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.: IPR2023-00420

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 1103 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. 1101, 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." Ex. 1101, 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.

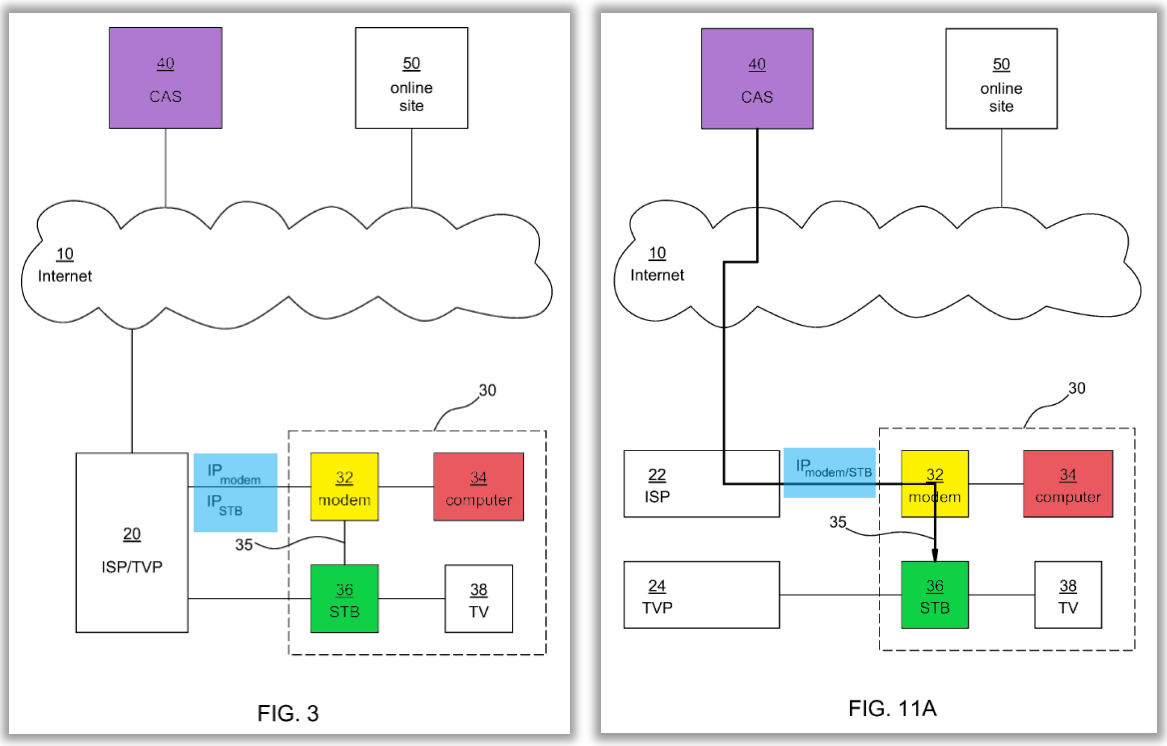
36. The '015 Patent explains that the targeted ads are "selected for delivery to the user's STB 36 based on the user's online behavior (e.g., merely accessing the online site 50, viewing a particular web page, performing a particular search, clicking on a particular link or ad, online shopping or purchases, 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. 1101, 12:35-13:4.



Ex. 1101, 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. 1101, 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. 1104, 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. 915-916.

49. The '015 Patent issued on January 24, 2023. Ex. 1101, 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. 1152, 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. 1153, 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 Madhavan, Park, Martinez, Kato, Brookes, Koran, Banga507, 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. 1121. I understand that Patent Owner sued Petitioner for alleged infringement of the ’015 Patent. Ex. 1151.

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. 1105, 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. 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 Microsoft Corporation, Samsung Electronics America, Inc., and Samsung Electronics Co., Ltd. (collectively “Microsoft”) filed a petition for IPR (IPR2022-01420) on August 12, 2022 challenging claims 1, 2, 36, and 37 of the ’398 patent. I understand that, in a first ground, claims 1, 2, 36, and 37 were alleged to be anticipated under pre-AIA U.S.C. § 102(a) and § 102(e) by U.S. Patent No. 8,180,674 to Madhavan (“Madhavan”). I understand that, in a second ground, claims 1, 2, 36, and 37 were alleged to be anticipated under pre-AIA U.S.C. § 102(a) and § 102(e) by U.S. Patent No. 9,110,903 to Martinez (“Martinez”). I understand that, in a third ground, claims 1, 2, 36, and 37 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan. I understand that, in a fourth ground, claims 1, 2, 36, and 37 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Martinez. I understand that Microsoft did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response, but did not propose any constructions for any claim terms. I understand that the PTAB denied institution on April 7, 2023 because Microsoft 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. I understand that Roku, Inc. ("Roku"), filed a petition for IPR (IPR2022-01236) on Jul 5, 2022 challenging claims 13-17, 19, 20-26, of the '398 Patent. I understand that, in a first ground, claims 13-17, 20-23, and 26 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of U.S. Patent No. 7,843,923 to Baum ("Baum"). I understand that, in a second ground, claim 19 was alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum and U.S. Patent Application No. 2006/0242294 to Damick et al. ("Damick"). I understand that, in a third ground, claims 24 and 25 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum and U.S. Patent No. U.S. Patent No. 7,908,645 to Varghese et al. ("Varghese"). I understand that Roku did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on November 4, 2022, but did not propose any constructions for any claim terms. I understand that the PTAB issued a decision denying institution of IPR on February 2, 2023, because Roku 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.

71. I understand that the Amazon and Yahoo! IPRs for the ’398 Patent were denied institution, and the Meta IPR for ‘398 was jointly terminated. I understand that none of the current Petition’s grounds rely on references that were applied during the Amazon, Meta, or Yahoo! IPRs for the ’398 Patent. I understand that Petitioner was not involved in the petitions for IPR of the ’398 Patent, and I had no involvement in these proceedings.

B. ’878 IPRs

72. I understand that the petition for the Roku ’878 IPR (IPR2022-01315) was filed on July 27, 2022, challenging claims 1-23 of the ’878 Patent. I understand that, in a first ground, claims 1, 2, 5-7, 10, 13, 14, 17-19, and 22 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, U.S. Patent No. 8,040,819 to Harrington et al. (“Harrington”), and Damick. I understand that, in a second ground, claims 3, 4, 11, 12, 15, 16, 20, 21, and 23 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, Harrington, Damick, and Rankin. I understand that, in a third ground, claims 8 and 9 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, Harrington, Damick, and Varghese. I understand that Roku did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on December 16, 2022, but did not propose any constructions for any

claim terms. I understand that the PTAB issued a decision denying institution of IPR on March 13, 2023, because Roku 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. I understand that the petition for the Samsung '878 IPR (IPR2022-01505) was filed on September 7, 2022, challenging claims 1-23 of the '878 Patent. I understand that the Samsung '878 IPR asserted the same grounds (based on the same prior art combinations) as the Roku '878 IPR. I understand that, like the Roku '878 IPR, the Samsung '878 IPR asserted, in a first ground, claims 1, 2, 5-7, 10, 13, 14, 17-19, and 22 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, Harrington, and Damick. I understand that, in a second ground, claims 3, 4, 11, 12, 15, 16, 20, 21, and 23 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, Harrington, Damick, and Rankin. I understand that, in a third ground, claims 8 and 9 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Baum, Harrington, Damick, and Varghese. I understand that Samsung moved for joinder of the Roku '878 IPR with the Samsung '878 IPR on September 7, 2022. I understand that Samsung did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on December 28, 2022,

but did not propose any constructions for any claim terms. I understand that the PTAB issued a decision denying the motion for joinder and institution of IPR on March 22, 2023, because Samsung 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.

73. I understand that the Meta IPR of the '878 patent (IPR2023-01281) was instituted on February 21, 2024. I understand that the Meta IPR of the '878 Patent asserted grounds involving U.S. Patent No. 6,427,170 B1 to Sitaraman et al. ("Sitaraman"), used in the current Petition supported by this Declaration. I understand that no other references used in the current Petition were applied during the Meta IPR of the '878 Patent. I understand that Petitioner was not involved in the petitions for IPR of the '878 Patent.

C. '164 IPRs

74. I understand that the petition for the Roku '164 IPR (IPR2022-00953) was filed on May 24, 2022, challenging claims 1-3, 6-14, 16-18, 20, 21, 23-25, 27, and 28 of the '164 Patent. I understand that the Roku '164 IPR asserted, in a first ground, claims 1-3, 6, 12, 14, 16-18, 21, 23-25, and 28 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of U.S. Patent Application Publication No. 2008/0281697 to Whitehead ("Whitehead"). I understand that, in a second ground, claims 7 and 8 were alleged

to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and U.S. Patent No. 9,495,682 to Vallier ("Vallier"). I understand that, in a third ground, claims 9, 10, and 13 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and Varghese. I understand that, in a fourth ground, claims 11, 20, and 27 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and U.S. Patent No. 9,928,522 to Beyda et al. ("Beyda"). I understand that Samsung did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on September 6, 2022, but did not propose any constructions for any claim terms. I understand that the PTAB issued a decision denying institution of IPR on November 29, 2022, because Roku 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. I understand that intuition of Samsung's petition for IPR of the '164 Patent (IPR2022-01506) was denied on April 13, 2023 because Samsung did not establish a reasonable likelihood of prevailing on at least one challenged claim. I understand that none of the current Petition's grounds rely on references that were applied during the Samsung IPR of the '164 Patent. I understand that Petitioner had no involvement in the Samsung petition, and I had no involvement in that proceeding.

D. ’069 IPR

75. I understand that the petition for the Roku ’069 IPR (IPR2022-00959) was filed on May 13, 2022, challenging claims 1, 3-5, 8-18, 20-25, and 27-31 of the ’069 Patent. I understand that the Roku ’069 IPR asserted, in a first ground, claims 1, 3-5, 8, 17, 18, 20, 21, 25, 27, and 28 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead. I understand that, in a second ground, claims 9 and 10 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and Vallier. I understand that, in a third ground, claims 11-16, 22-24, and 29-31 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and Varghese. I understand that Roku did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on September 6, 2022, but did not propose any constructions for any claim terms. I understand that the PTAB issued a decision denying institution of IPR on November 29, 2022, because Roku 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.

E. ’198 IPRs

76. I understand that the petition for the Roku ’198 IPR (IPR2022-00960) was filed on May 13, 2022, challenging claims 1, 3-5, 8-18, 20-26, and 28-33 of the ’198 Patent. I understand that the Roku ’198 IPR asserted, in a first ground, claims 1, 3-5, 8, 17, 18, 20, 21, 26, 28, and 29 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead. I understand that, in a second ground, claims 9, 10, 25, and 33 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and Vallier. I understand that, in a third ground, claims 11-16, 22-24, and 30-32 were alleged to be unpatentable under pre-AIA U.S.C. § 103(a) as being obvious over Madhavan in view of Whitehead and Varghese. I understand that Roku did not propose any constructions for any claim terms. I understand that Patent Owner filed a Preliminary Response on September 7, 2022, but did not propose any constructions for any claim terms. I understand that the PTAB issued a decision denying institution of IPR on November 29, 2022, because Roku 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. I understand that intuition of Samsung’s petition for IPR of the ’198 Patent (IPR2022-01507) was denied on March 29, 2023 because Samsung did not establish a reasonable likelihood of prevailing on at least one challenged claim.

I understand that the Samsung IPR of the '198 Patent asserted grounds involving Martinez, used in the current Petition supported by this Declaration. I understand that no other references used in the current Petition were applied during the Samsung IPR of the '198 Patent. I understand that Petitioner had no involvement in the Samsung petition, and I had no involvement in that proceeding.

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. 1137), which describes a method of providing digital advertisements over the Internet, including targeted advertisements. Ex. 1137, 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. 1131) 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. 1131,

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. 1132) describes a similar method, "for advertising over a computer network utilizing virtual environments of games." Ex. 1132, Title. 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. 1133) describes a method of providing digital advertisements (e.g., via video distribution systems for video-on-demand (VOD)) that "match[] content and target audience," and which "solves the

problem of advertising effort being wasted on uninterested viewers … by providing selected advertisements to VOD viewers." Ex. 1133, [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. 1137, pp. 163-188. As Zeff recognized, Internet advertising was focused on generating revenue for websites that display digital advertisements from its inception. Ex. 1137, 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. 1135), 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. 1135, 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. 1137, 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. 1163, [0002], [0006], [0017]-[0019]; Ex. 1166, pp. 188-189, Ex. 1168, [0041], [0046], [0074]; Ex. 1170, Abstract, 6:37-39, 6:50-57, 7:10-15, 9:2-10, 13:10-25; Ex. 1168, p. 2; Ex. 1165, 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. 1163, [0002]. Collecting characteristics of viewers in order to refine and "target" ads was also well-understood (*see* Section VIII.A, above); Jennings (Ex. 1168), for example, describes targeting media based on "sex, age, hobbies, historical viewing habits, and other data the viewer would provide." Ex. 1168, [0041]; *see also* Ex. 1163, [0027] ("formation of groups for targeted advertising … subgroups may be based (1) geographic segmentation, (2) demographic segmentation, (3) psychological segmentation," etc.); Ex. 1164, [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. 1168, [0006] (describing delivery of "targeted advertisements to the set-top boxes (STB)"); Ex. 1164, 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. 1169, [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. 1163) 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. 1163, [0006], [0017]-[0019]. Howcroft (Ex. 1164) 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. 1164, [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. 1166), 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. 1166, 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. 1166, 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. 1166, 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. 1166, 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. 1170, 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. 1171, [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. 1169, [0026], [0132], [0141]; Ex. 1116, [0063]-[0064], Ex. 1164, (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. 1168, [0045]-0046] (noting that the network owner may "stream media to its employees or customers directly"); Ex. 1164, 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. 1165, [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. 1167), 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. 1167, 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. 1171) describes the use of an "Ad Content Server" to request and insert targeted advertisements from third parties at specified locations on web pages. Ex. 1171, [0022]-[0024]; *see also* Ex. 1132, 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. 1136. 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. 1112) 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. 1112, 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

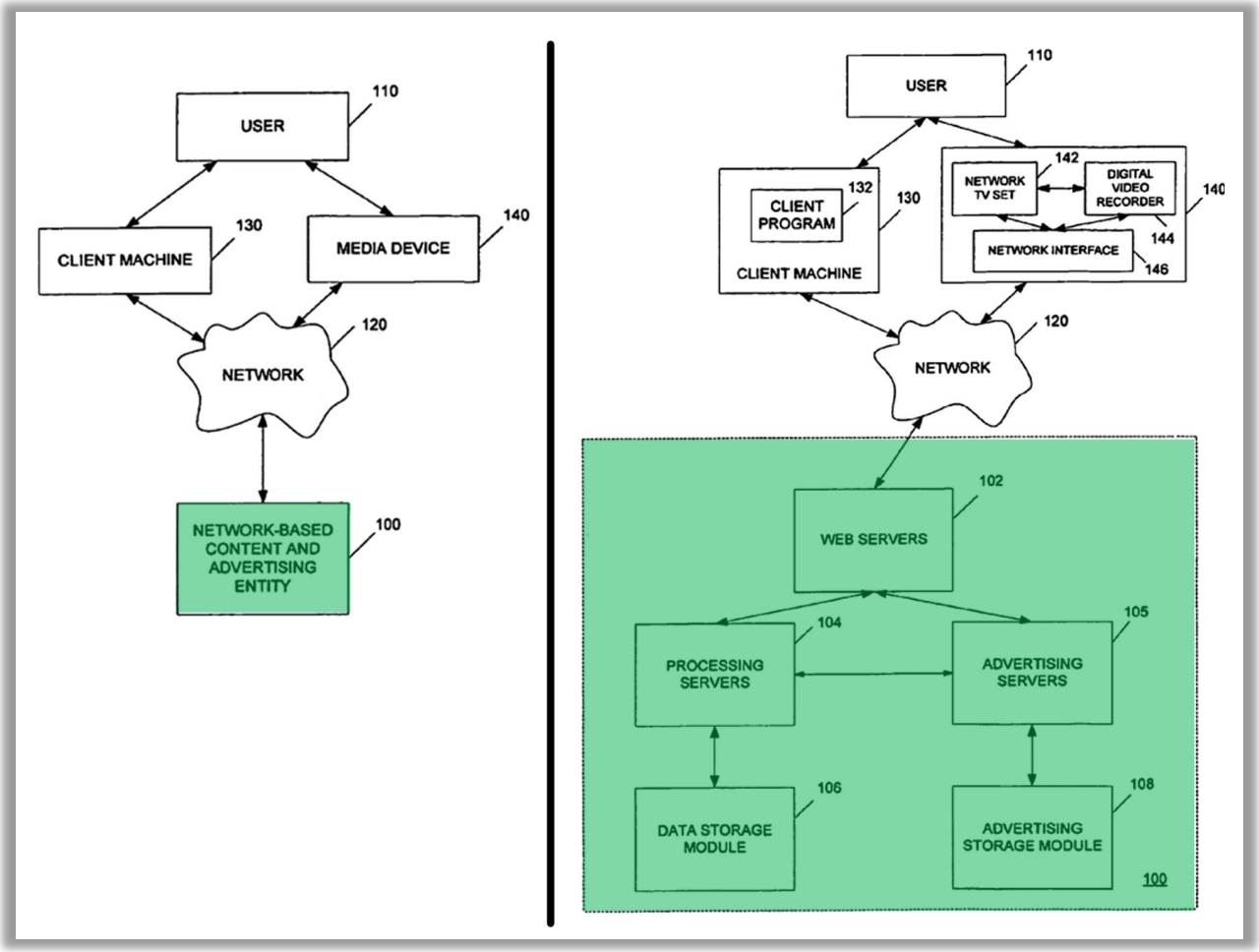
for some communications while using different IP addresses for other communications.

IX. OVERVIEW OF THE RELIED UPON PRIOR ART

A. U.S. Patent No. 8,180,674 ("Madhavan")

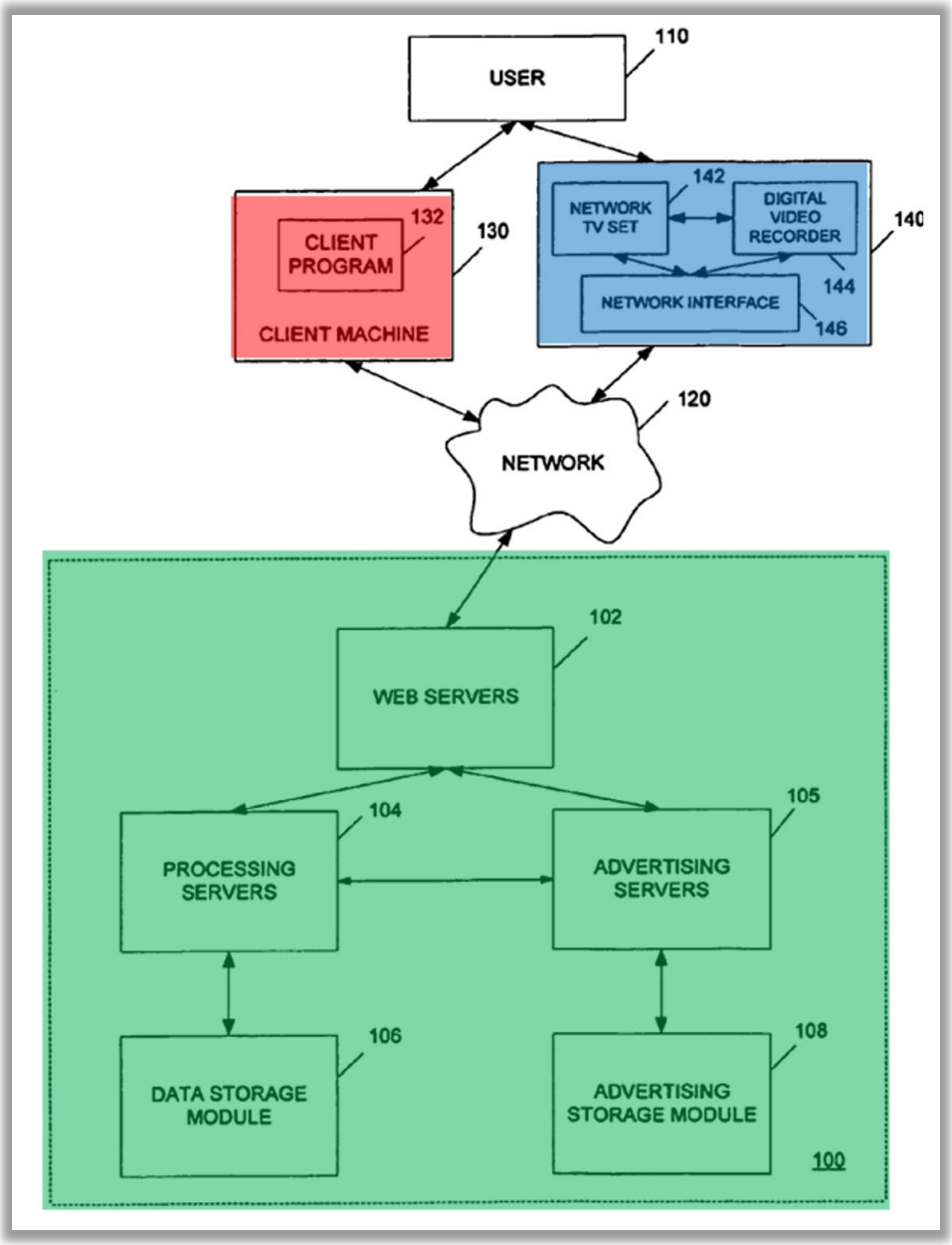
87. Madhavan (Ex. 1122) is a U.S. Patent issued on March 15, 2012, from an application filed on October 3, 2006 and published on April 3, 2008. I understand that Madhavan qualifies as prior art under pre-AIA 35 U.S.C. § 102(e).

88. Madhavan discloses an apparatus and method for providing targeted advertising based on mutual information (e.g., online activity) sharing between multiple computing devices accessing a common network. Madhavan's system includes a network-based content and advertising entity 100 (e.g., content service provider) that includes a number of different servers (**green**) as shown in Figure 2 below. Ex. 1122, 4:26-36, 4:57-65, 5:18-27, 8:5-8, 8:53-56.



Ex. 1122, FIG. 1 (annotated) Ex. 1122, FIG. 2 (annotated)

89. Madhavan discloses that content service provider 100 can be accessed by different users 110 through a network 120, such as the internet. Ex. 1122, Abstract, 1:36-54, 4:46-5:2. For example, Madhavan's content service provider 100 is connected to network 120, which also connects to client machine 130 (**red**) and media device 140 (**blue**). Ex. 1122, 4:37-45.



Ex. 1122, FIG. 2 (annotated)

90. User 110 accesses content service provider 100 through network 120 using client machine 130 assigned a unique IP address associated with the user. Ex. 1122, Abstract, 4:37-45, 5:3-11, 7:33-36, 7:60-67, 8:42-48, 10:35-40, 10:67-11:6. Similarly, the network-based television set 142 and the digital video recording

device 144 are assigned respective unique IP addresses, where each of the unique IP addresses is associated with the user 110, by way of the user's device used to access the content service provider. Ex. 1122, 7:15-26, FIG. 1.

91. Madhavan discloses content service provider 100 deriving and storing user profile information based on the user's online activity, including linking user data (via a user profile) with IP addresses of devices associated with the user. Madhavan provides that such user data may include demographic data about the user 110, geographic data detailing user access locations, and behavioral data related to the user 110. *See* e.g., Ex. 1122, Abstract, 1:38-46, 2:62-3:55, 5:53-6:16, 8:37-41, 10:65-11:17.

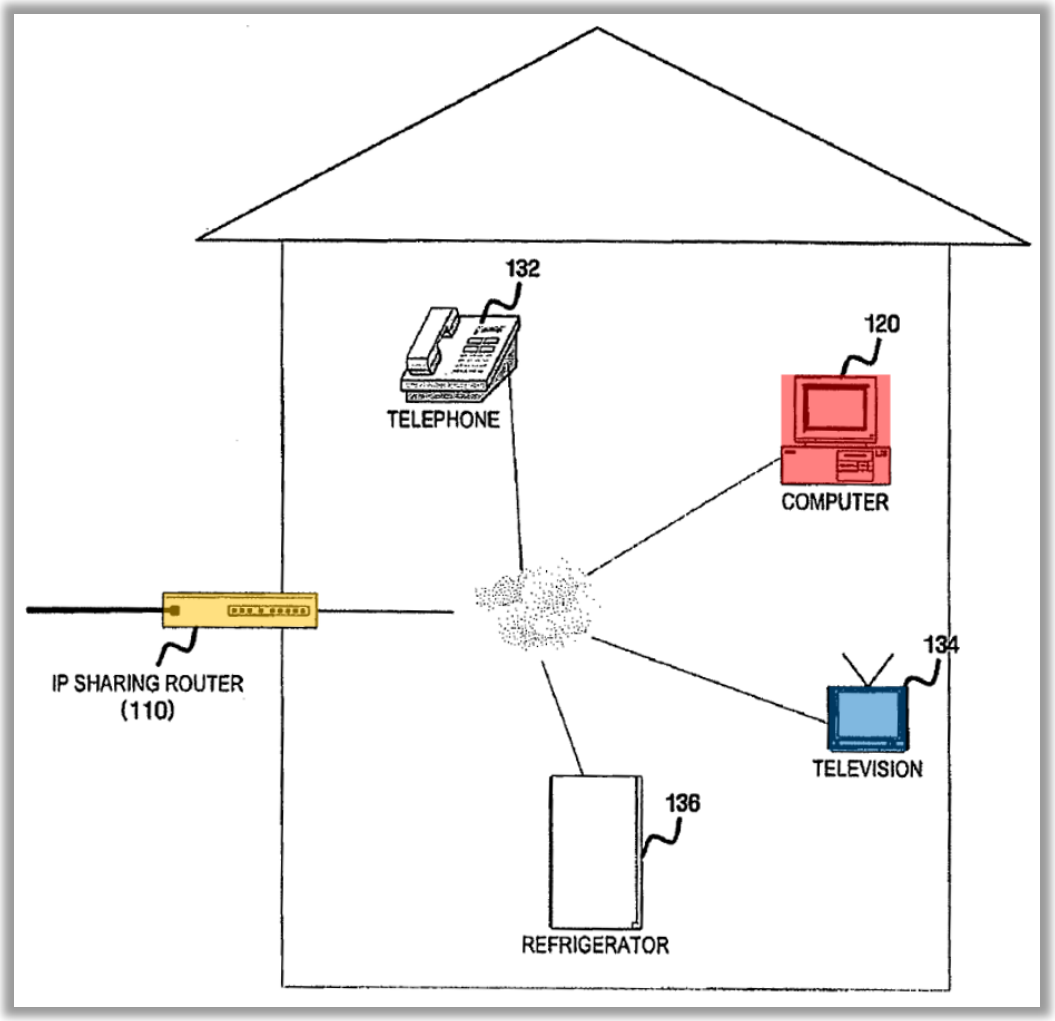
92. Leveraging the user profile information, Madhavan's content service provider 100 directs targeted advertisements to the user 110 on the user's various devices (e.g., client machine 130 and media device 140) that connect to content service provider 100 through network 120. Ex. 1122, Abstract, 1:46-54, 3:55-63, 4:37-56, 5:28-36, 7:15-26, 8:26-33, 9:18-29, 10:3-9, 10:35-55, 11:34-37, 11:55-61, FIGs. 5-9.

