) and the device identifier of the second device of part (b) is stored in a cookie readable by the computer system.
Claim 26	
26	26. The article of claim 14 wherein the device identifier of the first device of part (b) and the device identifier of the second device of part (b) include no personally identifiable information pertaining to a user of the first device or the second device.