93. Therefore, it is my opinion that Madhavan is analogous art to the '015 Patent. I will provide more detail about Madhavan in my discussion of the claim limitations below.

B. U.S. Patent App. Pub. No. 2006/0039386 ("Park")

94. Park (Ex. 1123) is a U.S. Patent Application Publication filed on July 29, 2005, and published on February 23, 2006. I understand that Park qualifies as prior art under pre-AIA 35 U.S.C. §§ 102(b) and 102(e).

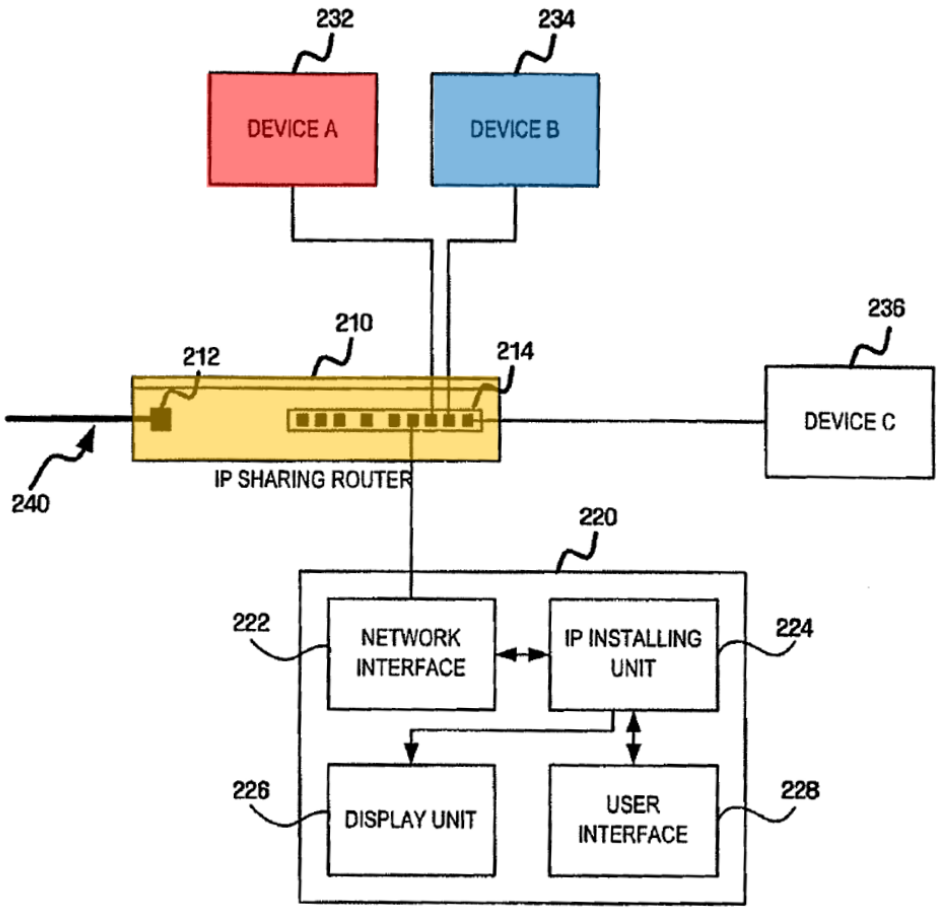
95. Park discloses an internet protocol (IP) installer for setting up a home network with multiple devices that share a single router to interface with a public network, such as the Internet. Ex. 1123, Abstract, ¶ [0003]. To address the shortage of public IP addresses, Park employs a system configured to use a common IP address for multiple devices. Ex. 1123, ¶¶ [0009]-[0011]. Specifically, as shown in Figure 1 below, Park discloses using an IP sharing router 110 (**orange**) with a computer 120 (**red**) and a television set 134 (**blue**) connected to it in a home network. Ex. 1123, ¶¶ [0007]-[0008].



Ex. 1123, FIG. 1 (annotated)

96. Each of the devices home network above are assigned a unique private IP address by the IP sharing router 110, and these devices access the internet with a public IP address assigned to the IP sharing router 110. Ex. 1123, ¶¶ [0009]-[0011]. Park further discloses the system may include an IP installer to facilitate the assignment of the private IP addresses. Ex. 1123, ¶¶ [0012], [0014]-[0016]. As shown below in Figure 2, Park's IP installer 220 connects directly to the IP sharing

router 210 (orange), which is connected to multiple devices 232 (red), 234 (blue), and 236. Ex. 1123, ¶¶ [0029]-[0030].



Ex. 1123, FIG. 2 (annotated)

97. Park's router includes network address translation (NAT) functions in which the router is assigned a public IP address by an Internet Service Provider (ISP), and the router assigns private IP addresses to the devices connected to the router. Ex. 1123, ¶¶ [0031], [0035]-[0038]. Park further discloses associating a respective port to each of the connected devices. Ex. 1123, ¶ [0038]. To transmit data between the internet and a device connected to the router, the router translates

the private IP address of the device to the public IP address and adds the device's port number. Ex. 1123, ¶ [0038]. For example, the router may be assigned a public IP address of 221.100.10.1 and assign a private IP address 198.126.10.3 for Device A 232 at port 7070 and private IP address 198.126.10.4 for Device B 232 at port 8080[1]. Ex. 1123, ¶ [0038]. If Device A would like to transmit data through the internet, Park's router translates the source of the data from its private IP address (198.126.10.3) to the public IP address of the IP sharing router 110 (221.100.10.1) and adds port 7070. Ex. 1123, ¶ [0038].

98. Therefore, it is my opinion that Park is analogous art to the '015 Patent.

C. U.S. Patent App. Pub. No. 2004/0003292 ("Kato")

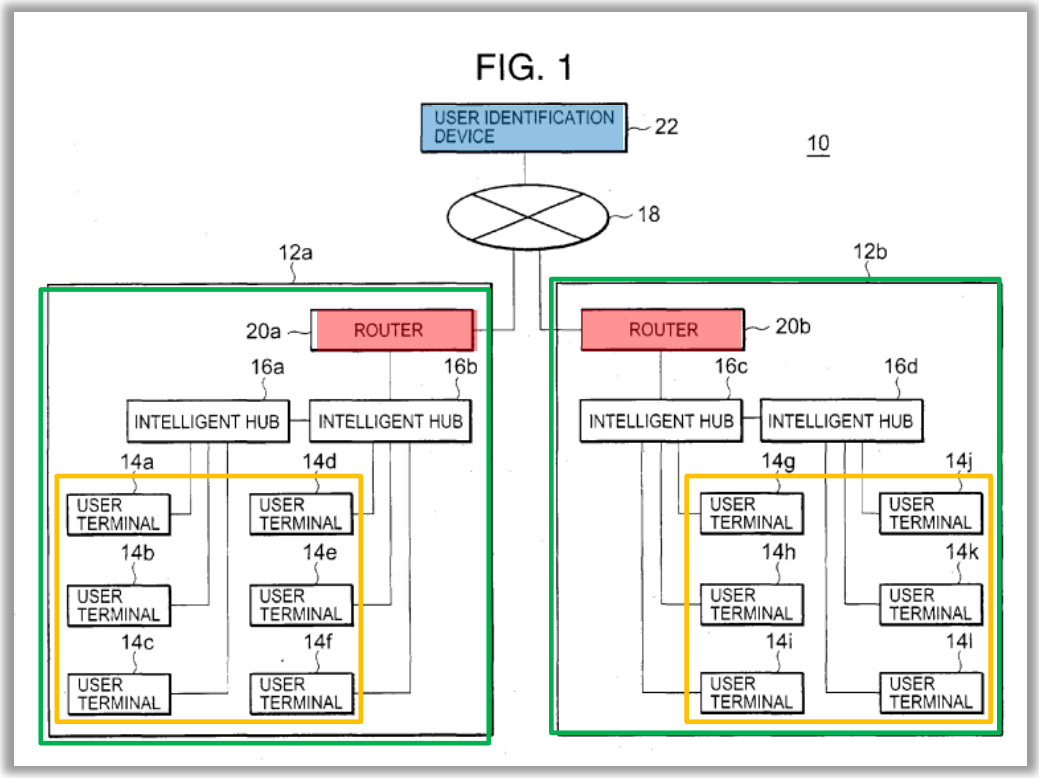
99. Kato (Ex. 1125) is a U.S. Patent Application Publication filed on July 1, 2003 and published on January 1, 2004. I understand that Kato qualifies as prior art under pre-AIA 35 U.S.C. §§ 102(b) and 102(e).

100. Kato discloses a system and method for identifying a user of a user terminal based on a source IP address, including providing a relationship or

[1] Paragraph [0038] of Park states, in part: "For example, when the port number of the IP installer 220 is 6060, the port number of device A 232 is 7070, the port number of device B 234 is 7070, and the port number of device C 236 is 9090…." (Emphasis added). It is clear from Park's example that reference to port "7070" for Device B and is a typo.

correspondence between a media access control (MAC) address, a private IP address, and a global/public IP address. Ex. 1125, Abstract.

101. As shown below in Figure 1, Kato describes a user identification system 10 that includes intelligent hubs (16*a*-16*d*) each of which is placed in a Local Area Network (LAN) 12*a* or 12*b* (**green**) and is provided with a plurality of physical ports to which a plurality of user terminals 14*a*-14*l* (**orange**) are connected respectively; routers 20*a* and 20*b* (**red**) for connecting the LANs 12*a* and 12*b* with the Internet 18; and an identification device 22 (**blue**) for identifying a user terminal—via the terminal's MAC address—that communicated on the Internet 18. Ex. 1125, ¶¶ [0030]-[0031], FIG. 1.



Ex. 1125, FIG. 1 (annotated)

102. Each of Kato's intelligent hubs (16*a*-16*d*) include a database storing first communication information indicating a correspondence between the physical ports of the intelligent hub and terminal identification information (e.g., MAC address) identifying a user terminal (e.g., user terminals 14*a*-14*l*) connected to the port. Ex. 1125, ¶ [0031]. Additionally, each of Kato's routers 20*a* and 20*b* store second communication information indicating a correspondence between the user terminal's MAC address and the private IP address assigned to the device by the respective router 20*a* and 20*b*. Ex. 1125, ¶ [0033]. In particular, Kato discloses that the routers 20*a* and 20*b* include a Dynamic Host Configuration Protocol (DHCP)

server that assigns private IP addresses for each of the respective user terminals 14. Ex. 1125, ¶ [0033].

103. Kato's router further stores third communication information indicating a correspondence between the respective private IP address of the user terminals 14 and the global/public IP address associated with the respective router 14. This information is used by the router's address converter to perform network address translation to convert between the private IP addresses of the user terminals 14 and the global/public IP address of the router 20. Such conversions are used to relay data packets between a LAN and the Internet. Ex. 1125, ¶ [0035].

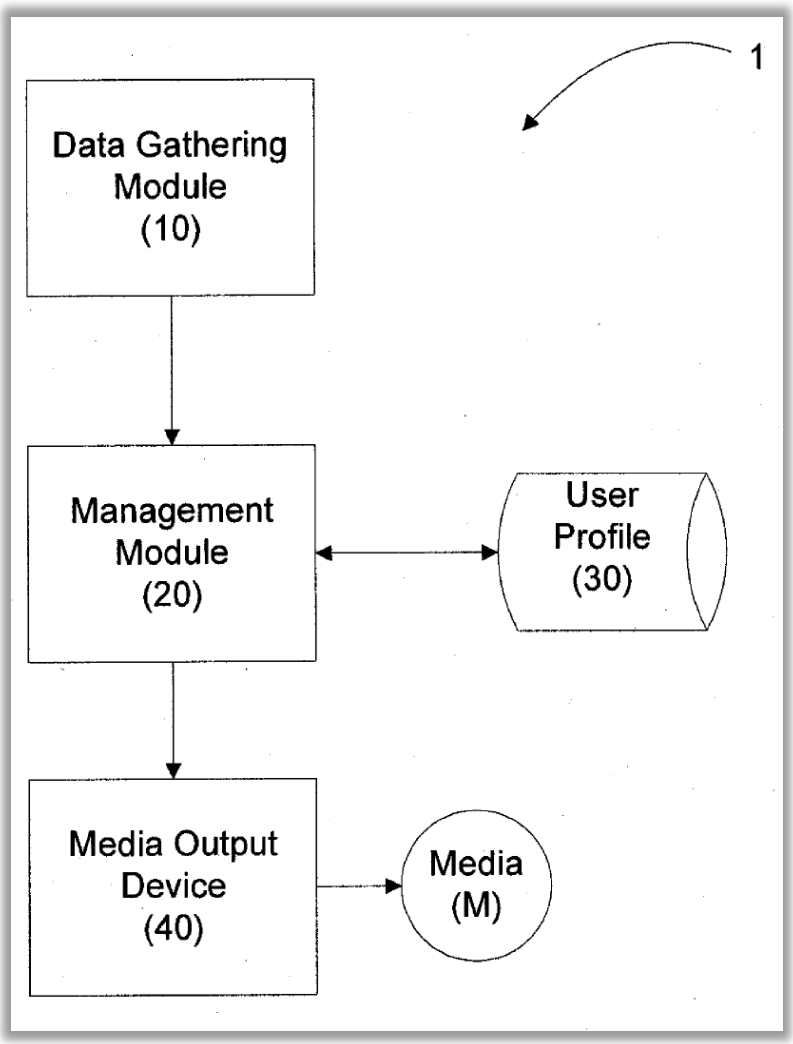
104. Therefore, it is my opinion that Kato is analogous art to the '015 Patent.

D. U.S. Patent App. Pub. No. 2008/0120178 ("Martinez")

105. Martinez (Ex. 1124) is a U.S. Patent Application Publication filed on November 22, 2006 and published on May 22, 2008. I understand that Martinez qualifies as prior art under pre-AIA 35 U.S.C. § 102(e).

106. Martinez discloses a system and method for collecting data and presenting media to a user. Ex. 1124, Abstract. Martinez was assigned to the same entity (i.e., Yahoo!) as Madhavan and were filed within two months of each other. Ex. 1124, cover page; Ex. 1122, cover page. As shown in Figure 1 below, Martinez describes a system 1 for delivering media using a data gathering module 10 that collects electronic data and provides it to a management module 20 that manages

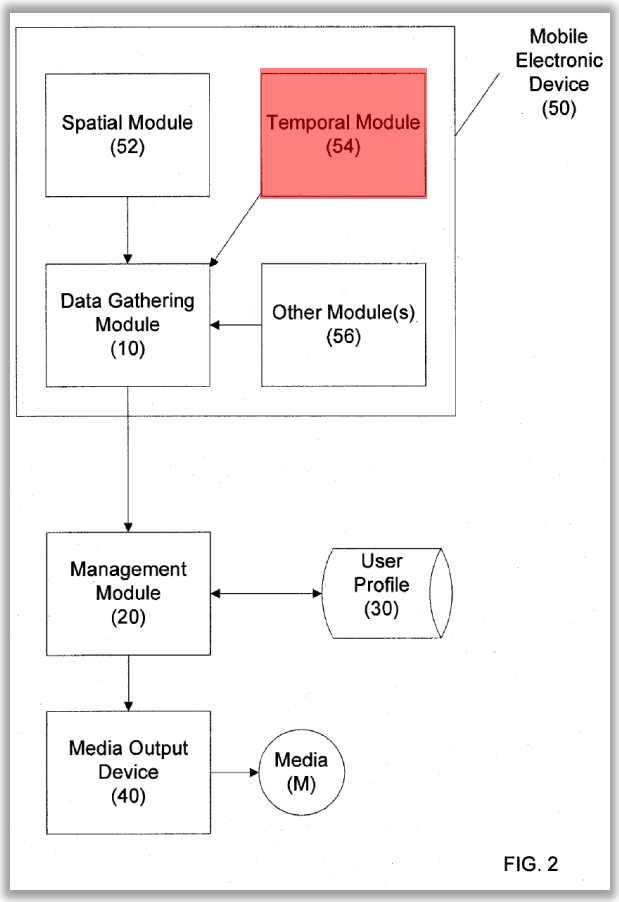
(e.g., creates and/or updates) a user profile 30 that is based on the electronic data. Ex. 1124, ¶¶ [0035], [0046]. Using the user profile 30, management module 20 determines media for presentation to a user via media output device 40. Ex. 1124, ¶¶ [0035], [0046]-[0047].



Ex. 1124, FIG. 1.

107. Martinez further explains that the user profile includes at least some of the electronic device data, including deduced information that is deduced based on

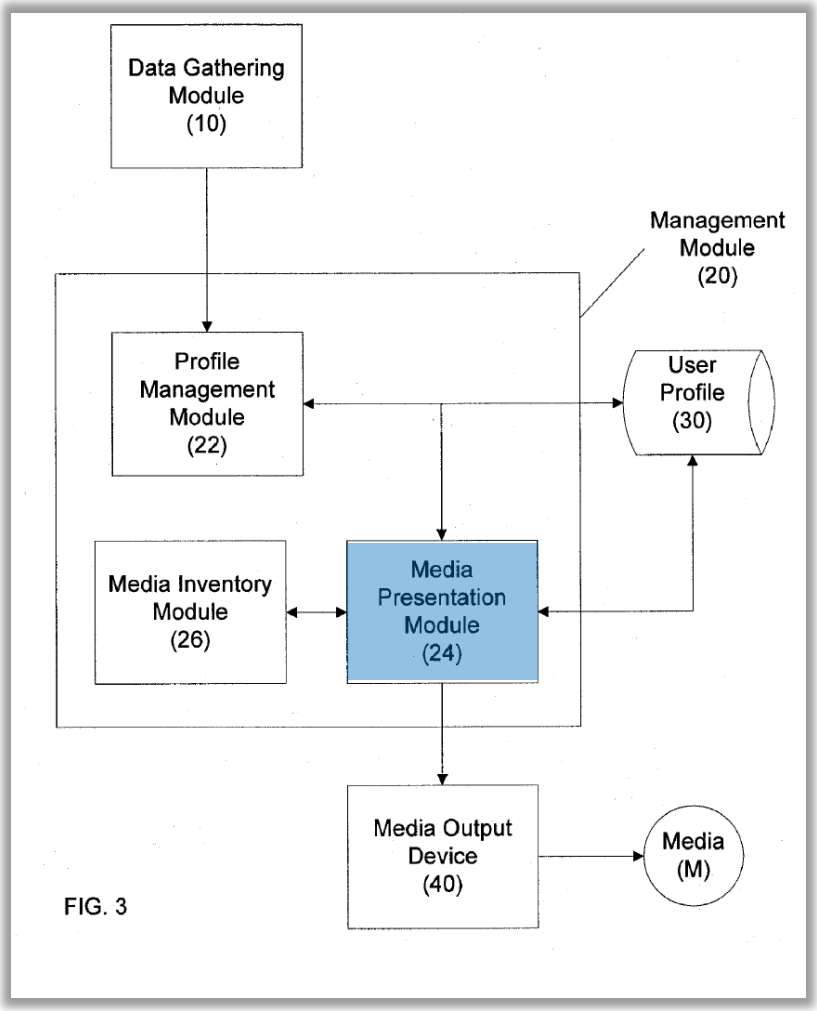
spatial data, temporal data, and/or interaction data. The profile management module 20 may correlate the spatial data, the temporal data, and the interaction data to deduce at least some of the deduced information. Ex. 1124, ¶ [0004]. For example, as shown in Figure 2 below, Martinez discloses that the data gathering module 10 communicates with spatial module 52 and temporal module 54 to collect electronic data. Ex. 1124, ¶ [0037]. In particular, the spatial module 52 may communicate spatial data to the data gathering module 10 and the temporal module 54 (**red**) may communicate temporal data to the data gathering module 10. Ex. 1124, ¶ [0037].



Ex. 1124, FIG. 2 (annotated)

108. Martinez discloses that the temporal module 54 may be any hardware and/or software operable to communicate temporal data (e.g., time stamps), and may uses a local clock or a network-based clock to provide the temporal data. Ex. 1124, ¶¶ [0040], [0049]. In particular, Martinez explains that the time based data (e.g., time stamps) relates to specific times and/or events associated with a user and/or the electronic device. Ex. 1124, ¶ [0051]. For example, the temporal data 15 may be passively collected time data (e.g., time data from a clock resident on the electronic device, or time data from a network clock), or may be actively collected time data, such as time data entered by the user of the electronic device (e.g., a user maintained calendar). Ex. 1124, ¶ [0051].

109. Further Martinez discloses leveraging the electronic device data (including the temporal data 15) to facilitate the media presentation to the user. In particular, as shown in Figure 3, the management module 20 may include a media presentation module 24 (**blue**) that utilizes at least a portion of the user profile 30 to facilitate selection of media for presentation to a user. In particular, the media presentation module 24 may correlate data of the user profile 30 and data associated with the media of the media inventory 26 to locate potential targeted advertising opportunities. Ex. 1124, ¶ [0047].



Ex. 1124, FIG. 3 (annotated)

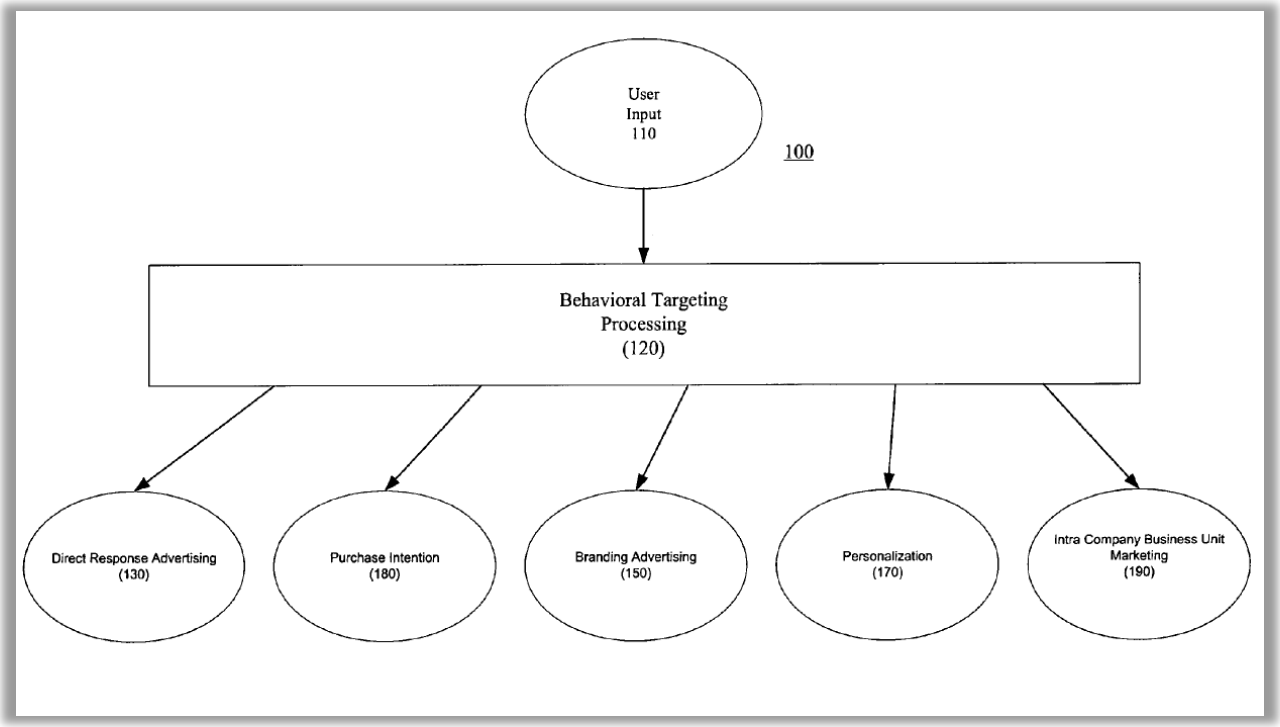
110. Therefore, it is my opinion that Martinez is analogous art to the '015 Patent.

E. U.S. Patent No. 8,438,170 ("Koran")

111. Koran (Ex. 1127) is a U.S. Patent issued on May 7, 2013 from an application filed on March 29, 2006. I understand that Koran qualifies as prior art under pre-AIA 35 U.S.C. § 102(e).

112. Koran discloses a behavioral targeting system for providing advertisements using user profiles generated based on online activity of the user. Koran's system generates a user profile score based on the online activity of a user using a model that includes recency, intensity and frequency dimension parameters. Ex. 1127, Abstract. Koran was assigned to the same entity (i.e., Yahoo!) as Madhavan and were filed within one year of each other. Ex. 1127, cover page; Ex. 1124, cover page.

113. With reference to Figure 1 below, Koran's behavior targeting system 100 profiles the interests and behavior of Internet users based on the user's online activities. Using the behavior targeting system 100, a user input 110 is captured by behavioral targeting processing (120). The user input includes event information, such as online activity of the user. Ex. 1127, 2:27-37. The behavior targeting system 100 generates a plurality of user profiles specific for a target objective. As shown below in Figure 1, the behavioral targeting system 100 outputs user behavioral profiles for direct response advertising 130, brand awareness advertising 150, purchase intention activities 180 and intra-company business unit marketing. Koran further discloses that the behavioral targeting processing 120 may generate user interest profiles for marketing objectives (e.g., direct response advertising). Ex. 1127, 2:37-56.



Ex. 1127, FIG. 1

114. Koran further discloses using recency and other parameters to generate a user profile that is used to predict success for marketing targeting the user. For example, Koran discloses that the behavioral targeting processing generates long-term and short-term user behavioral profiles that compile activities of the user over time. For example, the long-term user behavioral profile includes activities of the user over a relatively long period of time (e.g., over at least 24 hours), while the short-term user behavioral profile includes activities of the user over a short period of time, such as an hour. Using the long-term and short-term user behavioral profiles, Koran's system generates a user behavioral profile that is used to serve advertisements conducive to a user's long-term and/or short-term interests. Ex.

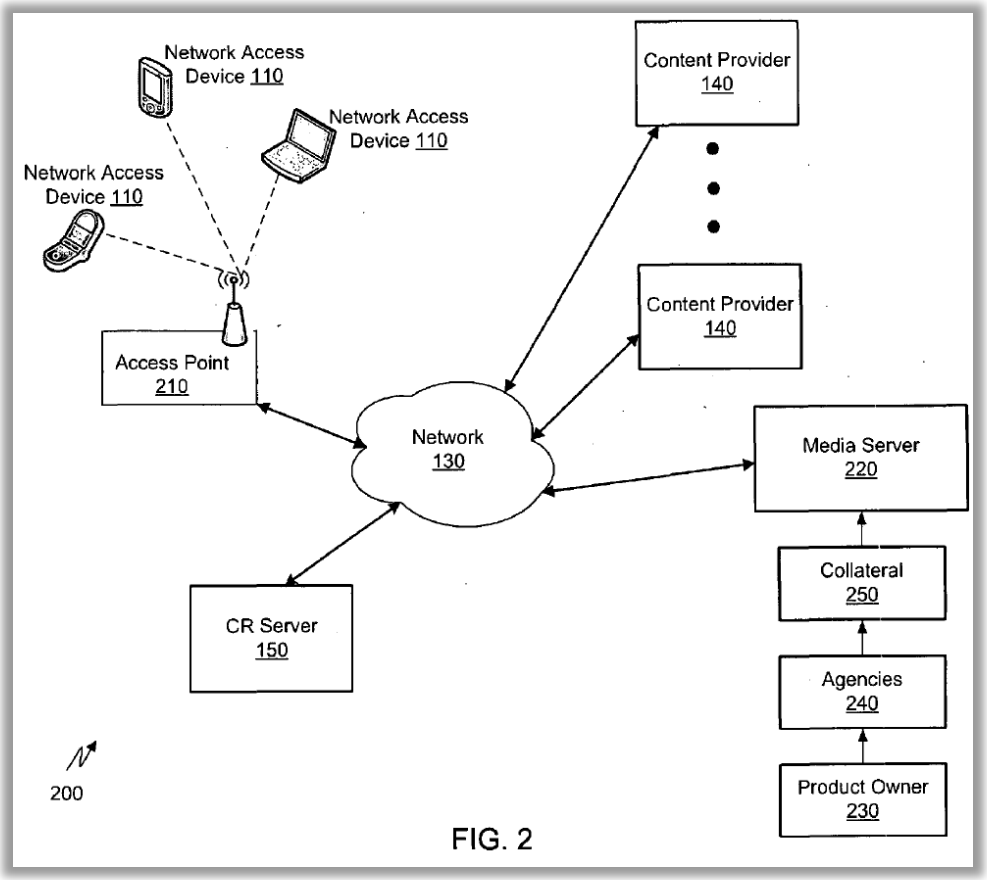
1127, 11:29-48, 14:28-42. More specifically, Koran's targeting system categorizes and processes received user events (e.g., user inputs 110), and then applies a recency dimension that weighs events based upon how recent the events have occurred to generate interest scores for different event types. Ex. 1127, 5:42-55. Koran's targeting system uses these generated interest scores to predict information regarding a user's action relative to categories of interest, thereby optimizing the targeting of the user. Ex. 1127, 20:38-47. While Koran refers to certain features or Figures as "embodiments," it is my opinion that a POSA would have understood, in the context of Koran's disclosures, that these features involve various aspects of the same "behavioral targeting system" and/or different variations of how Koran's targeting system processes data to crate user interest/behavioral profiles. In fact, Koran expressly discloses that those skilled in the art would appreciate that various modifications and alterations might be made without departing from the scope of the invention. Ex. 1127, 24:4-8.

115. Therefore, it is my opinion that Koran is analogous art to the '015 Patent.

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

116. Banga507 (Ex. 1115) is a U.S. Patent Application Publication filed on May 12, 2006 and published on November 23, 2006. Ex. 1115, cover. I understand that Banga507 qualifies as prior art under 35 U.S.C. §§ 102(a) and 102(e).

117. 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. 1115, ¶¶ [0041], [0043], FIG. 4. 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. 1115,, ¶¶ [0023]-[0029], FIG. 2.



Ex. 1115, FIG. 2

118. 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. 1115, 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. 1115, ¶¶ [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. 1115, ¶¶ [0007], [0031]. Banga507 also teaches that "generally, users interact with the content providers and advertiser by accessing a web site via a network access device. Users have traditionally been identified by either the user's current destination on the network through personal accounts or through downloaded programs on the user's network access device (e.g., cookies)." Ex. 1115, ¶ [0005].

119. Therefore, it is my opinion that Banga507 is analogous art to the '015 Patent.

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

120. Ashbaugh (Ex. 1119) 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. 1119, cover; Ex. 1150. The Ashbaugh PCT designated the United States and published in English. Ex. 1150, cover. The invalidating disclosures from Ashbaugh are supported by the Ashbaugh PCT. *See* Ex. 1150. I understand that Ashbaugh qualifies as prior art under 35 U.S.C. § 102(e).

121. 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. 1119, 9:36-38; 11:67-12:3; Ex. 1150, 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. 1119, 9:36-38, 10:1-9; Ex. 1150, 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. Ashbaugh, 11:43-12:3; Ex. 1150, 17-18. Therefore, it is my opinion that Ashbaugh is analogous art to the '015 Patent.

H. U.S. Patent No. 5,428,778 ("Brookes")

122. Brookes (Ex. 1126) is a U.S. Patent issued on June 27, 1995, from an application filed on September 13, 1994. I understand that Brookes qualifies as prior art under pre-AIA 35 U.S.C. §§ 102(b) and 102(e). Brookes discloses a system and method for disseminating information to a user, and alerting users to disseminated information, based on parameters associated with information items. Ex. 1126, Abstract. Brookes' system generates an interest profile for each user that lists categories of information of interest to the user. Ex. 1126, 7:1-3, *see also* Table 3.

123. Parameters are assigned to information items to assist in the system administration. The parameters may include identification information (e.g., author, source) and temporal information (e.g., time stamps). Further, the parameters stored in association with each information item also includes a value indicative of an expiry date, at which time the utility of the information item is deemed to be negligible. Ex. 1126, 2:66-3:5. Brookes' system deletes and/or archives information items after the expiry date is reached. Ex. 1126, 3:1-5. To assist the administration of the information items, Brookes discloses the system prompts the user to associate an expiry date with the respective information items. For example, the system enquires whether the item is to have a default expiry date or an expiry date within

the valid range (e.g., 1 to 20 weeks) entered by the user. Ex. 1126, 6:13-19. In particular, Brookes' system automates this procedure by assigning to every item a default expiry date, or by prompting the users to do so. When the expiry date is reached, the information is deemed to be of no interest. Ex. 1126, 9:64-67.

124. Therefore, it is my opinion that Brookes is analogous art to the '015 Patent.

I. U.S. Patent No. 6,427,170 ("Sitaraman")

125. Sitaraman (Ex. 1160) is a U.S. Patent issued on July 30, 2002 from an application filed on December 8, 1998. I understand that Sitaraman qualifies as prior art under pre-AIA 35 U.S.C. §§ 102(b) and 102(e).

126. Sitaraman discloses a technique for managing dynamic IP address allocation. Ex. 1160, Abstract. Sitaraman acknowledges that with the growth of the Internet, companies and users were faced with an increasing shortage of IP addresses, since there is only a finite number of static addresses. Ex. 1160, 3:21-29. One well-known approach to address this problem is the assignment of "dynamic" IP addresses by an Internet Service Providers (ISP). In particular, a device is assigned an IP address that is dynamically assigned by a server known as a Dynamic Host Configuration Protocol (DHCP) server. DHCP refers to an industry-standard technique where a device on a network (such as a client device) may request a DHCP server "to provide it with an IP address and configuration parameters." Ex. 1160,

3:34-40. Sitaraman describes "[c]onventional DHCP operation" in which DHCP servers are used, for example, by ISPs that typically maintain a "pool" of available IP addresses that can be dynamically assigned upon request. Ex. 1160, 3:31-51, 3:64-4:1, 6:63-66.

127. If the client accepts the offered IP address, "the chosen DHCP server sends an acknowledgement with the offered IP address having an associated 'lease' time," which can be renewed by the client upon request. Ex. 1160, 3:42-47. "Once the lease expires, the IP address can be 'recycled' and given to another machine." Ex. 1160, 3:49-51.

128. Therefore, it is my opinion that Sitaraman is analogous art to the '015 Patent.

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

129. 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. 1101, 1:27-31, 1:49-53, 3:14-17, 5:20-26.

130. 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.

131. 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.

132. 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.

133. 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.

134. 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

135. 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

136. 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.

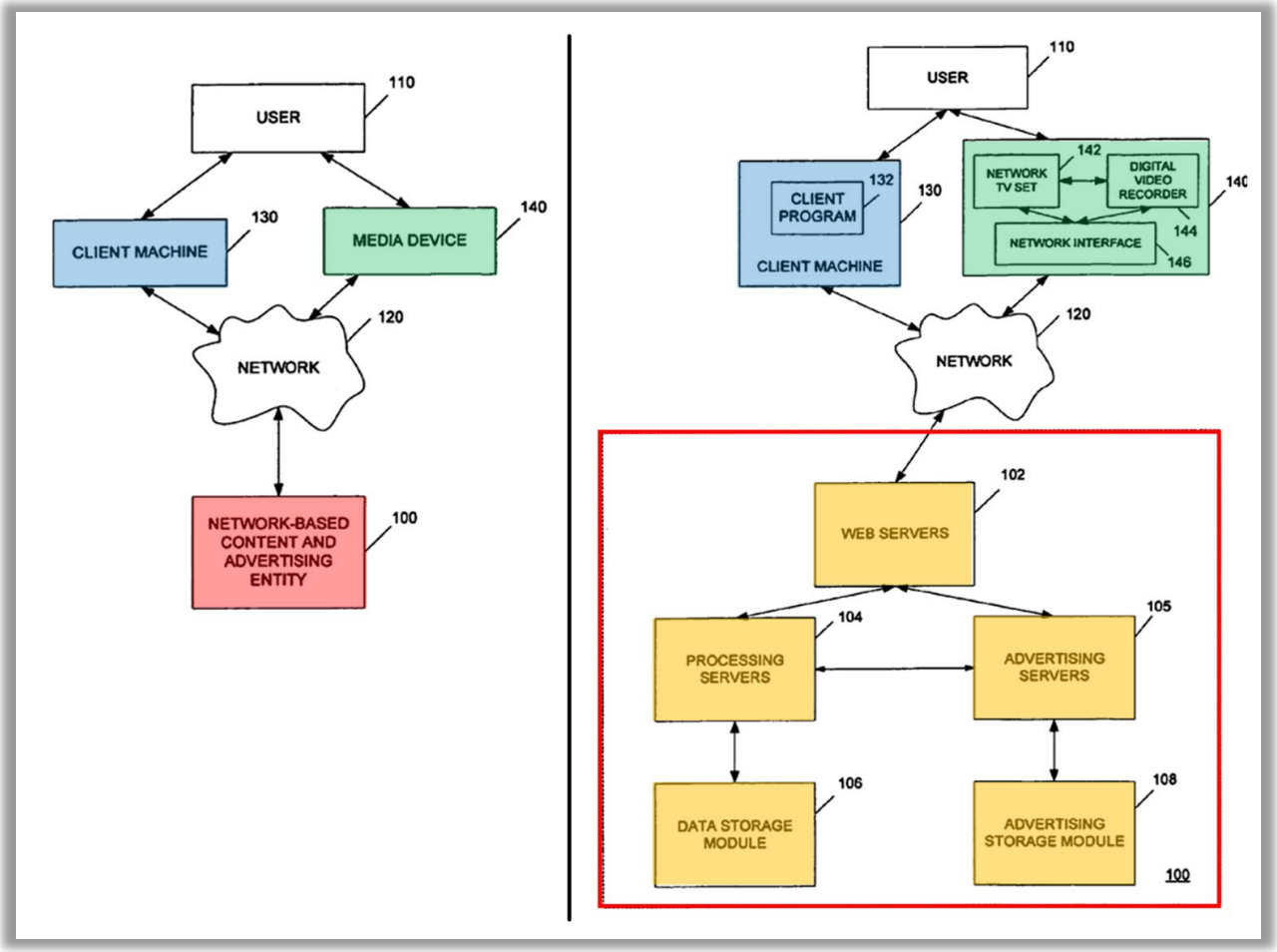
A. Ground A: Claims 1-10, 13-23, and 26 Are Obvious Over Madhavan in View of Park and Martinez

137. As I show and explain in further detail in the subsections below, the combination of Madhavan, Park, and Martinez renders obvious both using user identification information (e.g., device identifiers) to associate mobile computing devices that access the Internet from a (shared) router and automatically causing cross device action (e.g., providing targeted advertisements) to those computing devices based on the mutual sharing of information indicating user actions and online activity performed on the computing devices. For example, one such cross device action includes sending a targeted advertisement to one mobile computing device based on profile information (e.g., user data) from an associated second mobile computing device. The result of this combination teaches independent claims 1 and 14 as well as their dependent claims 2-10, 13, 15-23 and 26.

138. Madhavan's system "facilitate[s] targeting of advertisements based on mutual information sharing between devices over a network." Ex. 1122, Abstract, 1:7-11, 1:36-2:3. As seen below in Figure 1 from Madhavan, Madhavan's system includes a user's client machine 130 (**blue**) and media device 140 (**green**), which

are used by the user to initiate various events and actions during online sessions. Ex. 1122, 2:62-3:63, 4:26-42, 7:7-13, 8:1-8, 12:21-48, FIG. 1. The media device 140 may include a network-based television set 142 and/or a digital video recording device 144. Ex. 1122, 5:28-36, 7:7-26. The data collected from a user's device is stored, and associated with each other by a network-based content and advertising entity 100 (**red**). Ex. 1122, 4:46-56, 5:18-6:12, 7:2-9:67, FIGs. 1-3, 5-6. Madhavan describes that the content and advertising entity 100 is a network content service provider, that includes multiple servers (**orange**), such as one or more front-end web servers 102 and one or more back-end or processing servers 104 and one or more advertising servers 105. Ex. 1122, 4:26-65. The content service provider 100 enables "automatic matching of advertising information to events or actions and interests of users," for example, selecting and delivering advertisements to the user's devices that are related to current and/or previously-stored online activity of the user. Ex. 1122, 4:26-65, 5:18-6:12, 7:2-9:67, 10:1-29, 10:65-12:20. FIGs. 1-3, 5-6. However, as shown below, the user's devices do not necessarily connect to the Internet from the same access point. For example, Madhavan teaches that client machine 130 access the content service provider 100 by being directly coupled to network 120. Ex. 1122, 4:37-43, 5:3-11. By contrast, both the network-based television set 142 and the digital video recording device 144 may be coupled to the content

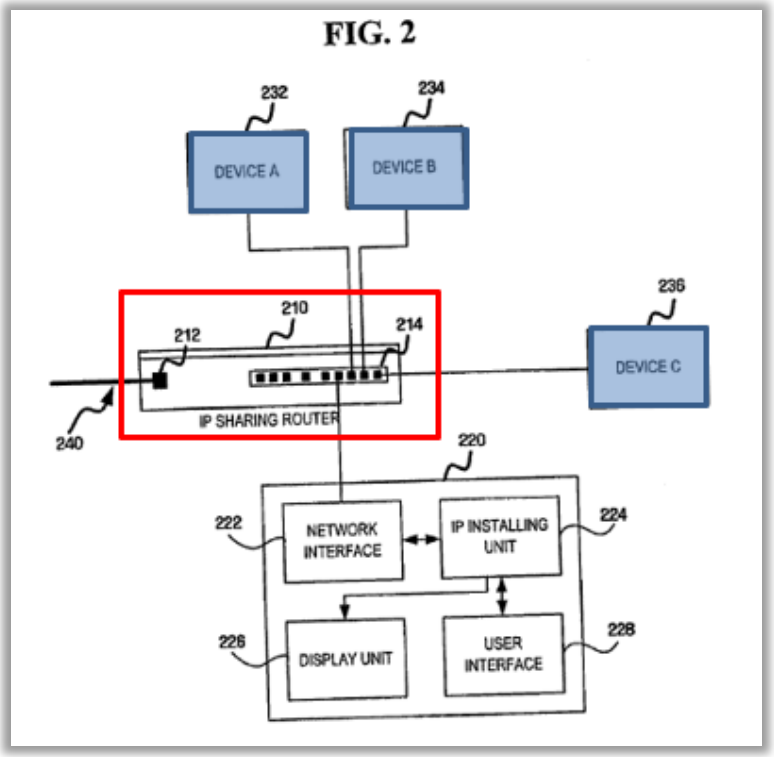
service provider 100 via the network 120 and a network interface module 146. Ex. 1122, 5:28-36, FIG. 2.



Ex. 1122, FIG. 1 (annotated) Ex. 1122, FIG. 2 (annotated)

139. Park recognizes that a user's devices may connect to the Internet via a common access point within a home network. In particular, as shown below in Figure 1, Park describes a system that comprises a local or home network that is configured to use an IP sharing router (**red**). Park's IP sharing router (e.g., router 110/210) assigns a private IP address to each user device (**blue**) within the home

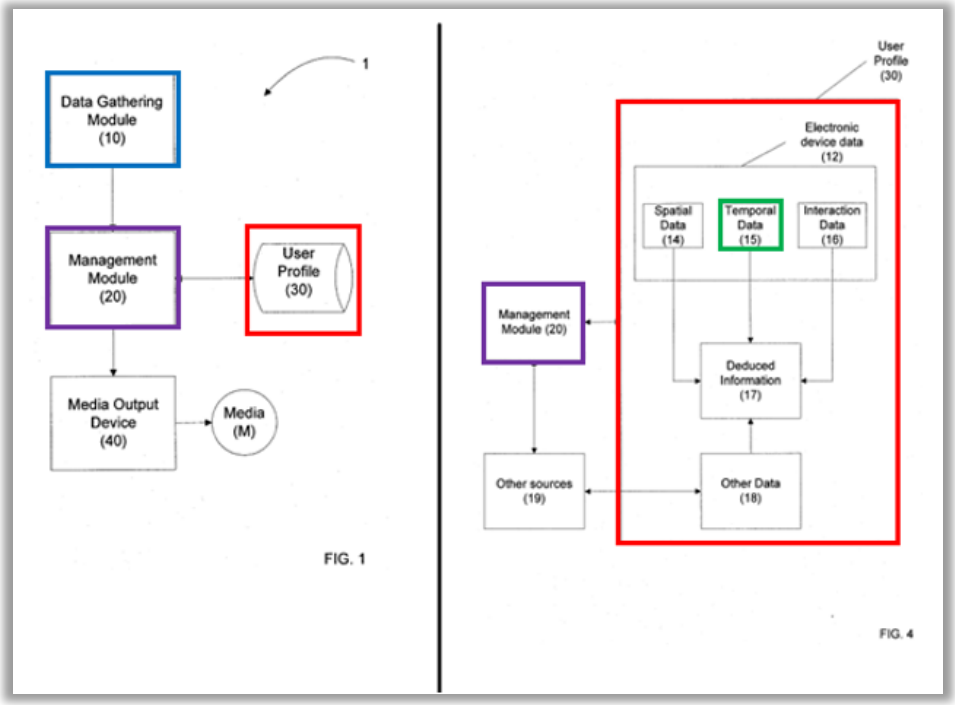
network (e.g., Devices A-C) for use within the local or home network, and connects the user's devices to a different, external network (e.g., the Internet) using a common, public IP address. Ex. 1123, ¶¶ [0003], [0007]-[0012], [0029]-[0030], [0035]-[0038], FIGs. 1-2.



Ex. 1123, FIG. 2 (annotated)

140. Martinez generally describes systems and methods for collecting data using a user profile and presenting media to a mobile device of a user associated with a particular profile. Ex. 1124, ¶ [0001], Abstract. Martinez was assigned to the same entity (i.e., Yahoo!) as Madhavan and was filed within two months of Madhavan. Ex. 1124, cover page; Ex. 1122, cover page. Martinez teaches a system comprising a data gathering module 10 (**blue**) for collecting data from a user's

mobile electronic device that is stored to a user profile 30 (**red**). Martinez's system also includes a management module (**purple**) for selecting media, such as advertisements, to present to a user based on their respective user profile. Ex. 1124, ¶¶ [0035]-[0036], [0045]-[0046], Abstract, FIGs. 1, 4. The user data collected and stored to the user profile includes, among other things, at least one of spatial data 14, temporal data 15 (**green**) and interaction data 16, which may be used to create deduced information 17. Ex. 1122, ¶¶ [0004]-[0008], [0036]-[0040], [0049]-[0052], [0056]-[0062], [0070]-[0071]. The temporal data collected and stored in the user profile includes timing information, e.g., time stamps, relating to when specific device events occured, including network access by the user's device. Ex. 1122, ¶¶ [0036]-[0040], [0049], [0051]-[0054], [0057]-[0058], [0070].



Ex. 1122, FIG. 1 (annotated) Ex. 1122, FIG. 4 (annotated)

141. As I describe in further detail below, it is my opinion that a POSA would have found it obvious to apply the above teachings of Park and Martinez to Madhavan's system so that, when the Madhavan-Park-Martinez system communicates with a user's devices that have accessed the network (e.g., Internet) using a common IP address, the system associates the devices based, in part, on their common IP address. The Madhavan-Park-Martinez system also stores, in a user profile, information about the user's activity performed using the various devices. Additionally, the Madhavan-Park-Martinez system selects targeted advertisements to automatically send to the user based on this user profile information, which contains user data (e.g., temporal data) regarding the user's online activities and behavioral patterns. This user data, including timestamps indicating network access by a user device, may be used, for example, to determine whether a user's online activity satisfy temporal requirements for a particular behavior profile.

1. Independent Claim 1

142. As I explain below, a POSA would have found it obvious to combine Madhavan, Park, and Martinez.

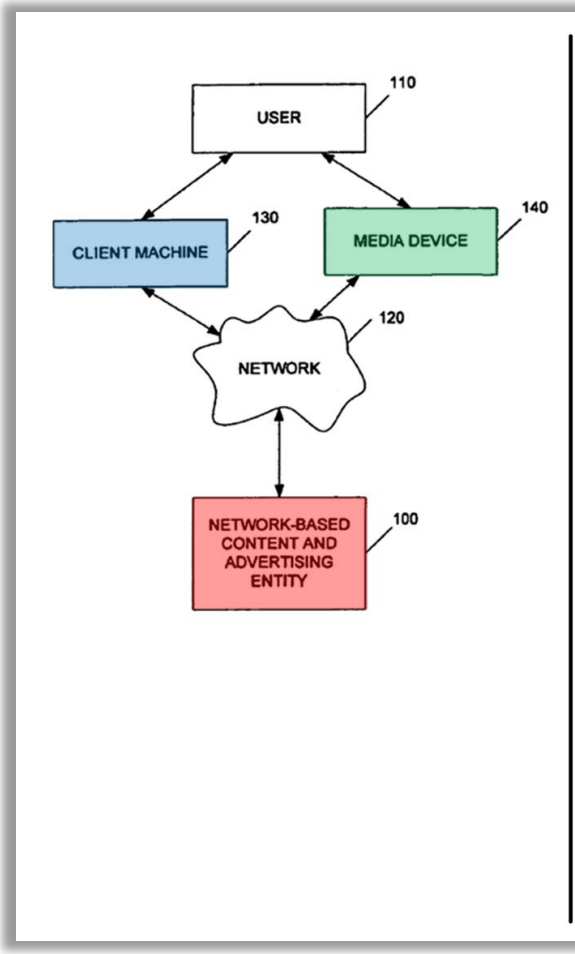
i. Element [1A]: "A computer system comprising at least one hardware server computer, wherein the computer system is programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device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

143. Assuming the preamble [1A] imposes a limitation, in my opinion it is taught by and rendered obvious over the combination of Madhavan, Park, and Martinez.

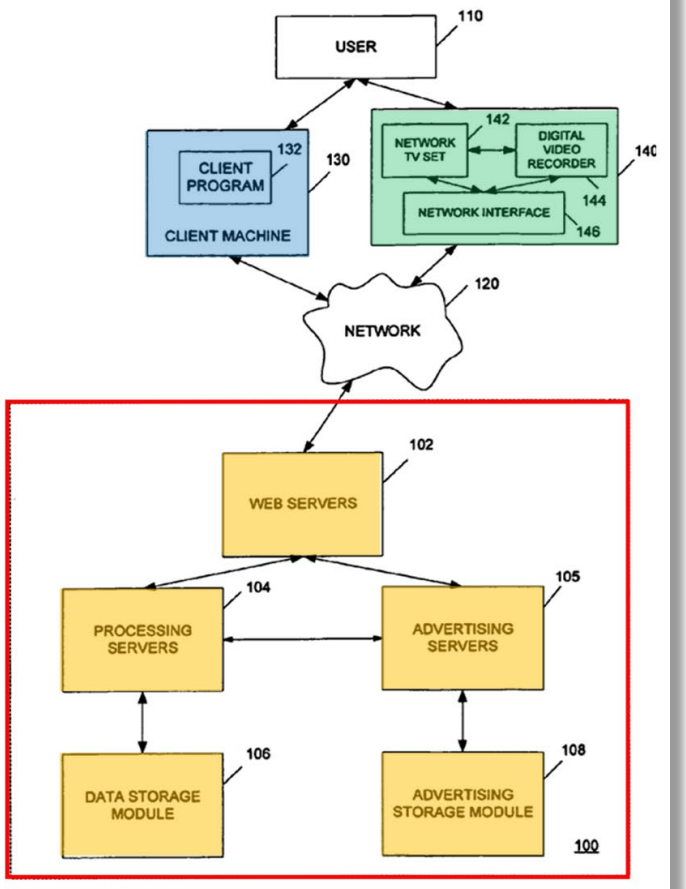
144. As I introduce above and show again below, the result of combining the teachings of Madhavan, Park, and Martinez is a modified version of Madhavan's system. Madhavan teaches "[a] system and method to facilitate targeting of advertisements based on mutual information sharing between devices over a network." Ex. 1122, Abstract. Madhavan's system includes a network-based content service provider (content and advertising entity 100 (**red**)) that "enable[es] automatic matching of advertising information to events or actions and interests of users." Ex. 1122, 4:27-36, FIG. 1.

145. Madhavan's modified system includes a network content and advertising entity 100 that is a network content service provider and, as I show below in Figures 1 and 2 of Madhavan, includes multiple different servers (**orange**) ("**at least one hardware server computer**"). Ex. 1122, 4:26-65, 5:18-27, 8:5-8, 8:53-56, 12:21-53. Madhavan's content service provider 100 includes "one or more front-

end web servers 102, which may, for example, deliver web pages to multiple users … deliver images to be displayed within the web pages, deliver content information to the users in various formats, and deliver advertising information to the users." Ex. 1122, 4:46-56. "The entity 100 further includes one or more back-end servers, for example, one or more processing servers 104 and one or more advertising servers 105…to store advertisements to be transmitted and displayed for users over the network 120." Ex. 1122, 4:57-65.



Ex. 1122, FIG. 1 (annotated)



Ex. 1122, FIG. 2 (annotated)

146. As I explain further below, the proposed combination results in a system that 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 I explain below in Sections XII.A.1.i-ix, Madhavan's modified system (i.e., Madhavan-Park-Martinez) performs this method and causes cross-device action in the form of providing targeted advertisements to a user's device(s), which renders obvious the steps of claim 1, including element [1A].

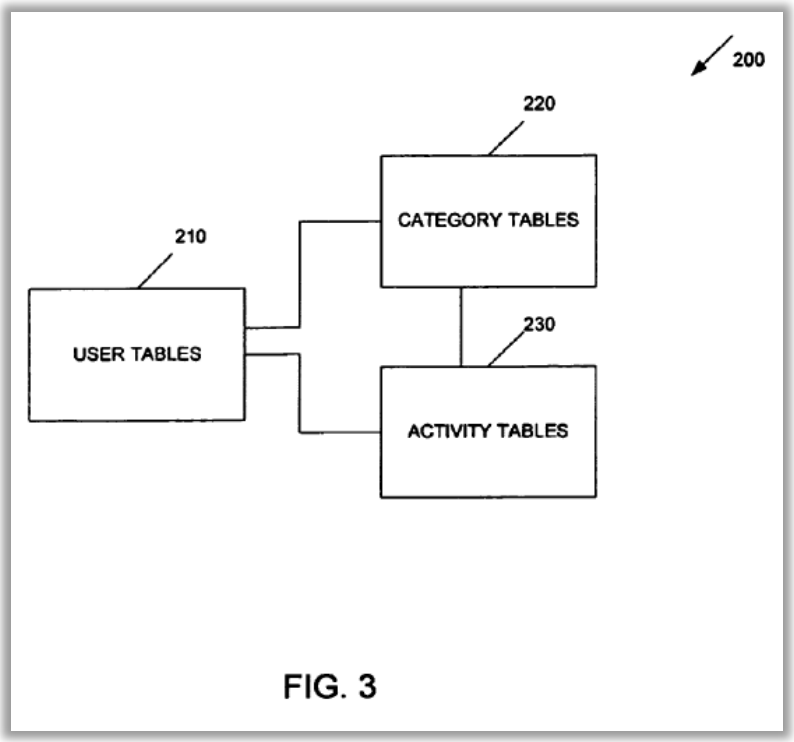
147. As I note above, Madhavan discloses a system and method for targeting advertisements to user deices "based on mutual information sharing between devices over a network, such as the Internet." Ex. 1122, 1:7-11, 1:36-2:3. The content service provider 100 of Madhavan's modified system is coupled via a network 120 (e.g., Internet) to one or more user entities 110, and the "user entities 110 are coupled to…network 120 through a client machine 130 and/or at least one media device[s] 140" ("**multiple electronic devices"**). Ex. 1122, 4:39-42, FIGS. 1-2. Madhavan describes that client machine 130 may be a smartphone. Ex. 1122, 5:3-11 (describing a "cellular phone, a PDA or other wireless device" that executes a client program 132 (e.g., Internet browser) to access content service provider 100). Madhavan also describes that media device 140 includes "a network-enabled television set 142" and/or "a digital video recording device [DVR] 144." Ex. 1122,

5:28-32. Madhavan does not limit the number of user devices (e.g., client machines, media devices) that may be associated with a user or included within the user's home or local network. *See* e.g., Ex. 1122, 1:44-60 (describing that "a user connects to one or more media devices and further performs specific actions"), 9:4-8, Abstract. Nor does Madhavan limit the number of user devices that may be connected to the content service provider 100 at the same time. *See* Ex. 1122, 1:46-54, 3:53-63, 7:22-26, 9:9-13, 9:25-29, 9:58-68, 10:3-6, 11:55-61.

148. In Madhavan, each user device[2] (e.g., client machine 130 and/or media device 140) provides respective identification information, called "user identification information," to Madhavan's servers (e.g., processing server 104). This identification information may include, for example, a unique IP address (which may be a common IP address, as taught in Park), that is specifically assigned to a user's device. Ex. 1122, 5:53-66, 7:15-26, 8:60-67. Madhavan also teaches that this identification information, additionally or alternatively, may include password information. Ex. 1122, 7:33-36, 8:60-67, 9:42-48. The one or more servers of Madhavan's content service provider 100, such as processing server 104, receive the identification information along with user data collected from the user's devices and stores this information within data storage module 106 of Madhavan's content

[2] As discussed herein, my reference to Madhavan's "user device" is referring to Madhavan's client machine 130 and/or media device 140.

service provider, which may be a database that implements and supports the content service provider 100. This database (e.g., database 200) of the content service provider 100 "may be implemented as a relational database, and may include a number of tables having entries, or records, that are linked by indices and keys." Ex. 1122, 5:37-47, FIG. 3.



Ex. 1122, FIG. 3

As shown above in Figure 3, Madhavan's database 200 includes, for example, user tables 210, category tables 220, and event or activity tables 230, and Madhavan teaches that database 200 may include "any of a number of additional tables, which may also be shown to be linked to the user tables 210, the category tables 220, and the user event/activity tables 230." Ex. 1122, 5:48-52, 6:13-19. Madhavan teaches

that "the event or activity tables 230 may contain, for example, records of events or other actions performed by the user 110 while accessing the network 120, and the category tables 220 may contain, for example, multiple classification categories used to group the events or activities performed by the user 110." Ex. 1122, 6:3-8.

149. Madhavan's database 200 also includes user tables 210 that contain a user profile for each user of the content service provider 100 that "may be linked to multiple items stored in the other tables 220 and 230 within the database 200, such as, for example, user identification information…," and Madhavan describes that this identification information "may further include a user profile containing demographic data about the user 110, geographic data detailing user access locations, behavioral data related to the user 110, such behavioral data being generated by a behavioral targeting system…." Ex. 1122, 5:53-66. As I discuss above, when users connect to the content service provider using respective user devices (e.g., client machine 130 and/or media device 140), identification information for each user device is sent to processing servers 104, along with user data that is collected from the users' devices and associated with each device's identification information. This user data may include, for example, the actions or events of the users performed via their respective user device. *See* e.g., Ex. 1122, 7:15-55, 7:60-8:15, 8:37-67. The collected user data, stored within activity tables 230 of database 200, is used to create user profiles, which are stored in activity tables

210 of database 200, that as I explain above consolidate various information (e.g., geographic, identification, behavioral data) from the multiple devices associated with each user. Ex. 1122, 5:48-6:12, 7:14-26, 7:33-42, 8:44-48, 9:18-25. Madhavan also teaches that this user data is stored (e.g., contained) within the user profiles. *See* Ex. 1122, 5:48-5:66. Accordingly, in view of the above discussion, the Madhavan-Park-Martinez system identifies **"associations among multiple electronic devices**" because each user device (e.g., client machine 130, media devices 140) provides respective identification information to Madhavan-Park-Martinez's servers, which is used to associate, via a user profile, various information (e.g., user action or event activity, geographic data, identification information, behavioral data, etc.) collected from multiple devices associated with a user of the content service provider. Further, in view of the above discussion, the user profile of a user of the content service provider 100 thus contains the respective identification information (e.g., unique IP address) and user activity data from each of the devices (e.g., client machine 130, media devices 140) associated with the user based on the identification information provided by the respective devices. Ex. 1122, 3:1-8, 5:53-6:12, 7:33-36, 8:9-25, 10:3-25, FIGs. 5-7.

150. Madhavan's content service provider 100 uses identification information obtained from user devices (e.g., client machine 130, media devices 140) to associate each user device with a particular user. This association allows the

content service provider 100 to identify and retrieve a user profile along with previously-stored user data that is obtained from a first user device based on the identification information of a second (associated) user device. The ability to identify and retrieve a user's profile and associated user data from database 200 using identification information allows the content service provider 100 to add data from the second device to the database 200 and to associate that data with the user's profile, such that the previously-stored user data obtained from the first device can be used to direct advertisements to the second device. Ex. 1122, 7:43-8:8, 8:26-9:67. This sending of targeted advertisements to one user device (e.g., client machine 130) based on user data and other information that is stored in a user's profile and obtained from a different user device (e.g., media device 140) is an example of "**using an identified association to cause cross-device action**." Ex. 1122, 5:48-56, 7:33-53, 8:57-9:3, 9:36-67, 10:21-25, 10:41-46, FIGs. 5-6. Additionally, Madhavan's content service provider 100 uses the identification information of one user device to identify and retrieve content classification categories related to user data obtained from a different device, and can use the classification categories to identify targeted advertisements to send to the user via the different (second) user device. *Id.*

151. Madhavan-Park-Martinez's system implements the claimed method ("**programmed and connected to perform [the] method**") through the use of "software programs executed upon some form of processing core (such as the CPU

of a computer) or otherwise implemented or realized upon or within a machine or computer readable medium." Ex. 1122, 12:41-53, 12:21-29, FIGs. 1-3, 12. For example, Madhavan describes "a diagrammatic representation of a machine in the exemplary form of a computer system 1200 within which a set of instructions, for causing the machine to perform any one of the methodologies" described in Madhavan. Ex. 1122, 12:21-25. Madhavan's exemplary computer system 1200 includes "machine-readable medium 1224 on which is stored a set of instructions (i.e., software) 1226 embodying any one, or all, of the methodologies described" in Madhavan. Ex. 1122, 12:41-62.

152. In my opinion, a POSA would have understood, in the context of Madhavan's disclosures, that the features discussed in connection with Figures 5-11 are attributed and related to operations of the Madhavan system shown in Figures 1-2, and involve the same "network-based entity," which in the Madhavan-Park-Martinez combination is the claimed "**computer system**" that performs the claimed "method" as discussed herein for the remaining elements of claim 1. While Madhavan refers to certain features as "one embodiment" or an "alternate embodiment" (*see* e.g., Ex. 1122, 2:22-46, 7:12-32, 8:34-37, 9:25-35, 9:65-67) such disclosed features of Madhavan may be attributed to other aspects of Madhavan's disclosed invention. For example, the processes of Figures 5-10 involve operations performed by the content service provider 100 and are described in connection with

Madhavan's Figures 1-3 and 12. *See* Ex. 1122, 4:26-5:17 (FIGs. 1-2), 6:66-8:33 (FIG. 5), 8:34–9:67 (FIG. 6), 10:1–29 (FIG. 7), 10:30–64 (FIG. 8), 10:65-11:26 (FIG. 9), 11:27-67 (FIG. 10). While the processes of Figures 6, 9 and 10 are discussed as "alternate embodiment[s]," they each involve variations of how Madhavan's content service provider 100 is involved in the processes to target advertisements based on information shared between user devices (Figure 6), how user identification and action data are processed (Figure 9), and the matching of advertisements to user action data (Figure 10) like that described for Figures 5 and 7-8. Further, Madhavan describes that a user's profile includes "behavioral data…generated by a behavioral targeting system," and describes in Figure 11, within the context of Figures 2-10, one such example of a behavioral targeting system. Ex. 1122, 5:53-66, 11:62-12:20. It is also my opinion that a POSA would have understood, in the context of Madhavan's disclosures, that the features discussed in connection with Figures 3 and 12 are attributed and related to operations of the Madhavan system shown in Figures 1-2, and involve the same "network-based entity," which in the Madhavan-Park-Martinez combination is the claimed "**computer system**" that performs the claimed "method" as discussed herein for the remaining elements of claim 1. For example, Madhavan expressly teaches that the data storage module 106 (shown in Figure 2) may be a database (e.g., database 200) as shown in Figure 3 of Madhavan. Ex. 1122, 5:37-47, FIGs. 2-3. Additionally,

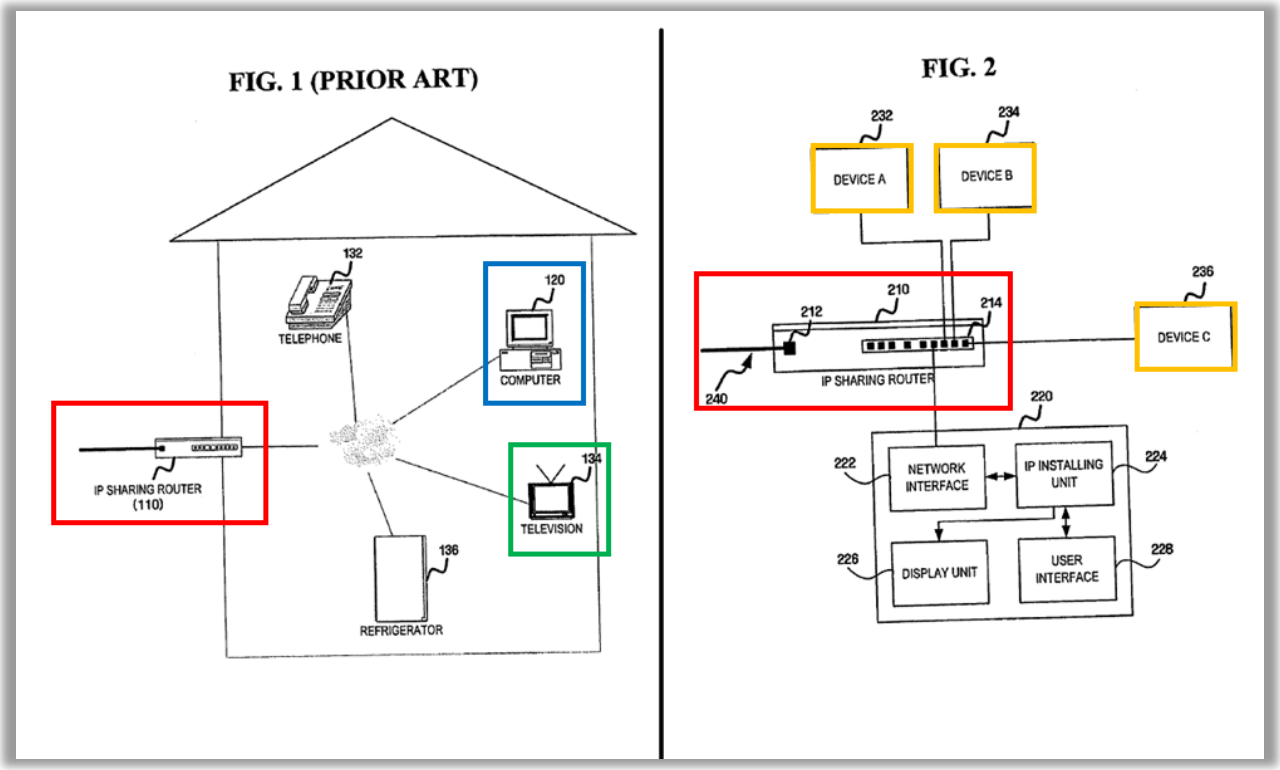
Madhavan expressly teaches that the computer system 1200, shown in Figure 12, is a diagrammatic example of a machine having a "set of instructions, for causing the machine to perform any one of the methodologies discussed above, may be executed." Ex. 1122, 12:21-25, FIG. 12. In my opinion, a POSA would understand that the features described with respect to Figure 12 of Madhavan would be attributed or applied to the other aspects of Madhavan's disclosed invention and the devices/machines implemented therein. See Ex. 1122, 12:63-13:1. To the extent it is argued that Madhavan's Figures 5-11 represent separate and distinct embodiments, in my opinion, a POSA would still have found it obvious and been motivated to combine these embodiments to provide a method of targeted advertising across multiple user devices based on user profile information. Such a combination would not have required a leap of inventiveness because Figures 5-11 are adjacent to one another in Madhavan, they reference back to Figures 1-3, and they describe the basic operations the system such as collecting user profile information, storing that information in user profiles, and using that information to select and direct advertisements to a user STB. Ex. 1162, 2:14-46, 6:66-11:61, Figs. 5-11. Likewise, Figures 7-10 are adjacent to one another in Madhavan, they reference back to Figures 5-6 and they describe basic operations of the system such as processing information received from the content service provider (e.g., content service provider 100), and facilitating the matching of advertisements to user data received at the content

service provider. *Id*. This would have been nothing more than the simple combination of prior art elements according to known methods to yield predictable results. *See* § IV, *supra* (exemplary obvious rationale (A) above; *see* also § V.III.B. A POSA would have been motivated to combine these embodiments to improve the ability of Madhavan's system to facilitate the targeting of advertisements based on information shared between the user's various devices.

153. As discussed above, Madhavan teaches a network interface module 146, identified through a respective IP address, that is used to couple a network-enabled television set 142 and/or a digital video recording device 144 (of the media device 140) to the content service provider 100 via the network 120 (e.g., Internet). Ex. 1122, 5:28-36, 7:15-26, FIG. 2. As further described above, Madhavan uses the IP addresses of a user's devices as identification information, which Madhavan's content server provider 100 may use to associate different devices to a particular user profile. While some of the user's devices appear to have the same Internet access point—for example, the network-enabled television set 142 and the digital video recording device 144 connecting to network 120 via the network interface module 146—not all user devices necessarily connect to the network using a same access point. For instance, referring to Figures 1 and 2 of Madhavan, client machine 130 appears to connect to network 120 using a different access point than media devices 140 and, as such, would likely be assigned and use a different IP address for

communicating with external devices or systems via network 120 (e.g., the Internet). *See* Ex. 1122, 7:15-26, 7:60-67, FIG. 2.

154. However, as I discuss above (*see* ¶139 of my Declaration above), Park teaches using an "IP sharing router" to connect multiple user devices to the Internet using a common IP address. Ex. 1123, Abstract, ¶ [0003]. As I show below in Park's Figures 1 and 2, Park discloses a home network that includes an IP sharing router 110 (**red**) and a plurality of user devices that are connected to the router—e.g., computer 120 (**blue**), television 134 (**green**), and devices 232-236 (**orange**). Ex. 1123, ¶¶ [0007]-[0008], [0029]-[0030].



Ex. 1123, FIG. 1 (annotated)

Ex. 1123, FIG. 2 (annotated)

In Park, an Internet Service Provider (ISP) assigns a public IP address to the IP sharing router 110, and the IP sharing router 110 assigns a private IP address to each of the devices constituting the home network (e.g., Devices A-C as shown in Figure 2 of Park). Ex. 1123, ¶ [0009]. As I explain in further detail below (see ¶204 of my Declaration), a POSA would understand, in view of their general knowledge, that the public IP address of Park's sharing router (within a home network) would be dynamically assigned by the ISP using the industry-standard Dynamic Host Configuration Protocol (DHCP), which was well-known and admitted prior art in the '015 Patent. *See* e.g., Ex. 1160, 3:21-51(discussing conventional DCHP operation), 3:64-4:1, 6:63-66; Ex. 1123, ¶¶ [0009]-[0010], [0031]-[0034], [0041], [0048]; Ex. 1159, 4:59-62, 5:44-57, Abstract; Ex. 1101, 4:37-42. Because a private IP address cannot be used on the Internet and is only available on the internal network, each of Park's user devices access the Internet with a public IP address assigned to the IP sharing router ("**common IP address**"). Ex. 1123, ¶¶ [0009]-[0011]. Further, recognizing that the number of network products, such as user devices, continues to increase, resulting in a decrease in the number of public IP addresses that are available, Park teaches that "[t]he use of a private IP address is helpful in obviating the shortage of public IP addresses." Ex. 1123, ¶10. Thus, as explained above, each of the devices within Park's local network share a common

IP address—i.e., the IP address of IP sharing router 110—to connect to the Internet. Ex. 1123, ¶¶ [0009]-[0011].

155. Park describes another example of an IP sharing router (e.g., router 210) that includes an IP installer 220 to facilitate the assignment of private IP addresses to user devices. Ex. 1123, ¶¶ [0012], [0014]-[0016], FIG. 2. As shown above in Figure 2, Park's IP installer 220 connects directly to the IP sharing router 210. Ex. 1123, ¶¶ [0029]-[0030].

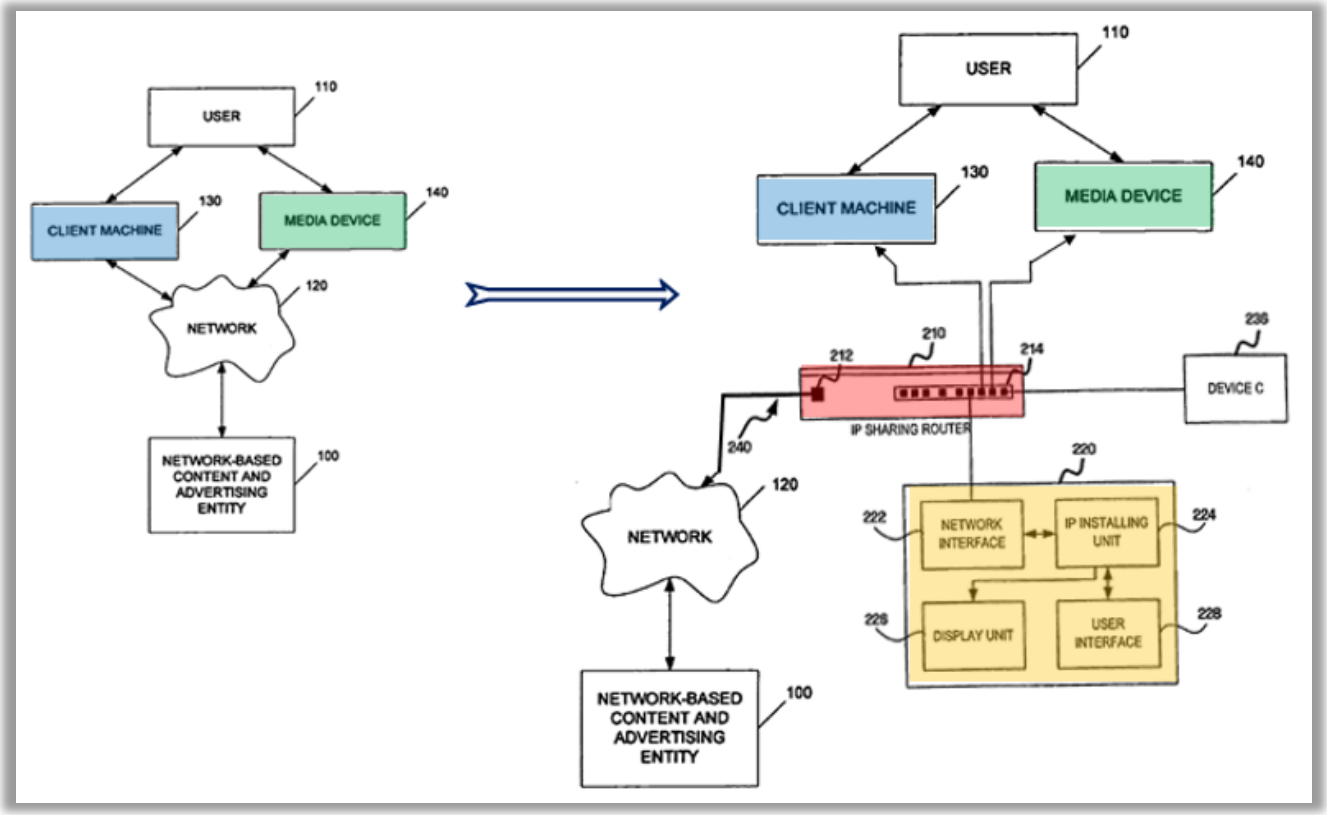
156. As I explain above in § VIII.B, network address translation (NAT) is a well-known method of mapping multiple IP addresses (e.g., private addresses) inside a network to a common public IP address at least as of May 1994. *See* Ex. 1112, pp. 36-38; Ex. 1106, ¶¶ [0004]-[0009] . Park's IP sharing router (e.g., router 110/210) includes these well-known NAT functions in which the router 110/210 is assigned a public IP address by an Internet Service Provider (ISP), and the router assigns private IP addresses to devices that are connected to the router. Ex. 1123, ¶¶ [0030], [0035]-[0036], [0038]. In the example shown in Figure 2, Park's IP installer 220—coupled to router 210—assigns private IP addresses to each device constituting the local network. Ex. 1123, ¶ [0038], FIGS. 1-2. Like the example network in Park's Figure 1, user devices within the home or local network cannot use their assigned private IP address to transmit data to an external device, and instead use the common public IP address assigned to the router 210. *Id*.

157. Park further explains that the IP sharing router (e.g., router 210) performs port translation (PAT), such that an external device—using port numbers associated with each of the devices—may distinguish between, and send data to, the various devices sharing the public IP address of the router 210. Ex. 1123, ¶ [0038]; *see* also Section VIII.C (discussing PAT functionality). More specifically, Park's router translates the private IP address of the local device to the router's public IP address and adds the device's internal port number—thus enabling an external device to distinguish between, and send data to, the various local devices sharing the public IP address of Park's router. Ex. 1123, ¶ [0038]. For example, Park's router may be assigned a public IP address of 221.100.10.1 and assign a private IP address 198.126.10.3 for Device A 232 at port 7070 and private IP address 198.126.10.4 for Device B 232 at port 8080[3]. Ex. 1123, ¶ [0038]. If Device A would like to transmit data through the internet, it cannot use its private IP address; rather, Park's router translates the source of the data from 198.126.10.3 to 221.100.10.1 and adds port 7070. *Id*.

158. In my opinion, a POSA would have found it obvious to add an IP sharing router with network address translation and port address translation

[3] Paragraph [0038] of Park states, in part: "For example, when the port number of the IP installer 220 is 6060, the port number of device A 232 is 7070, **the port number of device B 234 is 7070**, and the port number of device C 236 is 9090…." (Emphasis added). It is clear from Park's example that reference to port "7070" for Device B and is a typo.

functionality, as taught by Park, to Madhavan's system. As shown below, for example, Madhavan's Figure 1 has been edited to include Park's router 210 and IP installer 220, whereby various user devices (e.g., client machine 130, media device 140 and Device C) are each connected to the IP sharing router to access network 120. In my opinion, the proposed combination would have been well within the skill of a POSA because it would have merely involved connecting Madhavan's client machine 130 (**red**), which can be a computer running a web browser to access the internet, and Madhavan's media device 140 (**blue**), which can be a network enabled TV set, to an IP sharing router such as Park's IP sharing router 210 (**orange**), which is equipped to handle such devices. *See* Ex. 1122, 1:46-54, 3:55-63, 4:37-42, 5:3-11, 7:15-19, 9:18-22; Ex. 1123, ¶¶ [0008], [0011]-[0012].



Ex. 1122, FIG. 1

Ex. 1122, FIG. 1 (edited to include Park's router 210 and installer 220)

In the proposed Madhavan-Park-Martinez combination, the content service provider 100 ("**computer system**") would have "**identif[ied] associations among multiple electronic devices**" based on their use of the "common IP address," which is the IP address of the shared router (e.g., Park's router 110/210) used to connect the multiple electronic devices to the Internet. In particular, as I explain above (*see* ¶149 of my Declaration), Madhavan's system identifies associations among multiple electronic devices because each user device (e.g., client machine 130, media devices 140) provides respective identification information to Madhavan's servers, which is used to associate, via a user profile, various information collected from the multiple

devices. Ex. 1122, 5:48-6:12, 7:14-26, 7:33-42, 8:44-48, 9:18-25. As I will explain in more detail further below, in the proposed combination, the identification information—provided by the user's devices and used by the content service provider 100 to link the collected user data with a particular user profile—includes the dynamically-assigned common IP address of the shared router used by the devices to connect to the Internet. The operation/functionality of Madhavan's modified system would not have been impacted by the addition of a shared router, like Park's router, that has a dynamically-assigned public IP address at because Madhavan already contemplates the use of dynamically-assigned IP addresses as identification information. *See* Ex. 1122, 7:15-19; *see* also ¶¶154, 204, 260 of my Declaration. This is further supported in view of the fact that dynamic IP addresses may be assigned, as an example, for extended periods of time and, further, that it is not uncommon for DHCP servers to reassign the same dynamic IP address to a device to which it was previously assigned (provided of course it is still available).

159. In my opinion, a POSA would have been motivated to add an IP sharing router to Madhavan's system, such as Park's IP sharing router, because this was a well-known technique to reduce the number of public IP addresses used by a system such as Madhavan's. Ex. 1123, ¶¶ [0010]-[0011], [0035]-[0038]; *see* also ¶154 of my Declaration above. A POSA would have recognized that this structure would allow for the efficient routing of data between devices, even as the number of devices

connecting a network, such as the Internet, grows. *Id*. Further, it is my opinion that a POSA would also have recognized that by adding an IP sharing router to Madhavan's system, rather than assigning a public address to each of Madhavan's user devices, only a single public IP address would need to be assigned (e.g., to the IP sharing router) to a local network to enable user devices therein to communicate with external or remote systems via network 120, such as communicating with content service provider 100. Using a common IP address, (e.g., the IP address of an IP sharing router with NAT), rather than assigning multiple IP addresses, would result in simplified network management thus making it easier to manage and troubleshoot issues that may arise on the network, and also would offer some natural degree of firewall capability. Further, using an IP sharing router and adding the port number to uniquely identify each device as taught by Park would help limit the concern for the growing need of additional public IP addresses (as IP address depletion was a concern due to the growing number of devices on the internet and limited 32-bit IPv4 addressing capability), and would also result in cost savings. *See* Ex. 1123, ¶¶ [0006], [0010].

160. It is my opinion that adding an IP sharing router with NAT and/or adding the port number to uniquely identify each device (e.g., PAT functionality), as taught by Park, to Madhavan's system would have been nothing more than the simple combination of prior art elements according to known methods to yield

predictable results. *See* § IV, *supra* (exemplary obvious rationale (A) above; *see* also § VIII.B. The prior art elements include Madhavan's communication and advertisement targeting system, and an IP sharing router having NAT and adding port numbers functionality as taught by Park. Ex. 1122, 1:8-12, 1:44-2:3, 3:52-4:13, 4:37-42, 5:3-17, 5:28-32, 7:15-9:67, 10:6-25, 10:33-64, 11:30-61, FIGs. 1-2, 5-9; Ex. 1123, ¶¶ [0010]-[0011], [0030]-[0038], FIGs. 1-2. The known methods include connecting or otherwise coupling a router, like Park's IP sharing router, to a network—e.g., the Internet—and to one or more user device constituting the user's local network, such as Madhavan's user devices (e.g., client machine 130, media device 140). *Id*. The predictable results include a communications system that uses an IP sharing router to enable one or more user devices within a local network to communicate with external devices via a common IP address using NAT and adding port numbers. *Id*. Further, a POSA would have had the knowledge and skills to implement the combination with a reasonable expectation of success. As I explain above (*see* ¶158 of my Declaration), the proposed combination would have been well within the skill of a POSA because it would have merely involved connecting multiple user devices (e.g., client machine 130, media device 140) to an IP sharing router, such as Park's IP sharing router 210, which is equipped to handle such devices. Ex. 1122, 1:46-54, 2:55-61, 3:55-63, 4:37-5:11, 7:15-19, 9:18-22, 12:64-13:2; Ex. 1123, ¶¶ [0008], [0011]-[0012], [0027]. For instance, Park's sharing router

110/210 is already configured to assign IP addresses to multiple devices (e.g., a computer 120, a telephone 132, a television 134, etc.) and to couple these devices to a network (e.g., the Internet). Ex. 1123, ¶¶ [0008]-[0012], [0030]-[0031], [0038]. Further, as I explain above in § VIII.B, the use of NAT and adding port numbers provided by an IP sharing router were well-known at the time of filing the '015 Patent. *See*, e.g., Ex. 1112, pp. 33-38; Ex. 1106, ¶¶ [0004]-[0009]; *see* also ¶156 of my Declaration above. Thus, in my opinion, a POSA would have been familiar with the proposed implementation of a router like that of Park within Madhavan's system.

161. Additionally, the proposed combination would have been well within the skill of a POSA at least because IP sharing routers, like Park's, are equipped to handle and route communications between Madhavan's user devices and other devices/systems over the Internet using a common, public IP address. Ex. 1122, 1:46-54, 3:55-63, 4:37-42, 5:3-11, 7:15-19, 9:18-22; Ex. 1123, ¶¶ [0008], [0011]-[0012], [0027]. For example, network traffic to and from the client machine 130 and media device 140 would be routed using the common IP address of the IP sharing router (e.g., Park's IP sharing router 210). Specifically, as disclosed by Park, an ISP would assign a public IP ("common IP address") to the IP sharing router, and the IP sharing router would assign private IP addresses for Madhavan's client machine 130 and Madhavan's media device 140. When Madhavan's client machine 130 accesses the content service provider 100, an IP router (as taught by Park) translates the

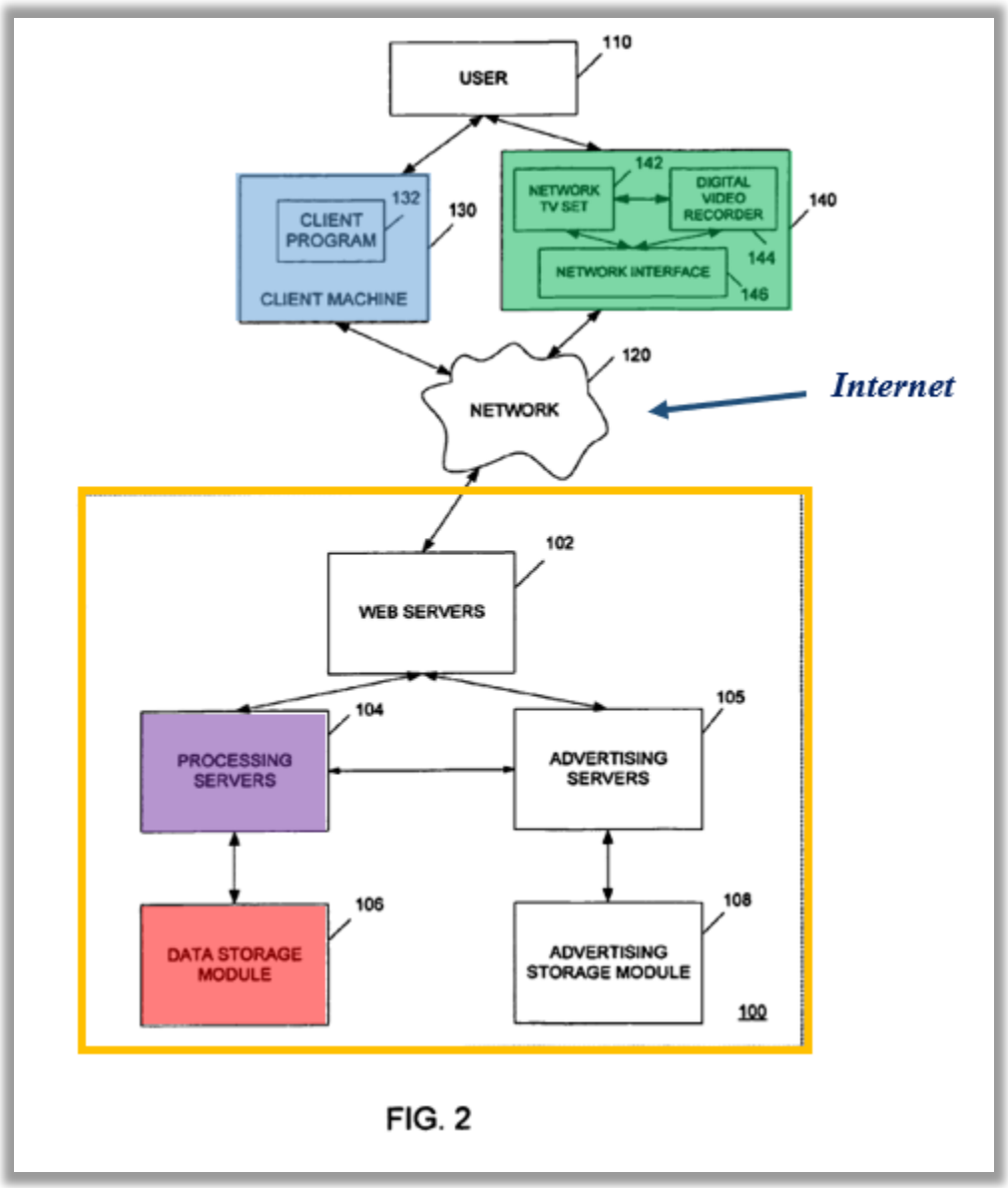
private IP address to the common IP address and adds the port number. Similarly, when Madhavan's media device 140 accesses the content service provider 100, the IP router translates the private IP address to the common IP address and adds the port number. The Madhavan-Park content service provider 100 ("computer system") would thus have associated the identification information (device identifiers) based on their use of the "common IP address." *See* also Ex. 1101, 13:18-22, 14:7-9 ("The existence of the common IP address associates the online access IP address and the set-top box IP address."). Additionally, in my opinion, a POSA given his level of knowledge, including experience with network communication systems, would have found connecting multiple devices to an IP sharing router, such as Park's, to be straightforward. Further, a POSA would have also understood that the use of Park's router and a common IP address would not interfere with Madhavan's operations, including the operations disclosed in Figures 5-11. For instance, coupling Madhavan's user devices (e.g., media device 140 and client machine 13) to Park's router such that the devices may access content server 100 via the Internet would not impact the operation of Madhavan's system at least because Madhavan already contemplates that each user device may access content server 100 via the Internet using separate IP addresses.

162. The proposed combination thus teaches 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:"

163. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1B].

164. As I introduce above, Madhavan teaches implementing a "method to facilitate targeting of advertisements based on mutual information sharing between devices over a network, such as the Internet." Ex. 1122, Abstract, 1:7-11. As shown below in Figure 2, Madhavan discloses that media device 140 (**green**) and client machine 130 (**blue**) access the content service provider 100 (e.g., the network-based content entity) (**orange**) via network 120 (e.g., Internet) ("**two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices**"). Ex. 1122, 4:37-42, 5:3-32, FIG. 1.

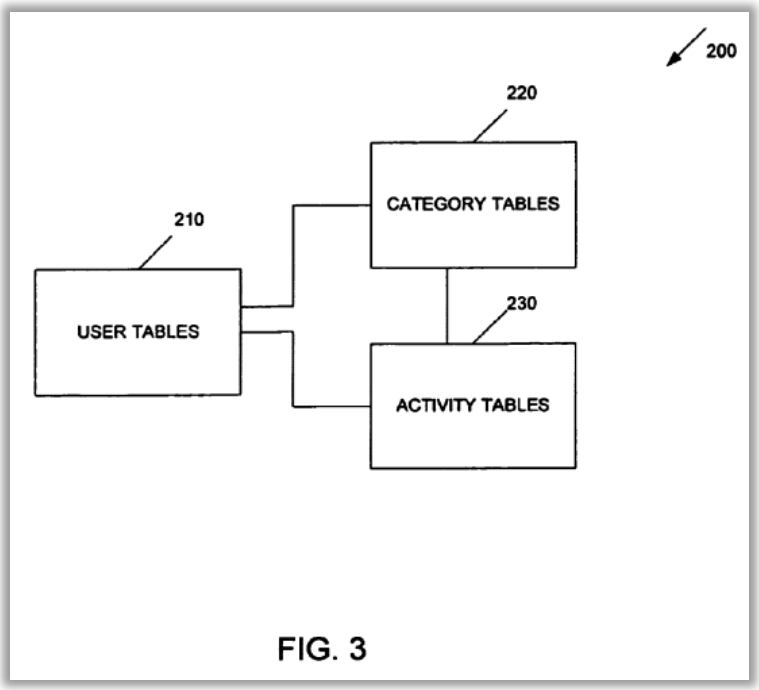


Ex. 1122, FIG. 2 (annotated)

Madhavan discloses that client machine 130 may be "a cellular phone, a PDA or other wireless device" (Ex. 1122, 5:3-11), and that media device 140 may include "a network-enabled television set 142" and/or "a digital video recording device [DVR] 144." Ex. 1122, 5:28-32. In my opinion, a POSA would understand that media

device 140 is a set-top box (STB) for connecting a television and signal source. *See* Ex. 1101, 1:49-2:7 (defining a STB).

165. A shown above in Figure 2 of Madhavan, a user (e.g., user 110) accesses the content service provider 100, via network 120, using local devices (e.g., devices 130, 142, 144). User data, provided by the local device(s) is collected by processing servers 104 (**purple**) of the content service provider 100. Ex. 1122, 2:62-67, 4:46-65, 7:36-45, 7:60-67, 10:3-14. The captured data, which includes "any type of online navigational interaction or search-related events" (Madhavan, 3:1-15), is stored within data storage module 106 (**red**) of the content service provider 100. Ex. 1122, 3:1-55, 4:3-6, 4:59-65, 5:66-6:2, 7:2-6, 8:37-41, 10:15-18, FIGs. 5-6. Madhavan's data storage module 106 may be implemented as a database—e.g., database 200 comprising multiple tables, as shown below in Figure 3. Ex. 1122, 5:37-47, FIG. 3.



Ex. 1122, FIG. 3 (annotated)

166. The content service provider 100 of the proposed Madhavan-Park-Martinez combination "**creat[es] an electronic database**" containing a multitude of the claimed "associations" as shown by database 200, which is illustrated above in Figure 3 of Madhavan. Database 200 includes user profiles, which are contained in user tables 210, that associate the data (e.g., user data) obtained from each of a user's various devices and stored in database 200 (e.g., stored in user tables 210, activity tables 230, etc.). For example, Madhavan describes that "user tables 210 contain a record for each user 110 of the entity 100, such as, for example, a user profile containing user data which may be linked to multiple items stored in the other tables 220 and 230 within the database 200…."Ex. 1122, 5:53-59. User data collected from a particular device is associated with a particular user's profile

because, as I explain above, the content service provider 100 of Madhavan-Park-Martinez uses identification information, such as the public IP address of the router used by mobile devices to connect to the network and the port numbers associated with those devices ("**device identifiers**"), to associate multiple devices as belonging to the same user. In other words, the associations contained in the database 200 "**each indicat[e] an association between device identifiers of two or more Internet-accessing electronic devices** …"). Ex. 1122, 5:43-66, 7:33-53, 8:57-67, 9:36-40, 10:3-25.

167. More specifically, as shown above in Madhavan's Figure 3, database 200 includes "user tables 210 contain[ing] a record for each user 110…, such as…a user profile containing user data…such as, for example, user identification information, user account information and other known data related to each user 110." Ex. 1122, 5:48-59. The user profile also includes "demographic data about the user 110, geographic data detailing user access locations, behavioral data related to the user 110, such behavioral data being generated by a behavioral targeting system, which analyzes user activities in connection with the entity 100, and other identification information related to each specific user 110." Ex. 1122, 5:59-66.

168. In Madhavan, the "identification information" provided from a user's device to content service provider 100 may take a variety of different forms including, for example, "a unique IP address" that is assigned to the user's device

during the online session. Ex. 1122, 7:15-19, 9:18-25. When a user connects to the content service provider 100, the identification information (e.g., IP address) is sent from the user's device (e.g., client machine 130, media device 140) to the content service provider 100 along with corresponding user data, which is stored into respective category tables 220 and activity tables 230 of database 200. Ex. 1122, 5:48-59, 7:43-55, 8:42-48, 10:1-18, FIG. 7. Madhavan also teaches that the user's data is stored (e.g., contained) within the user profile. *See* Ex. 1122, 5:48-5:66.

169. Madhavan teaches that the user's data is "associated with the respective user identification information" and "linked to the user profile of the user…based on the user identification information." Ex. 1122, 7:33-36, 7:48-53, 8:63-67, 10:15-25. For example, when a user accesses the content service provider 100 using client machine 130, processing servers 104 within the content service provider receive from the client machine 130 identification information and user data, including data associated with each respective event or action by the user while accessing the Internet. This user data and classification categories associated with the user's online activity are further "stored into respective category tables 220 and activity tables 230 within the data storage module 106 [e.g., database 200] and are linked to the user profile of the user 110 stored within the user tables 210 ***based on the [] identification information***." Ex. 1122, 8:63-67 (emphasis added), *see also* 7:33-36, 7:48-53, 8:9-15, 9:36-40, 10:15-25, 10:41-46. By linking or associating user data,

received from a user's devices, to a particular user profile based on the identification information of each device, the user profile associates multiple devices and corresponding user data as belonging to a same user. This "association" allows the content service provider 100 to use the identification information of respective devices to retrieve previously-stored data that was obtained from any of the devices previously associated with the user's profile based on respective identification information. Ex. 1122, 7:43-53, 8:9-15, 8:57-67, 9:36-40, 10:10-25, 11:7-22. The "association" also enables the content service provider 100 to use the identification information to retrieve content classification categories relating to each user action that is associated with the user's profile. *Id*. Madhavan teaches that advertising servers 105 of the content service provider 100 access tables within advertising storage module 108 to retrieve advertisements selected based on the user data and retrieved classification categories stored in database 200 and, further, to transmit the retrieved advertisements to be displayed on the user's devices. Ex. 1122, 8:16-33, 9:40-67, 11:38-61.

170. As I previously explained above in § VIII.B, as part of well-known network address translation and port translation functions, the IP address sent from each device sharing a router to communicate over the Internet is the same, while the port number is different for each device connected to a different port. *See* e.g., my comments above in ¶¶156 and 160 of my Declaration. In the proposed combination,

devices within the user's local network share a common IP address (e.g., the IP address of Park's shared router) and are also associated with a respective port number for communicating via the Internet with external devices, such as Madhavan's content service provider 100. As was well-known to a POSA at the time the '015 Patent was filed, data packets sent over the Internet include an IP address of the source and destination devices. *See* e.g., Ex. 1106, Abstract, [0002]-[0010], FIGs. 1-2. Thus, under the proposed combination, the "**device identifier[]**" recited in claim 1 is shown by identification information of a user's device, which is a combination of: **(i)** an IP address of a router used to connect to the Internet (e.g., the public IP address of Madhavan-Park-Martinez's shared IP router), which is assigned to a user's device, and **(ii)** a port number associated with the user device ("**Internet-accessing electronic device**").

171. As I explain above, this identification information is used to associate two or more devices of a multitude of devices with the same user profile. The content service provider 100 receives the device identifier (e.g., identification information) of each device connecting to the content service provider, which includes the public IP address of Madhavan-Park-Martinez's shared router (or any other router used by the device to connect to the Internet) and the port number associated with the device. Ex. 1122, 7:63-67, 8:42-48, 10:6-9. The IP address of the shared router to which a user's device is connected and the port number

associated with that device provides a "**device identifier[]**" because, together, they uniquely identify a particular user device that connects with Madhavan's content service provider 100 via network 120. 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. 1101, 15:32-37. The '015 Patent specifically identifies an "IP address" as one example of the claimed device identifier. Ex. 1101, *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 claim of the '015 Patent do not place any specific restrictions on the format of the device identifier. *Id*: *see* Ex. 1101, claims 1, 14.

172. Madhavan-Park-Martinez's content service provider 100 identifies "**an association between device identifiers of two or more Internet-accessing electronic devices**" based on their use of a "common IP address." *See* Ex. 1101, 13:18-22, 14:7-9 ("The existence of the common IP address associates the online access IP address and the set-top box IP address."). More specifically, as I discuss

above, the content service provider 100 receives the device identifiers (e.g., identification information) from the user's devices and then stores the device identifiers provided by respective user devices to a common user profile in database 200. By storing the device identifiers to a common user profile (i.e., the profile associated with the user), the content service provider 100 links the respective device identifiers (and corresponding user devices) as well as associated data for a particular user that is collected from the user's device. Ex. 1122, 5:48-66, 7:33-35, 8:57-67, 10:3-9, 10:20-25, 11:18-22, FIG. 3. In my opinion, a POSA would understand that the device identifiers for a user's devices (e.g., client machine 130 and media devices 140) would be associated with the user's profile and, indeed, each other. *Id*. This association between device identifiers of different user devices is confirmed by the ability of the content service provider 100 to use the device identifier (e.g., common IP address and port number) of a first device to retrieve previously stored user data—that is associated with the device identifier, of a second user device, linked to the user profile—for targeting advertisements to the first device. *See* e.g., Ex. 1122, 7:2-9:67, 10:35-55, 11:30-58, FIGs. 5-9.

173. The proposed combination thus teaches 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;"

174. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1C].

175. As I explain above for element [1B], Madhavan-Park-Martinez's content service provider 100 identifies "an association between device identifiers of two or more Internet-accessing electronic devices" based on their use of a "common IP address". more specifically, this association is identified when the content service provider receives and then stores the device identifiers provided by respective user devices to a common user profile, thereby associating the respective device identifiers (and corresponding user devices) as well as the user's data. Ex. 1122, 5:48-66, 7:33-35, 8:57-67, 10:3-9, 10:20-25, 11:18-22, FIGs. 3, 5-6. As I also explain above for element [1B], the content service provider 100 of the Madhavan-Park-Martinez receives identification information ("**device identifier**") from each user device that connects to the content service provider 100. Ex. 1122, 7:15-26, 7:63-67, 8:42-48, 9:18-25, 10:6-9, 10:35-37, FIG. 7 (step 610), FIG. 8 (step 710), FIG. 9 (step 810), FIG. 10 (step 910). In the proposed combination, the device

identifier received by the content service provider 100 includes the public IP address of the router used by the device to access the network 120 ("**IP address through which the one of the devices accessed the Internet**") and a port number associated with the device. *See* Ex. 1122, 5:53-66, 7:15-23, 7:63-67, 8:44-48. The device identifier is stored in database 200 of the content service provider 100 along with related user data collected by the device, for example, demographic data about the user, geographic data detailing user access locations, behavioral data related to the user, and data indicating events or actions performed by the user while accessing the Internet ("**stored data relating to Internet access by various of the multitude of devices**"). Ex. 1122, 3:1-38, 5:53-6:8.

176. As I further explain above for element [1B], the content service provider 100 associates device identifiers (e.g., common IP address and port number) of the user's devices based on their use of the "common IP address," more specifically, by storing the device identifiers of the user's multiple devices within a common user profile that is stored in database 200 of the content service provider. Ex. 1122, 5:48-6:12, 7:48-53, 8:8-15, 8:63-67, FIGs. 3, 5-9; *see* e.g.,¶¶166-172 of my Declaration above. Stated another way, the content service provider 100 of the proposed Madhavan-Park-Martinez system stores the device identifiers, that are respectively received from the user's multiple devices, within a user profile thereby associating the device identifiers with each other ("**associations is determined**

using stored data relating to Internet access by various of the multitude of devices"). *Id*. In my opinion, a POSA would understand that by storing the device identifier for each of a user's multiple devices (e.g., client machine 130 and media devices 140) within a common user profile contained within user tables 210 of database 200, the device identifiers for the user's devices would be associated with the user's profile and with each other.

177. Madhavan teaches that data stored in a user's profile may include "behavioral data being generated by a behavioral targeting system, which analyzes user activities in connection with the entity 100, and other identification information related to each specific user 110." Ex. 1122, 5:53-66. Madhavan also teaches that user data within the user's profile may include "near short term behavior of the user, or, in the alternative, long term behavior of the user or an algorithmic combination of short term and long term behavior of the user." Ex. 1122, 5:66-6:2. Thus, while Madhavan discloses that a user's profile may include data indicating "short term behavior" or "long term behavior" of the user, it does not disclose "**a timestamp identifying when the one of the devices accessed the Internet**," as recited in element [1C]. *Id*. However, as I explain below, this timestamp feature was well-known and is taught by Martinez. Further, I note that the '015 Patent does not define "timestamp," and this term does not appear outside of the patent claims themselves.

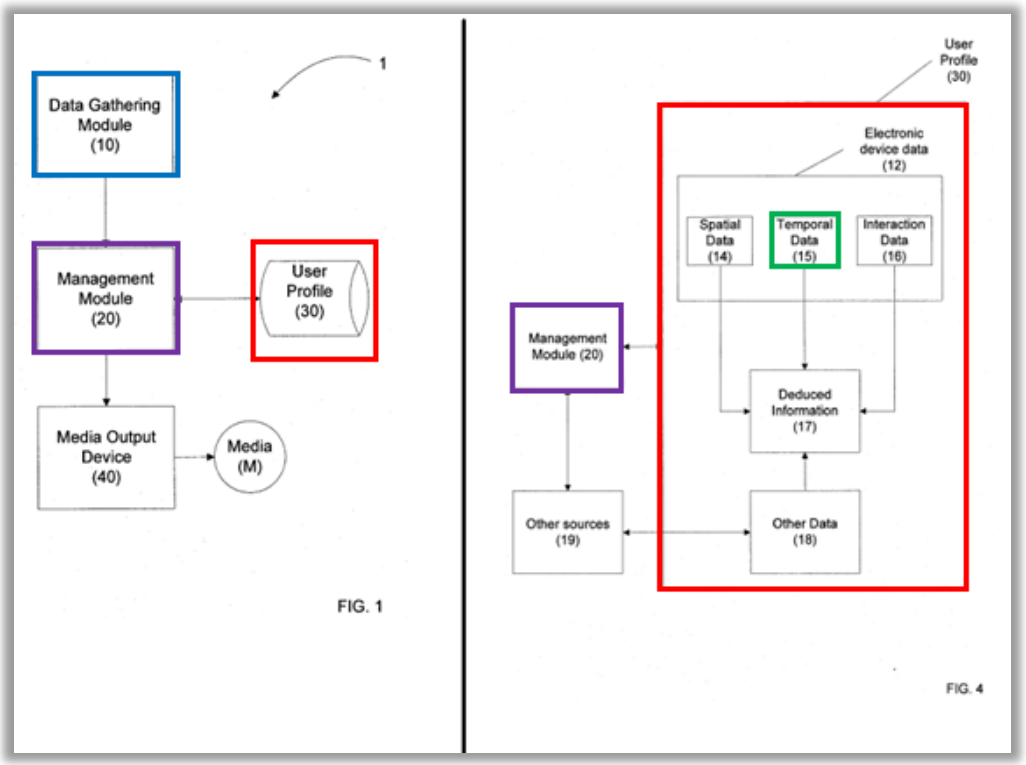
See Ex. 1101. Nevertheless, the term "timestamp" has generally been understood to refer to a record of when a particular event has occurred.

178. As I discuss above, the storing of timestamp information identifying when a device has accessed a network (e.g., Internet) is well-known. For example, Damick (Ex. 1117) teaches a network interface device 110 (e.g., router) that provides a log of access requests, from a client device to a host device, that 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. 1117, ¶¶ [0061]-[0063], [0068]-[0069], [0072]-[0073], FIG. 6B. As another example, Jaye (Ex. 1128) describes a system for monitoring and measuring the interests of users viewing content on a computer network, and teaches that the system maintains a record for each Internet sessions of a user. Ex. 1128, 1:10-14, 9:27-38. Jaye also teaches that "each session record can store a list of the web pages viewed by the user while visiting the server 15" and, for each page viewed, the record also stores "a date time stamp, t, which gives a statement of the time and date on which the page was accessed by the user." Ex. 1128, 9:42-10:3. As yet another example and as explained above in § IX.H, Banga507 (Ex. 1115) also teaches that its system includes a "client relationship" (CR) server 150 that maintains a history of the access devices' network access. Ex. 1115, ¶¶ [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.* 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. 1115, ¶ [0036].

179. In addition to being well-known, Martinez also teaches storing timestamp information identifying when a device has accessed a network. Martinez describes systems, methods, and apparatus for collecting data and presenting media to a user. Ex. 1124, Abstract. Martinez's system correlates data stored in a user profile with stored media inventory to locate targeted advertising opportunities. *See* Ex. 1124, ¶¶ [0002], [0047], [0073]-[0077], [0082]. More specifically, as shown below in Figure 1, Martinez discloses a system for collecting user data to present targeted advertisements, and Martinez's system includes a data gathering module 10 (**blue**), and a management module 20 (**purple**) that manages (e.g., creates and updates) a user profile 30 (**red**). Ex. 1124, Abstract, ¶¶ [0035], [0045]-[0046], [0096] FIGs. 1, 4[4], 9. Martinez also discloses a similar system for collecting information from a plurality of users using a plurality of electronic devices. Ex. 1124, ¶ [0096], FIG. 9.

[4] A POSA would have understood, in the context of Martinez's disclosures, that the features discussed in connection with Figures 1-4 do not show separate and distinct embodiments, but instead are different aspects and variation of the same media delivery system. Ex. 1124, ¶¶ [0014]-[0017].



Ex. 1124, FIG. 1 (annotated) Ex. 1124, FIG. 4 (annotated)

180. Martinez teaches that data gathering module 10 may be included in "a mobile electronic device 50, such as a mobile phone, a mobile email device, a mobile portable digital assistant, or a laptop computer, to name a few" and, further, that a "substantial amounts of spatial, temporal ["**time stamps**"] and "other data may be collected and later communicated to the management module 20, thereby facilitating management and production of the user profile 30." Ex. 1124, ¶¶ [0037]-[0038], [0045]. Martinez's mobile electronic device 50 includes a spatial module 52, a temporal module 54, and one or more other module(s) 56 that may communicate with data gathering module 10. *Id*. Martinez teaches that the profile management

module 22 receives electronic data from the data gathering module 10, and the user profile 30 includes a portion of the received electronic device data 12. Ex. 1124, ¶ [0049]. The electronic device data 12 stored in the user profile 30 includes: (i) spatial data 14, which may be "any data associated with a location of the user and/or an electronic device;" (ii) temporal data 15, which is defined as "**time based data (e.g., time stamps)** that relate to specific times and/or events associated with a user and/or the electronic device" and (iii) interaction data 16, "may be any data associated with user interaction of the electronic device, whether active or passive." Ex. 1124, ¶¶ [0049]-[0052]. Martinez's user profile 30 may also include information (i.e., deduced information 17) that may be deduced based on at least one of the spatial data 14, the temporal data 15, and the interaction data 16. *See* e.g., Ex. 1124, ¶¶ [0004], [0006], [0049], [0058]-[0060]. Martinez provides a non-exhaustive list of examples of spatial data, temporal data, interaction data and types of deduced information that may be stored by the user profile 30, including data relating to a user's interaction with the electronic device and/or network access. *See* Ex. 1124, ¶¶ [0004], [0006], [0008], [0036]-[0039], [0047]-[0063], [0090]-[0094].

181. It is my opinion that a POSA would have found it obvious for the Madhavan-Park system to collect data associated with network access of a user device, including timestamp information, and to store the collected information within a user profile (e.g., database 200) as taught by Martinez. *Id*. By collecting this

additional device information and linking it to a user's profile, the content service provider 100 in the Madhavan-Park system would be better equipped to deduce a user's activities and behavioral patterns based on more granular and detailed device information (e.g., timing information) collected from the user's devices when targeting the user with advertisements, including monitoring and identifying the short term and/or long term behavioral patterns of a user as indicated by their online activity. *See* Ex. 1124, ¶¶ [0002]-[0006], [0046]-[0047], [0049], [0072]-[0073]; Ex. 1122, 1:7-11, 3:9-15, 4:26-36, 5:53-6:8, 8:16-33, 9:36-67, 10:30-34. A POSA would also have been motivated to collect this additional information and associate with a user profile for a number of reasons. Advertisers and business benefit from increased information about the habits and behavior of their customers/users, creating a high demand for such information. This additional information enables companies to mine a larger universe of user data to better understand user behavior, increase user engagement, and nimbly modify their goods and services to better suit the current needs of their customers. For example, this temporal data may be used by advertisers to target advertisements during specific dates or times at which there is a higher likelihood of interest for a particular product or service. Temporal data indicating a user's online activity would also benefit companies by helping them to understand how consumers are engaging with and responding to marketing campaigns, and to adjust accordingly. Additionally, companies may also profit by selling consumer

data, which is immensely valuable to advertisers. As such, a company can profit from collecting additional information about its users in order to provide this data to and advertiser, thereby facilitate the advertiser's ability to generate personalized advertisements that more closely match the interests of potential consumers and their online activities. See Ex. 1122, 1:22-32.

182. In my opinion, a POSA would have recognized that Madhavan and Martinez both concern systems and methods for targeting advertisements based on user profiles and, also, that both Madhavan and Martinez share similar components and features that further indicate their compatibility. Ex. 1122, Abstract, 1:7-11, 1:36-2:3; Ex. 1124, ¶¶ [0001]-[0006], [0046]-[0048]. For instance, both Madhavan and Martinez are directed to systems that receive electronic device data and manage a user profile that stores data collected from user devices. More specifically, the user profiles described in Madhavan and Martinez are associated with a user's electronic device and the electronic data collected therefrom based on a unique device identifier. Ex. 1122, 5:53-66, 7:33-53, 8:9-15, 8:57-67, 9:36-40, 10:10-25; Ex. 1124, ¶¶ [0004], [0006], [0011]-[0012], [0043]-[0047], [0063], [0084]-[0085]. Further, Martinez's data collection and behavioral and pattern recognition techniques are implemented by a remote server and used to target advertisements to users based on mutual information sharing between devices associated with a user, which is a similar approach as that taken by the content service provider 100 in the Madhavan-

Park system. Ex. 1124, ¶¶ [0044], [0084]-[0087], [0091]-[0093], FIGs. 6-7; Ex. 1122, 1:36-2:3, 7:2-9:67, FIGs. 5-6. Additionally, both Madhavan and Martinez were originally assigned to Yahoo! Inc (*see* Ex. 1122, cover; Ex. 1124, cover) and, in my opinion, it would have been natural for a POSA to look to disclosures by the same company regarding their targeted advertising systems and methods.

183. Additionally, in view of the above-described similarities between Martinez's and Madhavan's systems, and the benefits of using additional profile information, e.g., temporal information provided by a user's device, to identify targeted advertising opportunities, as taught Martinez, in my opinion, a POSA would have been motivated to apply Martinez's teachings to the Madhavan-Park system to expand the statistical and behavioral information tracked within the user's profile by the content service provider 100 (e.g., the time and duration of online user activities) and to provide enhanced targeting of advertisements to the user. *See* e.g., Ex. 1124, ¶¶ [0002], [0004]-[0005], [0038], [0047], [0049]-[0053], [0057]-[0059], [0063], [0070]-[0071], [0076]-[0077], [0084], [0087], [0090]-[0091]; Ex. 1122, Abstract, 1:7-11, 1:36-2:3, 5:53-6:12, 7:33-36, 7:48-53, 8:9-34, 8:63-67, 9:36-67, 10:15-25, 10:41-60, 11:30-61, FIGs. 5-10.

184. In my opinion, as I noted above, a POSA would have found it obvious to configure the content service provider 100 in the Madhavan-Park system to collect and store, in a user profile (and other tables in database 200), timestamp information

identifying when a particular device accessed a network (e.g., Internet), as taught by Martinez. This would merely have been the simple combination of prior art elements according to known methods to yield predictable results. *See* § IV, *supra* (exemplary obvious rationale (A) above). *See* Ex. 1122, 5:53-6:13, 7:33-53, 7:60-8:15, 8:45-67, 9:19-40, 10:10-25, FIGs. 5-6; Ex. 1124, Abstract, ¶¶ [0003]-[0012], [0035], [0038], [0046]-[0052], [0058]-[0059], [0063]-[0064], [0071]. The prior art elements include (i) Madhavan-Park's system, which uses device identifiers to associate, within a same user profile, user data that has been collected from multiple devices, and (ii) Martinez's user profiles, which store various types of data collected from electronic devices, including timestamp information indicating when a user's activity on each device occurred. *Id*.

185. The known methods include configuring the Madhavan-Park system and content service provider 100 to collect and store timestamp information as part of the information collected from a user's device. For instance, it is my opinion that a POSA would have recognized that the one or more servers of the content service provider (e.g., processing services 104) may be programmed to obtain and store timestamp information from user devices connected to the content service provider 100, in addition to the various other types of user data already being collected by the content service provider and stored to the user's profile (e.g., user online activity and interaction events, geographic data detailing user access locations, user behavioral

data, etc.). Ex. 1122, 2:62-3:15, 5:53-6:8, 7:33-53, 8:9-15, 8:57-67, 10:10-25, 11:6-11, 12:21-13:1; Ex. 1124, ¶¶ [0004]-[0006], [0036]-[0042], [0046], [0049], [0052], [0064], [0081]. Likewise, it is my opinion that a POSA would have recognized that the user's devices (e.g., client machine 130, media devices 140) may be programmed to collect and/or provide timestamp information to the content service provider 100. *Id*. The predictable results include a communications system that uses profile information, including timestamp information provided by a user's device, to deduce behavioral patterns in user data (including a user's short term and/or long timer behavioral patterns) for the purpose of targeting users with advertisements.

186. It is my opinion that a POSA also would have found that the combination of Madhavan-Park and Martinez to be merely using known techniques to improve a similar system in the same way. *See* § IV, *supra* (exemplary obvious rationale (C) above). The known techniques include Martinez's technique of collecting and storing, as part of a user profile, device data indicating a device's network access activity, particularly a device's temporal data. Ex. 1124, ¶¶ [0003]-[0012], [0035], [0038], [0046]-[0052], [0058]-[0059], [0063]-[0064], [0071]. The similar system includes the Madhavan-Park's system that uses device identifiers to associate user data from various devices with a common user profile. *See* e.g., Ex. 1122, 5:53-6:8, 7:15-53, 7:60-8:15, 8:37-67, 9:9-40, 10:1-25, FIGs. 5, 6. The improvements include enabling the Madhavan-Park system to use information

obtained from a user's device's, particularly temporal data, to better consider the activity and/or event data in a user's profile to improve the targeting of advertisements to that user. *Id*.; *see also* Ex. 1124, ¶¶ [0035]-[0038], [0040], [0046]-[0052], [0058]-[0059], [0063]-[0064], [0071], [0076]-[0077], [0090]-[0091].

187. In my opinion, a POSA further would have found that combining Madhavan-Park and Martinez would have been merely applying a known technique to a known system ready for improvement. *See* § IV, *supra* (exemplary obvious rationale (D) above). The system to be improved is the Madhavan-Park system, which monitors and collects various types of events and/or actions performed by a user via a device while accessing the Internet. *See* e.g., Ex. 1122, 2:62-3:55, 5:53-6:8, 7:33-35, 8:1-11, 8:49-59, 10:10-14. However, the Madhavan-Park system does not expressly store and/or correlate within a user's profile the user's online activities (e.g., user data) and the corresponding dates and times that those activities occurred (e.g., temporal data), which collectively may be used to facilitate the selection and targeting of advertisements based on the behavioral patterns of the user, for example, a user's short term or long term interests. Martinez teaches the known technique of obtaining and correlating temporal data and other information (e.g., interaction data, spatial data, etc.), stored in a user profile, to deduce user activity and behavioral patterns associated therewith, which may be used to "deliver useful services and information to end users, and provide commercial opportunities to advertisers and

retailers"—e.g., targeted advertising. Ex. 1124, ¶¶ [0002], [0004]-[0005], [0038], [0047], [0049]-[0053], [0057]-[0059], [0063], [0070]-[0071], [0076]-[0077], [0084], [0087], [0090]-[0091].

188. As an example, the content service provider 100 of the resulting Madhavan-Park-Martinez system would receive, from a user device (e.g., client machine 130), a device identifier (e.g., shared router IP address and port number associated with the device) along with user data, for example, temporal data detailing network access of the user's device, records of the user's online events or other actions. *See* e.g., Ex. 1122, 5:53-6:8, 7:56-66, 8:34-48, 11:62-12:20; Ex 1124, ¶¶ [0040], [0051]-[0052], [0057]-[0059]. The content service provider would also generate and store user behavioral data, for example by using the received temporal data to identify user events or actions indicating a short term (and/or long term) behavior of the user. *Id*. This user data is associated with the device identifier (identification information) of the device providing the data to the content service provider 100, and is stored to (e.g., contained within) the user's profile. *See* e.g., Ex. 1122, 5:53-6:2. The content service provider further stores the user data within various tables of database 200, for example, activity tables 230 which includes records of events or other user actions performed by the user while accessing the Internet. *See* e.g., Ex. 1122, Abstract, 5:66-6:12, 7:43-53, 8:63-67. In this example, the activity tables 230 of database 200 would store records of events or other user

actions indicating a short term (and/or long term) behavior of the user. The content service provider 100 then links this user data to the user's profile based on the received device identifier, and may subsequently retrieve previously-stored data corresponding to the short term (and/or long term) behavior of the user—provided by any of the devices that have been previously associated with the user via the user's profile—that is used to select and target advertisements to the user. *See* e.g., Ex. 1122, 7:33-36, 7:48-53, 8:9-34, 8:63-67, 9:36-67, 10:15-25, 10:41-60.

189. In my opinion, a POSA would have had the skills and knowledge to combine the teachings of Madhavan-Park and Martinez with a reasonable expectation of success in arriving at the subject matter recited in element [1C]. Madhavan indicates, for example, that "various modifications and changes" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex. 1122, 2:55-61, 12:63-13:1. Furthermore, like Madhavan's system that collects user data from multiple devices, manages a user profile, uses a device identifier for each of a user's devices to link user data collected from the devices to the common user profile, and uses the user profile to facilitate the selection of targeted advertisements, Martinez's system collects electronic data from multiple electronic devices, manages a user profile 30, uses device identifiers to associate the electronic devices and corresponding electronic data with the user's profile, and also uses the user profile to facilitate the selection of targeted content. *Compare* Ex. 1122, 1:36-

2:3, 3:53-4:13, 5:53-6:2, 7:2-53, 7:60-8:33, 8:42-9:67, FIGs. 5-6 *with* Ex. 1124, Abstract, ¶¶ [0004]-[0006], [0035]-[0043], [0046]-[0047], [0049]-[0053], [0063], [0084]. Madhavan's system uses a "conventional" network architecture, and Madhavan teaches that the devices within this system include typical computing components such as processors, memory, data, and supporting circuitry that run programs for carrying out the functionality of Madhavan's system. Ex. 1122, 4:26-27, 12:21-62. Thus, as explained further below, a POSA would have been familiar with the design and components of Madhavan's system for the purpose of programming that system to collect and process temporal data provided by a user's device, as taught by Martinez. *Id*.; *see also* Ex. 1124, ¶¶ [0013], [0130].

190. It is my further opinion that a POSA would have recognized that it would have been straightforward to program Madhavan-Park's system to collect date and time information (e.g., temporal data) indicating network access by a device, and to use this information to deduce behavioral patterns within the user data obtained from multiple user devices. For example, the resulting Madhavan-Park system would use temporal data collected from multiple user devices to identify user data indicating short term behavior of the user (e.g., user data collected from devices reflecting user events or actions that have occurred within a threshold time period). As another example, the resulting Madhavan-Park system would use temporal data collected from multiple user devices to identify user data indicating long term

behavior of the user (e.g., user data collected from devices reflecting user events or actions that have occurred over the duration a specified time period). Additionally, the resulting Madhavan-Park system would use the user data (e.g., user data indicating short term and/or long term behavior) to target advertisements to the user. Madhavan's system already distinguishes between and tracks—within a user profile—near short term and long term behavior of a user (*see* Ex. 1122, 5:53-6:2, 11:62-12:20), so using temporal data to identify user data indicating the short term and/or long term behavior of the user would require relatively simple modifications to the Madhavan-Park system (e.g., software modifications), which would have been well within the skill set of a POSA.

191. The proposed combination thus teaches 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;"

192. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1D].

193. As I show above for elements [1B] and [1C], when a user connects to the content service provider 100 of the Madhavan-Park-Martinez system, the content service provider receives identification information ("**device identifier"**) of the user's device (e.g., the common IP address of the router used by the device to access the internet and a port number associated with the device) and receives corresponding user data from the user's devices, such as events or actions performed by the user will accessing the Internet, geographic data detailing user access locations, user behavioral data, and the like. *See* e.g., Ex. 1122, 2:62-3:51, 5:53-6:8, 7:27-42, 8:42-59, 10:3-14.

194. The content service provider 100 of the Madhavan-Park-Martinez system links the device identifier and corresponding user data for the user's device (e.g., client machine 130) to the user's profile. The content service provider 100 also links (or will have linked) to the user's profile the device identifier and corresponding user data for each of the user's other devices (e.g., media devices 140) that have previously connected to the content service provider. By linking these device identifiers to a common user profile (i.e., the profile associated with the user) the content service provider 100 thus associates the device identifiers of the user's multiple devices (e.g., client machine 130 and media devices 140) with each other. *See* e.g., Ex. 1122, 5:48-66, 7:43-53, 8:9-15, 8:63-67, 9:18-40, 10:15-25. Accordingly, in this example, the client machine 130 is associated with the media

device 140 because the device identifier of the client machine 130 (which includes the common IP address of the shared IP router used by the client machine 130 to connect to the Internet) matches the device identifier for the user's other devices (e.g., the common IP address of the shared IP router used by the media device 140 to connect to the Internet) that was already stored in the user's profile ("**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**"). e.g., Ex. 1122, 5:53-6:16, 7:33-55, 8:9-15, 8:42-9:2, 10:10-25, 11:12-17, FIGs. 5-6.

195. As I explain above concerning elements [1B] and [1C] (*see* §§ XII.A.1.ii-iii), the content service provider 100 of the Madhavan-Park system determines that user data, such as events or actions performed by the user while accessing the Internet, originated from multiple user devices that accessed the Internet via a common IP address. The content service provider 100 makes this determination at least because the content service provider 100 receives device identifiers (e.g., identification information) indicating the common, public IP address of a router (e.g., Park's shared IP router) that was used by the multiple user devices to access the content service provider. Additionally, the content service provider 100 makes this determination by using the device identifiers to link the user

data, collected from the multiple user devices, to a particular profile associated with the user.

196. Consider, for example, that a user accesses the Madhavan-Park content service provider 100 using media device 140. When the user connects to the content service provider using the Madhavan-Park shared IP router, the media device 140 will provide content service provider with a device identifier (e.g., the IP address of the router used by media device 140 to connect to the content service provider via the Internet and the port number associated with the media device 140) as well as user data associated with the media device 140, which will be stored by the content service provide 100 to database 200 and linked to a user's profile based on the device identifier of media device 140. *See* e.g., Ex. 122, 1:36-2:3, 3:52-4:13, 5:53-6:12, 7:7-53, 7:60-8:15, 8:42-57, 9:9-40, 10:1-25, FIGs. 5-6. When the user subsequently accesses the content service provider 100, via the Madhavan-Park shared IP router, using a different user device (i.e., client machine 130), the content service provider receives a device identifier of client machine 130 (e.g., the IP address of the shared IP router used by client machine 130 to connect to the content service provider and the port number associated with client machine 130) as well as any user data associated with client machine 130. The content service provider stores this information to database 200 and, further, links the user data provided by client machine 130 to a user profile based on the device identifier of the client machine.

More specifically, the content service provider 100 uses the device identifier of the client machine 130 to determine whether any profile already contains or is linked to a corresponding device identifier. In this example, the content service provider would identify the user profile containing the device identifier of media device 140 because the two devices share a common IP address—e.g., the device identifier of the client machine 130 (including the common IP address) matches the device identifier (e.g., common IP address) for the media device 140, which is already stored in the user's profile.

197. As discussed above, the determination by the Madhavan-Park content service provider 100 of an association between the respective device identifiers of a user's multiple devices (e.g., client machine 130, media devices 140) is consistent with the written description of the '015 Patent, which teaches that the existence of the common IP address for two devices associates their respective device identifiers with each other. In particular, the '015 Patent expressly states that "the existence of the common IP address associates the online access IP address and the [user device] IP address" and, further that "[i]n cases where the user's STB 36 can also obtain online access via the same IP address as the user's online access (i.e., via modem 32), that common IP address comprises the electronic association that can be used to perform targeted television advertising without requiring PII." Ex. 1101, 13:18-22, 14:2-9.

198. In my opinion, the content service provider 100 of the Madhavan-Park-Martinez system 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**," as recited in element [1D]. As I discussed above concerning elements [1B] and [1C] (*see* e.g., §§ XII.A.1.ii-iii, particularly ¶¶177, 181, 188, 190 of my Declaration above), Madhavan describes associating user data from different user devices (e.g., client machine 130, media devices 140) within a user profile and, further, that this user data may represent or indicate "near short term behavior" as opposed to long term behavior of the user. *See* e.g., Ex. 1122, 5:59-6:2 ("the stored data may also include near short term behavior of the user, or, in the alternative, long term behavior of the user or an algorithmic combination of short term and long term behavior of the user."), 7:43-53, 8:9-15, 11:62-12:20. In my opinion, a POSA would recognize that by linking user data collected from a user's multiple different devices that constitutes (and/or indicates) near short term behavior for that user, the content service provider 100 of the Madhavan-Park-Martinez system would thus have determined which of the user's multiple devices accessed the Internet using the IP address of the shared IP router within a particular time-relation criterion corresponding to the near short term. Stated another way, in my opinion, a POSA would understand that "near short term" behavior characterizes events or other actions of the user that were preformed

recently or within a certain period of time, thus indicating the short term interests of the user. The content service provider 100 of the Madhavan-Park-Martinez system would have associated, via a user profile and respective device identifiers contained therein, those user devices that have provided user data indicating or reflecting "near short term" behavior of the user. *See* e.g., Ex. 1122, 5:53-6:2, 7:33-53, 8:9-15, 8:42-65, 9:36-40, 10:10-25, 10:35-46, 11:7-22, 11:62-12:20. Additionally, the Madhavan-Park-Martinez system would have retrieved classification categories related to previously-stored user data that satisfies the time-relation criterion corresponding to the user's near short term behavior. *Id*. A POSA would understand that "near short term" behavior may be characterized by variety of different time durations. For instance, "near short term" behavior may be characterized a behavior occurring within a predetermined amount of time, e.g., within 12 hours, within 24 hours, within an IP address lease duration, etc. As an example, if "near short term" behavior was characterized as recent user activity occurring within the past 24 hours, the Madhavan-Park-Martinez system would have associated, via a user profile and respective device identifiers contained therein, those user devices that provided user data indicating events or other actions performed by the user while accessing the Internet within the past 24 hours.

199. As I discuss above in § XII.A.1.iii, the Madhavan-Park-Martinez system would readily have been able to associate user devices that provided user

data indicating "near short term" behavior by using data obtained from each of the user's devices (e.g., client machine 130, media devices 140), particularly temporal data (as taught by Martinez), to determine whether the collected user data indicates online events or actions of the user that has occurred within a particular time period (e.g., activity occurring within 24 hours, the "**predetermined time-relation criterion**" in this example). *See* e.g., Ex. 1124, ¶¶ [0006], [0037]-[0041], [0047], [0049]-[0054], [0057]-[0058], [0070], [0077]; *see also* § XII.A.1.iii, particularly ¶¶ 188-190 of my Declaration above. For example, the Madhavan-Park-Martinez system would readily have used temporal data obtained from each of the user's devices to identify corresponding user data, linked to the user's profile, that indicates online user activity (e.g., searching for and/or watching action movies) occurring within a recent time period, which would have been used to target the user with an advertisement (e.g., an advertisement for an action movie). In short, the Madhavan-Park-Martinez system would have associated the user data collected from two or more user devices with device identifiers (the common IP address of the router used by a device to connect to the Internet and the port number for that device) that are associated with the same user—by way of being stored to a common profile—that accessed the Internet in the near short term (e.g., accessed the Internet in a manner that satisfies the time-relation constraints or criterion characterizing near short term behavior).

200. It is my further opinion that the correlation of user data and temporal data to near short term behavior of a user in the Madhavan-Park-Martinez system confirms the existence of the "**predetermined time-relation criterion**," at least because the Madhavan-Park-Martinez content service provider 100 would have used recent user data (e.g., user data reflecting near short term behavior) to target an advertisement and, therefore, would have relied upon user data originating from recent network access by the user's devices (e.g., client machine 130, media devices 140), as indicated by the temporal data collected from said devices, to select appropriate advertisements that are targeting a user's current interests. The linking of data from a user's different devices that constitutes near short term behavior indicates that the Madhavan-Park-Martinez system determines which of the devices accessed the Internet via the common IP address within a certain time-relation criterion, i.e., did so within the near short term (e.g., within the last 24 hours, within the lease duration of an IP address, etc.). This determination of which devices accessed the Internet via the common IP address within a certain time-relation criterion is consistent with the disclosure of the '015 patent specification. *See* Ex. 1101, 4:25-29 (IP address used for determining association expires within predetermined period of time), 19:1-12 (describing time-relation criterion for maintaining device associations), 14:10-16. Thus, in my opinion, a POSA would have found it obvious that, when determining a targeted advertisement for a user,

the Madhavan-Park-Martinez content service provider 100 would determine an association between the respective device identifiers (common IP address and port number) of a user's devices (e.g., client machine 130, media device 140) by determining that the devices accessed the Internet via a common IP address—using the device identifiers provided by the respective user devices when connecting to the content service provider (Ex. 1122, 7:27-42, 8:42-59, 10:3-14)—at respective times satisfying a time-relation criterion that is associated with the user's near short term behavioral profile and/or that indicates the user's behavior, as reflected by the collected user data, is near short-term behavior as opposed to a long-term behavior.

201. The proposed combination thus teaches 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"

202. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1E].

203. 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. 1101, 6:25-44 (emphasis added).

204. As I explain below, the association between user devices within the Madhavan-Park-Martinez system would have been "**determined without use of personally identifiable information.**" As I show above for element [1D], the

content service provider of the Madhavan-Park-Martinez system would have determined the associations between device identifiers of at least two user devices (e.g., client machine 130, media devices 140) by linking device identifiers (the common IP address of the router used by a device to connect to the Internet and the port number for that device) for the at least two devices to a same user profile, and storing the corresponding user data collected from the at least two user devices, which is linked to the user profile based on the respective device identifiers of each device and may also satisfy a time-relation criterion characterizing the user's behavioral profile (e.g., near short term behavior). Furthermore, in my opinion, a POSA would understand, in view of their general knowledge, that the common IP address of the router in the Madhavan-Park-Martinez system would be dynamically assigned using the industry-standard Dynamic Host Configuration Protocol (DHCP), which was well-known and standard practice at the time of the filing of the '015 Patent. *See* e.g., Ex. 1160, 3:21-51(discussing conventional DCHP operation), 3:64-4:1, 6:63-66; Ex. 1123, ¶¶ [0009]-[0010], [0031]-[0034], [0041], [00]48; Ex. 1159, 4:59-62, 5:44-57, Abstract. And, in my opinion, a POSA would further understand, in view of their general knowledge, that such servers monitor the use of dynamically assigned IP addresses. *See* e.g., Ex. 1161, ¶¶[0011]-[0012], [0016]-[0030], [0042], [0047]-[0050], FIG. 1; Ex. 1162. Unlike dynamic IP addresses, static IP addresses are typically not free and usually require payment of periodic fees (for

example through a third-party service provider) to maintain the permanent address). As a result, the vast majority of users and devices on the Internet well before April 2007 used dynamically-assigned IP addresses, which continues to be true to this day. Moreover, the '015 Patent itself expressly acknowledges this fact stating, in the Background section, that many users of online access services do not have static IP addresses, but instead use dynamic IP addresses assigned using DCHP. Ex. 1101, 9:61-10:9. More specifically, the '015 Patent states that Internet Service Providers (ISPs) "generally use DHCP to assign individual IP addresses to subscribers" and that "[m]any residential routers…are configured in the factory to act as DHCP servers for home networks." Ex. 1101, 4:37-42.

205. In my opinion, the association between the respective device identifiers of at least two Madhavan-Park-Martinez user devices (e.g., client machine 130, user devices 140) would have also been "**determined without use of personally identifiable information [PII]**" because, as explained above in §§ XII.A.1.ii-iv, under the proposed Madhavan-Park-Martinez combination, the "**device identifier**" is a combination of: (i) an IP address of a router used to connect to the Internet (e.g., the dynamically assigned public IP address of Madhavan-Park-Martinez's shared IP router), which is assigned to a user's device, and (ii) a port number associated with the user device. It is my further opinion that a POSA would have understood that this combination of the Madhavan-Park-Martinez router's public IP address used to

connect the user's devices to the Internet and the port number associated with a device cannot be used, by itself, to identify any specific person and thus does not constitute "PII" as this term is used and defined in the '015 Patent. *See* Ex. 1101, 6:25-44 (defining PII and non-PII). Further, the '015 Patent expressly states that a dynamically assigned IP address constitutes non-PII. Ex. 1101, 6:35-44. Therefore, when the Madhavan-Park-Martinez content service provider 100 stores the device identifiers for separate user devices to a same profile along with corresponding user data, it does so "**without use of personally identifiable information**."

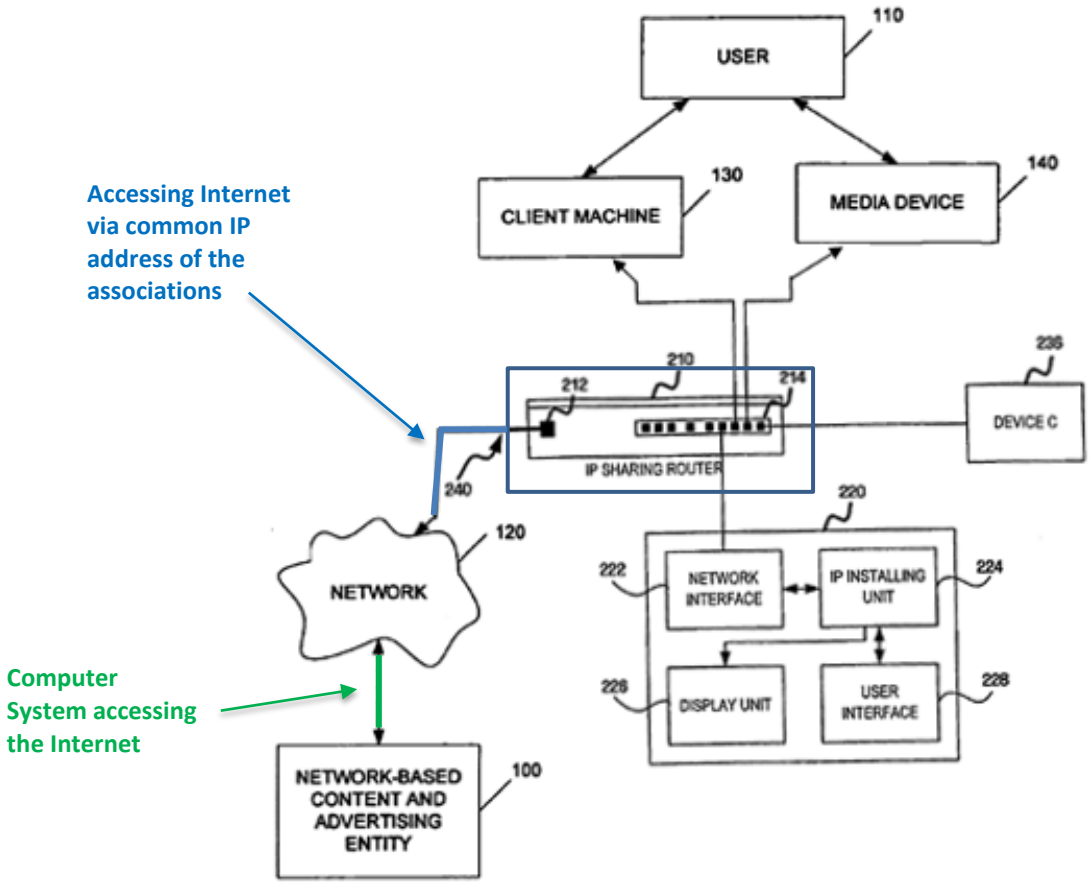
206. The proposed combination thus teaches and renders obvious element [1E].

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"

207. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1F].

208. As I show below in a version of Madhavan's Figure 1, which has been edited to include Park's IP sharing router 210 and IP installer 220, the content service provider 1 of the Madhavan-Park-Martinez system ("**the computer system determining the associations**") accesses network 120 (e.g., Internet), without using the IP sharing router 210, which instead is used by the user's devices (e.g., client

machine 130 and media device 140) to connect to the Internet. *See* Ex. 1122, 4:37-42, FIG. 1; Ex. 1123, ¶¶ [0009]-[0011], [0035]-[0038].



Ex. 1122, FIG. 1 (edited to add Park's router 210 and installer 220; annotated with color)

209. More specifically, as shown above, the content service provider 100 is directly connected (**green**) to network 120 (e.g., the Internet), while the user's devices (e.g., client machine 130 and media device 140) connect to the Internet via IP sharing router 210 using the common, public access IP address of the router (**blue**). *Id*. Accordingly, because the content service provider does not use the IP

sharing router 210 to connect to network 120, it would have had a different IP address than the router when connecting to the network 120. Therefore, the Madhavan-Park-Martinez content service provider 100 "**accesses the Internet without using any of the common IP addresses of the associations identified in part (ii)**."

210. The proposed combination thus teaches 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:"

211. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1G].

212. Madhavan discloses "a system and method to facilitate targeting of advertisements based on mutual information sharing between devices over a network, such as the Internet." Ex. 1122, 1:7-11, 1:36-2:3, 3:52-4:13. As I discuss above concerning elements [1A]-[1B] and [1D], the content service provider 100 of Madhavan's modified system collects user data and corresponding device identifier (e.g., "identification information"), which includes the common IP address of the

router used by a device to connect to the Internet and the port number for that device. The content service provider 100 collects this information from multiple user devices (e.g., client machine 130, devices 140) and links the respective user data and device identifier for each user device to a same user profile. *See* e.g., Ex. 1122, 5:53-66, 7:15-8:15, 8:37-9:40, 10:1-25, 10:65-11:22, FIGs. 5-9.

213. Madhavan also describes categorizing data indicating a user's online activity and storing the user data obtained from a user's multiple devices in database 200 along with the respective classification categories. Ex. 1122, 3:52-63, 6:3-12, 7:43-53, 8:57-67, 9:36-40, 10:15-25, 11:12-22. For example, Madhavan describes:

> [T]he processing servers 104 receive the user data and determine classification categories associated with each respective action performed by the user 110. If, for example, the user 110 watched a basketball game broadcast on the television set 142, the activity is assigned to a "sports" category and a "basketball" category. The user data and associated categories are further stored into respective category tables 220 and activity tables 230 within the data storage module 106 and are linked to the user profile of the user 110 stored within the

user tables 210 based on the user identification information.

Ex. 1122, 7:43-53.

214. By linking (e.g., associating) the user data collected from the user's multiple devices and the corresponding classification information for that user data to a common user profile based on the device identifiers of the user's devices, Madhavan's modified system is able to select and retrieve advertisements related to stored user data that was previously collected from the user's various devices. For example, advertising servers 105 of Madhavan's content service provider 100 use the device identifier provided by a first user device (e.g., client machine 130) to access tables within advertising storage module 108 and to retrieve advertisements that relate to previously-stored user data and classification categories. Ex. 1122, 3:52-63, 6:3-12, 7:43-53, 8:9-33, 8:57-67, 9:36-54, 10:35-55, 11:34-52, FIGs. 2-3, 10. The previously-stored user data used to retrieve relevant advertisements is maintained in database 200 (e.g., activity tables 230) and may have been generated or collected when the user accessed the content service provider from a second (different) user device, such as media devices 140. *Id*.

215. In my opinion, Madhavan-Park-Martinez's targeting of advertisements based on this mutual information sharing between user devices over a network discloses and renders obvious element [1G]. In Madhavan-Park-Martinez, a user

may connect to the content service provider 100 using a user device (e.g., client machine 130, media device 140). The user may access the content service provider by initiating "a login procedure using one or many known network protocols." Ex. 1122, 7:27-30, 7:60-63. If the user has logged on to the content service provider, data is transmitted to the processing servers 104 within the content service provider. However, if the user is not logged on, data is stored at the user's device for subsequent transmission to the content service provider 100 upon receiving a request from the content service provider. Ex. 1122, 7:36-42.

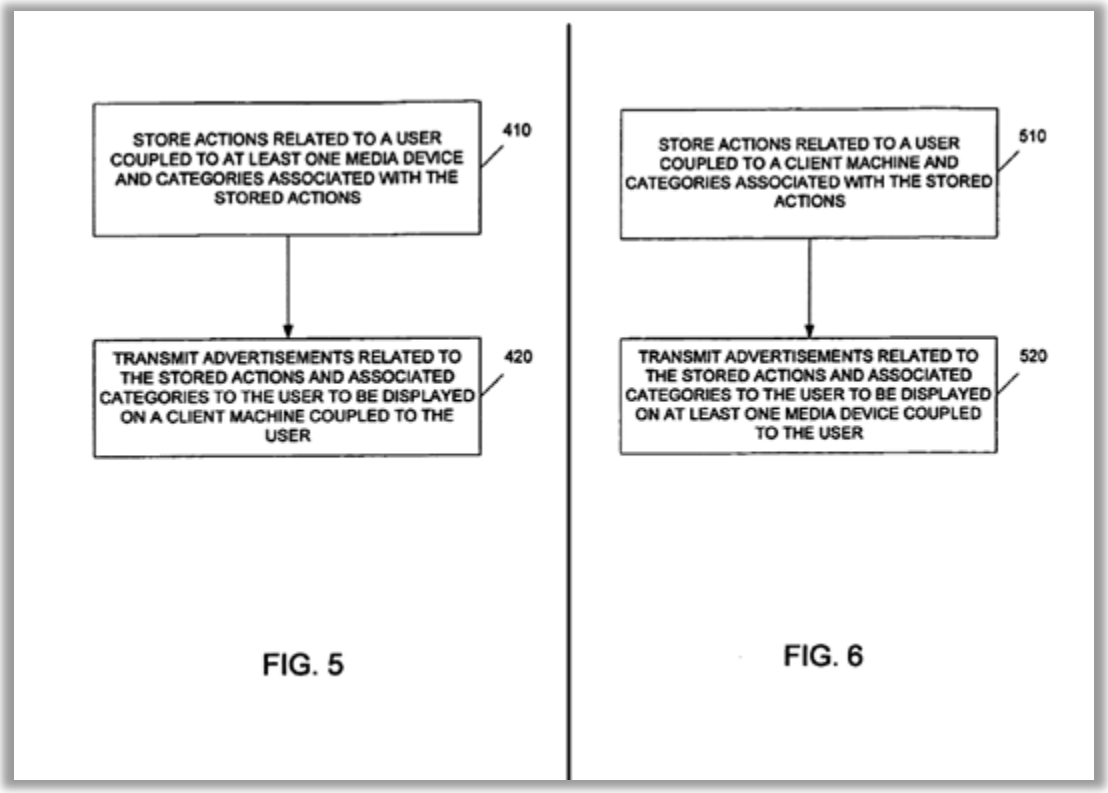
216. In Madhavan-Park-Martinez's system, the claimed "**automatic action**" is a targeted advertisement that Madhavan's modified system automatically provides to a user's device based on that device being associated with another user device in a profile via their device identifiers (common IP address and port number) and using user data for the associated device as I show above for elements [1B]-[1E]. Consider for example, in the Madhavan-Park-Martinez system, while a user is connected to the content service provider 100 via the Internet using a first of two associated user devices ("**when the computer system and a first device identified in a first association are in communication with one another**"), the content service provider takes automatic action by selecting and sending a targeted advertisement to a user device based on the mutual sharing of information (e.g., user data) between a

user's multiple devices over the Internet. Ex. 1122, 1:7-11, 1:36-2:3, 3:52-4:13, 8:9-34, 9:36-67, 10:35-64, 11:27-67, FIGs. 5-6, 8, 10.

217. More specifically, the content service provider 100 (e.g., advertising servers 105, processing servers 104) take automatic action by using the device identifier of the first device (e.g., common IP address and port number associated with client machine 130) as well as user profile information collected and/or generated from a second user device (e.g., media device 140) to select and send the targeted advertisement to the first device. *Id*. As I discuss above, the user profile information may include various types of user data, for example, geographic data detailing user network access locations, temporal data indicating when a user has accessed the network, user behavioral data, and the like. Ex. 1122, 2:61-3:47, 5:53-6:12, 11:62-12:20; Ex. 1124, ¶¶ [0003]-[0012], [0035], [0038], [0040], [0046]-[0052], [0058]-[0059], [0063]-[0064], [0071]. Further, the user data collected from the second user device will have already been linked to the user's profile, via the device identifier of the second device, when the user previously connected to the content service provider 100 using the second device. Ex. 1122, 5:53-66, 7:15-8:15, 8:37-9:40, 10:1-25, 10:65-11:22, FIGs. 5-9. In other words, as I explain above, the content service provider uses the device identifier of the first device to identify the user's profile, and uses the profile information (provided by the second device) to identify advertisement to target to the user. Thus, the content service provider uses

the device identifier of the first device and the profile information associated with a device identifier of a second device to cause an automatic action, e.g., selecting and sending the targeted advertisement to the user. Further, it is my opinion that a POSA would understand that, to send the targeted advertisement to the user's device over the Internet, the content service provider would use the device identifier (e.g., common IP address and port number) of the user's device that will receive the advertisement. In view of the foregoing, Madhavan-Park-Martinez thus teaches the element: "**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.**" *See* Ex. 1122, 1:55-2:3, 3:52-4:13, 7:7-9:67, 10:35-64, 11:27-67, Abstract, FIGs. 5-6, 8, 10.

218. As I show below in Figure 5 of Madhavan, the content service provider 100 may send targeted advertisements to a user device (e.g., client machine 130) based on previously-stored data (e.g., user actions or events performed while the user was accessing the Internet) that was collected from a different user device (e.g., media device 140). Likewise, as shown below in Figure 6, Madhavan teaches that the content service provider may send targeted advertisements to media device 140 based on previously-stored data that was collected from a different user device (e.g., client machine 130). Ex. 1122, 1:36-2:3, 3:52-4:13, 6:66-9:67, FIGs. 5-6.



Ex. 1122, FIGs. 5, 6

219. Madhavan contemplates that a user will access the content service provider 100 using various of their devices at various times and various locations. *See* e.g., Ex. 1122, 1:36-2:3, 3:1-8, 3:52-4:13, 5:59-66, 7:60-8:5, 9:9-15. As I explain above concerning elements [1B]-[1D], the user's multiple devices that are used to access the content service provider will be linked to each other and the user data obtained from those devices will be part of (and otherwise associated with) the same user profile. When the user is accessing the content service provider of the Madhavan-Park-Martinez system from one device, the content service provider will

determine targeted advertisements to send to the user based on data collected from their activity on other devices.

220. Consider as an example, that a user (e.g., user 110) initially accesses the content service provider 100 of the Madhavan-Park-Martinez system using media device 140 ("**first device**"). As I explain above, the content service provider 100 receives a device identifier and user data from the media device 140, and then links the received user data with a profile for the user based on the received device identifier (e.g., the common IP address of the router used by media device 140 to connect to the Internet and the port number for media device 140). Ex. 1122, 5:53-6:8, 7:2-38, 10:1-20, FIGs. 5 (step 410), 7. Subsequently, the user may access the content service provider 100 of the Madhavan-Park-Martinez system for one or more online sessions using a different user device, e.g., client machine 130. *See* e.g., Ex. 1122, 1:55-2:3, 3:1-8, 3:64-4:13, 7:60-67, 8:42-48. For example, as shown above in step 510 of Figure 6, when the user accesses the content service provider 100 of the Madhavan-Park-Martinez system using client machine 130 ("**second device"**), data indicating the events or actions of the user that are performed on client machine 130 during the one or more online sessions is sent to the content service provider, along with the device identifier of the second device (e.g., the common IP address of the router used by client machine 130 to connect to the Internet and the port number for client machine 130). *See* e.g., Ex. 1122, 1:55-2:3, 3:1-8, 3:64-4:13, 7:60-67, 8:42-

59. Additionally, the content service provider 100 stores this information to database 200 (e.g. within user tables 210) in association with the user's profile and based on the device identifier provided by the second device (e.g., client machine 130). *See* e.g., Ex. 1122, 5:53-6:8, 7:33-36, 7:48-53, 8:42-67, 10:6-25. As I noted above, the user data obtained from the user's multiple devices and stored in database 200 (e.g., activity tables 230) may contain actions or events performed by the user using the various devices over the course of multiple online session and in different locations. *See* Ex. 1122, 3:1-8, 5:53-66.

221. As I also explain above, because the user has already accessed the content service provider via the Internet using media device 140, the user's profile would already contain the device identifier provided by the media device 140 along with any corresponding user data. *See* e.g., §§ XII.A.1.ii, XII.A.1.iv, XII.A.1vii, particularly ¶¶172, 194, 217 of my Declaration above. Accordingly, the user's profile will now contain the device identifier of the first device (media device 140) and the device identifier of the second device (client machine 130) and, thus, will have an association ("**first association"**) between the respective device identifiers of the first and second devices. *See* e.g., Ex. 1122, 3:1-8, 5:53-59, 7:33-42, 7:60-67, 8:34-41, 10:15-25, 11:7-22. Because the content service provider 100 of the Madhavan-Park-Martinez system links the user data (e.g., data indicating the events or actions performed by the user on client machine 130) with the user's profile, this

user data ("**user profile information"**) is also associated—via the device identifier of the first device—with other user data indicating the previous actions or events performed by the user on other user devices, e.g., media devices 140 ("**first device"**), that have been linked to the user profile via their respective device identifiers. *Id.*; *see also* Ex. 1122, 8:9-23, 8:63-67, 9:36-46.

222. After the user has connected to the content service provider 100 using client machine 130 and the content service provider has stored user data provided by the client machine, the user may access the content service provider using a different user device, e.g., accessing the content service provider again using media device 140. For example, as shown above in step 520 of Figure 6 of Madhavan, when the user again accesses the content service provider 100 using media device 140, one or more servers of the content service provider may deliver targeted advertisements to the media device 140 ("**first device"**) based on the device identifier and user data associated with the client machine 130 ("**second device"**) that was previously stored to database 200 by the content service provider. Ex. 1122, 7:14-22, 8:34-41, 9:4-8, 9:36-67, FIG. 6. As I explain herein, the targeted advertisements are delivered to the media device 140 based on its device identifier and, for example, because the stored user data associated with the client machine 130 represents relevant near-term (or long term) user behavior. *See* e.g., ¶¶ 198-200 of my Declaration above.

223. More specifically, Madhavan explains that "at processing block 510, events or actions related to…user 110 coupled to…client machine 130 and classification categories associated with the user events or actions are stored within…data storage module 106 of…entity 100." Ex. 1122, 8:37-41. Then, at step 520, "advertisements related to the stored user actions or activities and their respective categories are transmitted to…user 110 to be displayed on one or more media devices 140 coupled to…user 110." Ex. 1122, 9:4-8, 7:14-22, 9:18-29 (TV set 142 and DVR 144 assigned unique IP addresses), 7:33-36 (user profile and action data associated with user identification information including unique IP addresses), 7:48-53. In particular, the content service provider 100 uses the device identifier (common IP address and port number) of the media device 140 ("**first device"**) to identify the user's profile and to access respective tables within data storage module 106 (e.g., database 200) to retrieve classification categories related to previously-stored user data for that user, for example, user data previously collected from client machine 130 ("**second device"**). Ex. 1122, 7:48-53, 8:9-33, 9:36-67, 11:34-61. Advertising servers 105 of the content service provider 100 in Madhavan's modified system communicate with processing servers 104 to obtain the device identifier of the media device 140 and to retrieve classification categories, as discussed above. Additionally, the advertising servers 105 of the content service provider access respective tables within advertising storage module 108, which is coupled to

advertising servers 105, to retrieve and transmit advertisements related to the previously-stored user data. Ex. 1122, 4:57-5:2, 8:16-33, 9:36-67, 10:47-67, 11:38-61.

224. Thus, as I explain above, Madhavan-Park-Martinez teaches that, while the user is accessing the Internet via the user's media device 140 ("**first device"**), targeted advertisements are delivered to the user's media device 140 based on: (i) user data collected over one or more online sessions by the client machine 130 ("**second device**") including events or actions performed by the user during the online session and (ii) the association of the user's profile information (e.g., the user data and corresponding classification categories) with the respective device identifier (common IP address and port number) of the client machine 130 and the media devices 140. As I explain above, a POSA would understand that the content service provider 100 uses the device identifier of the media device 140 to send a selected advertisement to the media device 140, for example, by using the IP address of the router used by the media device 140 to access the Internet and a port number assigned to media device 140 (e.g., the device identifier) to address a network communication concerning the targeted advertisement to its destination, i.e., the media device 140.

225. In my opinion, each of the selection, delivery, and display of the targeted advertisements is "**an automatic action**" because it occurs without the user

of the first device (e.g., media device 140) having to request receipt or initiate the selection, delivery, or display of the targeted advertisements. *See* e.g., Ex. 1122, 9:4-8, 7:56-59, 8:26-33, 9:36-67, 10:41-55, 11:38-61, FIGs. 5 (step 420), 6 (step 520), 11, Abstract. Accordingly, as I explain above concerning element [1G], Madhavan-Park-Martinez teaches that when the content service provider 100 and a first device (e.g., media device 140) identified in a first association—via the user's profile—are in communication with one another, the content service provider 100 uses a device identifier of the first device (e.g., media device 140) and user profile information (e.g., user action data) associated with a device identifier of a second device (e.g., client machine 130) identified in the first association to cause an automatic action (e.g., the selection, delivery and/or display of targeted advertisements) to be taken with respect to the first device (e.g., media device 140).

226. The proposed combination thus teaches and renders obvious element [1G].

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

227. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1H].

228. As I show above for element [1G], the association between the respective device identifiers of first and second of user devices (e.g., media device 140 and client machine 130) in the Madhavan-Park-Martinez system would have

been one of the associations indicated in the user's profile stored in database 200 of the content service provider.

229. More specifically, as I previously explained, the "**first association**" discussed above with respect to element [1G] is also an association as described herein with respect to elements [1B]-[1D] in that the Madhavan-Park-Martinez systems uses respective device identifiers (e.g., the common IP address and port number associated with media device 140, and the common IP address and port numbers associated with client machine 130) and temporal information collected from the user's devices (e.g., network access times of the device) to identify associations, within the user's profile, between device identifiers of two or more Internet-accessing devices (e.g., media device 140 and client machine 130). *See* e.g., §§ XII.A.1.ii-iv, particularly ¶¶166, 169, 172 175-176, 194, 221 of my Declaration of above. For example, as I explain above concerning element [1D], the Madhavan-Park-Martinez system uses the device identifier of a first user device (e.g., common IP address and port number) and the device identifier of a second user device to link—to the user's profile—user data (e.g., online actions or events performed by the user) that is collected from the first and second devices. As I explain above, the user data linked to the user profile comprises data reflecting user actions or events that satisfy a particular time-relation criterion corresponding to a particular user

behavior (e.g., near short term behavior). *See* e.g., § XII.A.1.iv, particularly ¶¶198-200 of my Declaration of above.

230. Accordingly, the "**first association**" discussed above concerning element [1G]—between the respective device identifiers of user devices in the Madhavan-Park-Martinez system—would have been one of the associations, stored in the user's profile within user tables 210 of database 200, for those user devices that have provided user data to the content service provider 100 that satisfy a time-relation criterion for a particular user behavioral profile. *Id*. For example, as I explain above concerning element [1D], a time-relation criterion for the user behavior may be characterized by near short-term behavior (e.g., online actions or events of the user that occurred within 24 hours). Additionally, or alternatively, the time-relation criterion may indicate that the user's actions or events is short-term behavior as opposed to long-term behavior ("**the first association is one of the associations identified in part (a)(ii)**").

231. The proposed combination thus teaches and renders obvious element [1H].

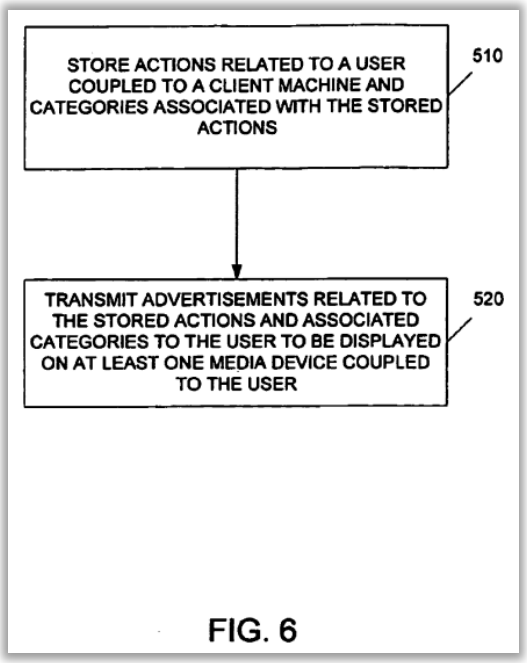
ix. Element [1I]: "(ii) the first association was stored in the electronic database described in part (a) prior to the computer system and the first device being in communication with one another as described in part (b)."

232. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious element [1I].

233. It is my opinion that, in the Madhavan-Park-Martinez system, the association between Madhavan's user devices (e.g., media device 140 and client machine 130) would have been stored before one of the user devices connected to that system and received the targeted advertisement(s). *See*, for example, my comments regarding elements [1B]-1D] and [1G] above. As I show above, the content service provider 100 of the Madhavan-Park-Martinez system receives, from media device 140 (**first device**), a device identifier (e.g., the IP address of the router used to access the Internet and a port number) for the media device 140 and user data (e.g., actions or events performed by the user using the device), and links the user data to the user's profile based on the device identifier. Ex. 1122, 5:53-6:8, 7:2-38, 10:1-25, FIGs. 5, 7[5]. More specifically, the device identifier, user data, and

[5] Although Madhavan describes that the method of processing action information depicted in Figure 7, after step 630, proceeds to the method of facilitating targeted advertainments as depicted in Figure 5 (*see* Ex. 1122, 10:28-29), in my opinion it would have been obvious to a POSA that a user of the Madhavan-Park-Martinez system may connect to the content service provider 100 via the client machine at any time after the steps of Figure 7 are completed or after the steps in Figure 5 occur at least because Madhavan contemplates that a user may access the content service

classification categories associated with each user event or action in the user data is stored in data storage module 106 of Madhavan's database 200 and "linked to the user profile of the user 110 stored with the user tables 210 [of database 200]" based on the device identifier. *See* Ex. 1122, 10:15-25.



Ex. 1122, FIG. 6

234. Thereafter, as described with respect to step 510 shown in Madhavan's Figure 6 (reproduced above), the user may access the content service provider 100

provider 100 using various of their devices at various times and various locations. *See* e.g., Ex. 1122, 1:35-2:3, 3:1-8, 3:52-4:13, 5:59-66, 7:60-8:5, 9:9-15; *see also id.*, 2:55-61 ("numerous details are set forth for purpose of explanation. However, one of ordinary skill in the art will realize that the invention may be practiced without the use of the specific details. In other instances, well-known structures and devices are shown in block diagram form in order not to obscure the description of the invention with unnecessary detail"), 12:63-13:1.

using a different device (e.g., client machine 130), causing the content service provider to receive a device identifier and corresponding user data from the client machine 130. Ex. 1122, 8:37-48. The content service provider 100 also links this information to the user's profile, which in this example is already associated with the device identifier and previously-stored user data obtained from the media device 140. As I explain above, the content service provider links the user data to the user's profile based on the device identifier of client machine 130, thereby forming an association between the respective device identifiers of client machine 130 and media device 140 ("**the first association**"). *See* Ex. 1122, 8:37-67, FIG. 6; *see* e.g., §§ XII.A.1.vii-viii.

235. The content service provider 100 of the Madhavan-Park-Martinez system may receive user data indicating multiple events or actions performed by the user, from multiple online sessions, associated with the use of client machine 130. Ex. 1122, 3:1-8, 7:56-8:15, 8:34-67; *see* e.g., § XII.A.1.vii, particularly ¶¶220 and 224 of my Declaration above. For example, the user may access the content service provider 100 using client machine 130 on three separate instances during the course of the week. Each time the user connects to the client service provider, the processing server 104 of the client service provider would provide the device identifier of the client machine 130 and any corresponding user data for that particular online session, which is linked to the user's profile based on the device identifier and stored

to database 200. *Id*. Madhavan also teaches that the content service provider 100 may request user data from the user's device in the event that the user has not logged on to the content service provider. *See* e.g., Ex. 1122, 7:38-42. Because user data for each of the user's online sessions with the client machine 130 are linked to the user's profile, this user data may subsequently be retrieved and used to target advertisements to the user when the user accesses the content service provider via any of the user's devices (e.g., client machine 130 or media device 140). *See* Ex. 1122, 1:36-2:3, 3:52-4:13, 5:53-67, 7:33-53, 8:9-33, 8:57-67, 9:36-67, 10:10-25, 10:41-55. As I explain above concerning elements [1D] and [1G], the content service provider 100 determines the association between the respective device identifiers of the user's devices by determining that the devices accessed the Internet via a common IP address at respective times satisfying a time-relation criterion that characterizes the user's near short-term behavior and/or that indicates the user's activity/behavior is near short term behavior as opposed to long term behavior. *See* e.g., §§ XII.A.1.iv, XII.A.1.vii, particularly ¶¶199-200 and 230 of my Declaration above.

236. Referring again to Figure 6, Madhavan teaches that "subsequent to the action detailed above, the user 110 initiates a connection to the network 120" and accesses the content service provider 100 through the network-based television set 142 (i.e., media device 140). *See* Ex. 1122, 9:9-33. As I show above concerning

element [1G], the content service provider of the Madhavan-Park-Martinez system accesses respective tables within data storage module 106 of database 200 to "retrieve classification categories related to previously stored actions of the user 110" based on the device identifier, for example, retrieving previously stored user events or actions that were performed during the one or more online sessions with client machine 130 and linked to the user's profile based on the device identifier of the client machine 130. *See* e.g., Ex. 1122, 9:36-40. Advertising servers 105 within the content service provider use the received device identifier and stored classification categories to retrieve advertisements from storage module 108 that are related to the previously stored actions of the user. *See* e.g., Ex. 1122, 9:41-46; *see* § XII.V.1.vii, particularly ¶223 of my Declaration above. Accordingly, the association between the respective device identifiers of media device 140 (**first device**) and the client machine 130 (**second device**) is stored in database 200 (**electronic database**) "**prior to the computer system and the first device being in communication with one another as described in part (b)**", for example, when the user connects to and receives advertisements from the content service provider using media device 140 after having previously: (i) connected to the content service provider via the media device 140 and the client machine 130, and (ii) performed activity using the client machine 130 that was stored by the content service provider

and linked to the user's profile. *See* e.g., Ex. 1122, 8:37-9:67, 10:3-25, 10:33-64, 10:67-11:22, FIG. 6.

237. The proposed combination thus teaches 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 Madhavan, Park, and Martinez teaches 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 [1C]-[1D] and [1H], the proposed combination renders obvious creating a profile that associates the device identifiers of the user devices in the Madhavan-Park-Martinez system having an observed network access pattern satisfying a time-relation criterion of a particular user behavioral. For example, as discussed above, the Madhavan-Park-Martinez system may track the "near short term behavior" of the user. Ex. 1122, 5:59-6:19, 7:48-53, 8:9-15, 10:10-25, 11:62-12:20. As I explain above, the content service provider does this by linking user profile data from different user devices that was generated in the recent past, i.e., within a predetermined short period of time, such as 12 hours, 24

hours, an IP address lease duration, etc. *See* e.g., §§ XII.A.1.iii-iv, XII.A.1.viii, particularly ¶¶198-200, 229-230, 237 of my Declaration above. Stated another way, the content service provider associates user devices that provided user data indicating "near short term" behavior, for example, by using data obtained from each of the user's devices (e.g., client machine 130, media devices 140), particularly temporal data (as taught by Martinez), to determine whether the collected user data indicates online events or actions of the user that has occurred within a particular time period (e.g., activity occurring within 24 hours). *See* e.g., Ex. 1124, ¶¶ [0006], [0037]-[0041], [0047], [0049]-[0054], [0057]-[0058], [0070], [0077]; Ex. 1122, 5:53-6:12, 11:62-12:20. Thus, the linking of the user's devices, via their respective device identifiers, is done using a "**criterion that one of the two or more Internet accessing electronic devices … accessed the Internet within a specified length of time after a time when another of the … devices … accessed the Internet**" as recited in claim 2.

240. Consider, for example, that media device 140 of the Madhavan-Park-Martinez system ("**another of the two or more Internet-accessing electronic devices**") connects to the content service provider 100 and provides data (e.g., user data, temporal data, etc.) to the content service provider 100 along with a device identifier for the media device 140. Ex. 1122, 7:3-36, 9:9-40, 10:3-18, FIGs. 5-9. Thereafter, the user may access the content service provider 100 using client

machine 130 ("**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**") and provide additional data to the content service provider along with the device identifier of the client machine 130. Ex. 1122, 7:60-8:9, 8:37-48, 10:65-11:6, FIGs. 5-9. As I explain above, the content service provider 100 may determine that the user data provided by client machine 130 and media device 140 are linked to a same user profile based on the respective device identifiers of the two devices. *See* e.g., §§ XII.A.1.ii-v, XII.A.1.vii, particularly ¶¶169, 196, 204, 221 of my Declaration above. Additionally, as I further explain above, the content service provider 100 of the Madhavan-Park-Martinez system may determine that the user data provided by client machine 130 and media device 140 satisfy a time-relation criterion indicating near short-term behavior of the user, and store that user data to database 200. *See* e.g., §§ XII.A.1.iv, XII.A.1.viii , XII.A.2, particularly ¶¶198-200, 229-230, 235, 239 of my Declaration above.

241. By determining that the user data provided by each of client machine 130 and media device 140 indicate near short-term behavior (e.g., online activity performed by the user within the past 24 hours), the Madhavan-Park-Martinez system would thus have determined that— although the client machine 130 accessed the content service provider 100 after a time that the media device 140 accessed the content service provider—the media device 140 and the client machine 130 each accessed the content service provider 100 via the Internet within the specific time

period required to satisfy the time-relation criterion characterizing near short-term behavior ("**a specified length of time**"). In other words, by determining that the user's actions or events performed using the client machine 130 and media device 140 respectively constitute near short term behavior, the Madhavan-Park-Martinez system would have thus determined that the user's action performed via the client machine 130 occurred after that of the media device 140 and within the specified length of time used by the Madhavan-Park-Martinez system to differentiate near short term behavior from other behavior—e.g., both devices accessed the Internet within 24 hours. Accordingly, in this example, the linking of the devices 130 and 140, via their respective device identifiers, is done using a criterion that the client machine 130 access the Internet within 24 hours after a time when the media device 140 accessed the Internet ("**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"**) since both devices are linked to the user's profile in view of providing user data that constitutes near short term behavior of the user.

242. As another example, consider that the user accesses the content service provider 100 provider of the Madhavan-Park-Martinez system using media device 140 at 9:00AM on Monday morning to watch a movie. If near short term behavior of a user is characterized by the Madhavan-Park-Martinez system as activity that

occurs within the past 24 hours, then user data obtained from media device 140 will be considered near short term behavior by the system for the next 24 hours (e.g., until roughly 9:00AM on Tuesday). Accordingly, if the user subsequently accesses the content service provider 100 using client machine 130 later that same day at 9:00PM to browse the Internet, the user data collected from the client machine 130 will also be considered near short term behavior for the following 24 hours (e.g., until roughly 9:00PM on Tuesday). In this example, the user data collected from both devices will be considered near short term behavior by the Madhavan-Park-Martinez system at least from 9:00PM Monday evening until 9:00AM Tuesday morning. During this period, when the user data provided by both devices is considered near short term behavior, the Madhavan-Park-Martinez system would link the user data collected from both devices to the user's profile which indicates near short term behavior, thereby allowing the system to target the user's devices with advertisements reflecting the user's current interests. Because the user browsing the Internet using client machine 130 is considered near short term behavior while the user watching a movie using the media device 140 is also considered near short term behavior, therefore, the user's action of browsing the Internet must have occurred within 24 hours of the user watching the movie. In other words, both of the user's actions must have occurred within 24 hours of each other in order for both

actions to have been considered near short term behavior, resulting in the system linking the devices and their corresponding user data to the user's profile.

243. Additionally, if one of the devices had accessed the Internet more than the specified length of time after the other (e.g., not within the past 24 hours), the user data provided by that device would not constitute near short term behavior, and this user data would not have been linked to the user's profile that indicates near short term behavior of the user. *See* Ex. 1122, 5:53-6:12, 11:52-12:20; Ex. 1124, ¶¶ [0006], [0037]-[0041], [0047]-[0054], [0057]-[0058], [0070], [0077]. Referring back to the example provided above (*see* ¶242 of my Declaration), if the user were to have browsed the Internet using client machine 130 at 9:00PM on Tuesday (instead of 9:00PM on Monday), the user's action of watching the movie using media device 140 would not be considered near short term behavior at the time the user browses the Internet. In this instance, because the media device 140 accessed the Internet (for the user to watch the movie) more than 24 hours prior to the user browsing the Internet at 9:00PM on Tuesday evening, the user data provided by the media device 140 would not be linked to the user's profile that indicates near short term behavior of the user.

244. The proposed combination thus teaches 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 Madhavan, Park, and Martinez teaches and renders obvious claim 3, which depends from claim 1. *See* my comments regarding elements [1A]-[1I] above.

246. 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**." To the extent it is determined the "**predetermined time-relation criterion"** recited in claim 3 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, Madhavan-Park-Martinez 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* § XII.A.2), claim 3 specifies two times defining the upper and lower bounds of a time window as the criterion for

determining the association. I created the diagram shown below in Figure 1 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") and 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).

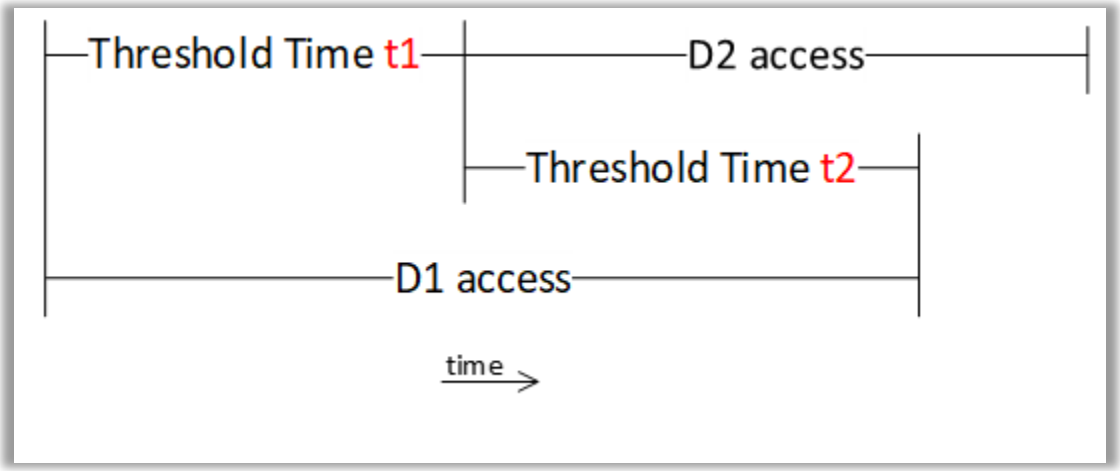


Figure 1: 1st Example Figure for Ground A, Claim 3 discussion

247. As discussed above in § XII.A.2, the Madhavan-Park-Martinez system may track the "near short term behavior" of the user. Ex. 1122, 5:59-6:19, 7:48-53, 8:9-15, 10:10-25, 11:62-12:20. As I also explain above concerning claim 2, the

content service provider does this by linking user profile data from different user devices that was generated in the recent past, i.e., within a predetermined short period of time, such as 24 hours. *See* also ¶¶198-200, 229-230, 237 of my Declaration above. Stated another way, the content service provider 100 associates user devices that provided user data indicating "near short term" behavior, for example, by using data obtained from each of the user's devices (e.g., client machine 130, media devices 140), particularly temporal data (as taught by Martinez), to determine whether the collected user data indicates online events or actions of the user that has occurred within a particular time period (e.g., activity occurring within 24 hours). *See* e.g., Ex. 1124, ¶¶ [0006], [0037]-[0041], [0047], [0049]-[0054], [0057]-[0058], [0070], [0077]; Ex. 1122, 5:53-6:12, 11:62-12:20. Thus, the linking of the user's devices, via their respective device identifiers, is done using a "**criterion that one of the two or more Internet accessing electronic devices … accessed the Internet within a specified length of time after a time when another of the … devices … accessed the Internet**" as recited in claim 2.

248. Consider, for example, that the media device 140 of the Madhavan-Park-Martinez system ("**another of the two or more Internet-accessing electronic devices**") connects to the content service provider 100 and provides data (e.g., user data, temporal data, etc.) to the content service provider 100 along with a device identifier for the media device 140. Ex. 1122, 7:3-36, 9:9-40, 10:3-18, FIGs. 5-9.

Thereafter, the user may access the content service provider 100 using client machine ("**one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)**") and provide additional data to the content service provider along with the device identifier of the client machine 130. Ex. 1122, 7:60-8:9, 8:37-48, 10:65-11:6, FIGs. 5-9. As I explain above, the content service provider 100 may determine that the user data provided by client machine 130 and media device 140 are linked to a same user profile based on the respective device identifiers of the two devices. *See* e.g., XII.A.1.ii, XII.A.1.iv, XII.A.1.v, XII.A.1.vii, particularly ¶¶169, 196, 204, 221 of my Declaration above. Additionally, as I further explain above, the content service provider 100 of the Madhavan-Park-Martinez system may determine that the user data provided by client machine 130 and media device 140 satisfy a time-relation criterion indicating near short-term behavior of the user and store that user data to database 200. *See* e.g., XII.A.1.iv, XII.A.1.viii-ix, XII.A.2, particularly ¶¶198-200, 229-230, 235, 239 of my Declaration above. By determining that the user data provided by each of client machine 130 and media device 140 indicate or otherwise corresponds to near short-term behavior of the user (e.g., online activity performed by the user within the past 24 hours), the Madhavan-Park-Martinez system would thus have determined that the client machine 130 accessed the content service provider via the Internet within a time window (e.g., between now and 24 hours ago) when the media device 140 accessed the Internet.

249. In other words, by determining that the user's actions or events performed using the client machine 130 and media device 140 respectively constitute near short term behavior, the Madhavan-Park-Martinez system would have thus determined that the user's action performed via the client machine 130 occurred between two times when the user's action performed via the media device 140 occurred, i.e., both actions occurred within the time window used by the Madhavan-Park-Martinez system to differentiate near short term behavior from other behavior. Simply put, both devices accessed the Internet within a time window that is defined between two times: now and 24 hours earlier. Accordingly, in this example, the linking of the client machine 130 and media device 140, via their respective device identifiers, is done using a criterion that each of the media device 140 and the client machine 130 access the Internet between now and 24 hours earlier ("**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"**) since both devices are linked to the user's profile in view of providing user data that constitutes near short term behavior of the user.

250. As another example, please refer to Figure 2 that I added below. Consider that the user accesses the content service provider 100 provider of the Madhavan-Park-Martinez system using media device 140 at 9:00AM on Monday morning to watch a movie. If near short term behavior of the user is characterized

by the Madhavan-Park-Martinez system as activity that occurs between now and 24 hours earlier, then the user data obtained from media device 140 will be considered near short term behavior by the system for the next 24 hours (e.g., until roughly 9:00AM on Tuesday). Accordingly, if the user subsequently accesses the content service provider 100 using client machine 130 later that same day at 9:00PM to browse the Internet, the user data collected from the client machine 130 will also be considered near short term behavior for the following 24 hours (e.g., until roughly 9:00PM on Tuesday). In this example, the user data collected from both devices will be considered near short term behavior by the Madhavan-Park-Martinez system at least from 9:00PM Monday evening until 9:00AM Tuesday morning. During this period when the user data provided by both devices is considered near short term behavior, the Madhavan-Park-Martinez system would link the user data collected from both devices to the user's profile which indicates near short term behavior, thereby allowing the system to target the user's devices with advertisements reflecting the user's current interests. Because the user browsing the Internet using client machine 130 is considered near short term behavior while the user watching a movie using the media device 140 is also considered near short term behavior, therefore, the user's action of browsing the Internet must have occurred between two times when the user watched the movie, i.e., between now, t2 (9:00AM Tuesday) and 24 hours earlier, t1 (9:00AM Monday). In other words, both of the user's actions

must have occurred within a time window comprising the past 24 hours in order for both of the user's actions to have been considered near short term behavior, resulting in the system linking the devices and their corresponding user data to the user's profile.

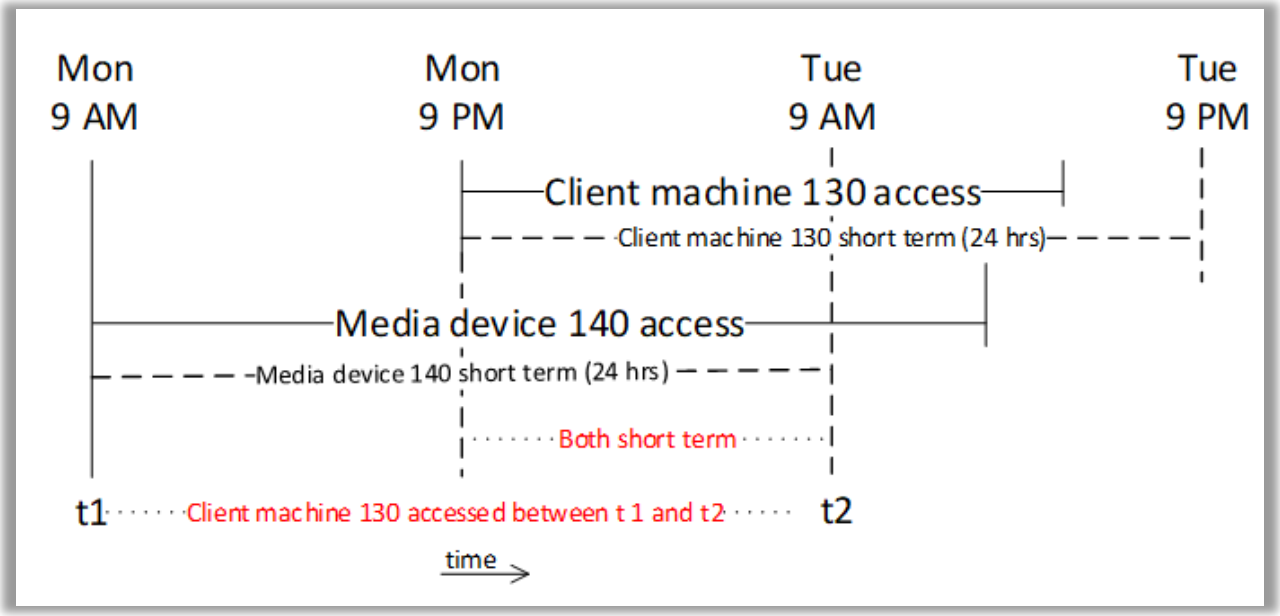


Figure 2: 2nd Example Figure for Ground A, Claim 3 discussion

251. The '015 Patent fails to provide written description support for the subject matter of claim 3. The specification fails to disclose a "criterion that one of the two or more Internet accessing electronic devices … accessed the Internet between two times when another one of the … devices … accessed the Internet," and original claim 3 of the '015 Patent is the only discussion of these limitations. Nonetheless, to the extent the "**predetermined time-relation criterion**" recited in claim 3 is determined to require that one device (second device) accessed the Internet

between two separate instances of another device (first device) having accessed the Internet, Madhavan-Park-Martinez still teach claim 3. A POSA would understand that in an environment where IP addresses (such as the IP address of Madhavan-Park-Martinez's router) are dynamically assigned to different devices (e.g., routers) associated with different users and given the time period (e.g., 24 hours) in which IP addresses may be leased using DHCP, using dynamically-assigned IP addresses as identification information to associate user device data with an appropriate user profile may result in incorrect associations between devices. For example, the content service provider may not be aware when or whether an IP address linked to devices associated with a particular user has been reassigned for use by devices associated with a different user. It is my opinion that a POSA would have been motivated and found it obvious, in addressing the dynamic nature of IP address assignments, to determine and use associations based on a first device (e.g., client machine 130) accessing the Internet between two separate instances of a second device (e.g., media device 140) having accessed the Internet (all using the same common IP address) because doing so provides greater assurance that the devices are being used by the same user, e.g., it provides more accurate associations of devices having accessed the Internet via a dynamically-assigned, common IP address.

252. Referring to the example discussed in §§ XII.A.1.vii and XII.A.2, after initially accessing the content service provider 100 of the Madhavan-Park-Martinez system via the Internet using media device 140 (**the first device; "another one of the two or more Internet-accessing electronic devices**"), the user may access the content service provider via the Internet using the client machine 130 (**the second device; "one of the two or more Internet-accessing electronic devices"**). Ex. 1122, 3:1-8, 5:53-67, 7:3-8:15, 8:37-48, 9:9-40, 10:1-25, 10:65-11:26, FIGS. 5-9; *see also* ¶¶220-224 and 240-241 of my Declaration above. As I explain above, at this point, the content service provider 100 of the Madhavan-Park-Martinez system would receive device identifiers from each of the user's devices (e.g., client machine 130 and media device 140) and would determine whether to use the respective device identifiers to link, via the user's profile, user data collected from the media device 140 and client machine 130 (respectively). *Id*. Whether or not it did so, in my opinion, a POSA may wish to make an (additional) association only after media device 140 again accesses content service provider 100 using the common IP address, this association indicating a higher likelihood that the devices are being used by the same user. Because an IP address of a router used by a user device to access the content service provider may, over time, be reassigned to a different router associated with a different user, the single use by devices of a common IP address may simply be the result of different users using an IP address that was first assigned

to one router and then, later, dynamically reassigned to another. Associating devices that use a common IP address in a repetitive or overlapping manner obviously and beneficially indicates the higher likelihood that the devices are in fact being used by the same user. Further, Madhavan teaches that the use of password information as identification information is optional and, as such, it would not impact the operation of the Madhavan-Park-Martinez system as discussed above. *See* e.g., Ex. 1122, 7:33-36 (describing identification information as including "the unique IP address and/or password information"), 7:60-67, 8:64-67).

253. Thus, to continue the example from [1G], when the user accesses the content service provider via the Internet using media device 140, for a second time, the content service provider 100 would recognize the repetitive use of the common IP address (access by 140, then access by 130, then access by 140), and create an association between the devices within the user profile, causing, e.g., the data from one to be used to direct advertisements to the other ("**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"**). Please refer to the Figure 3 that I added below to explain this scenario. In this example, because the IP address changed by the ISP from IP address "A" to IP address "B", the

association of the first device and the second device because of the common IP address "B" would not occur until the 1st device 140 accessed the Internet the second time.

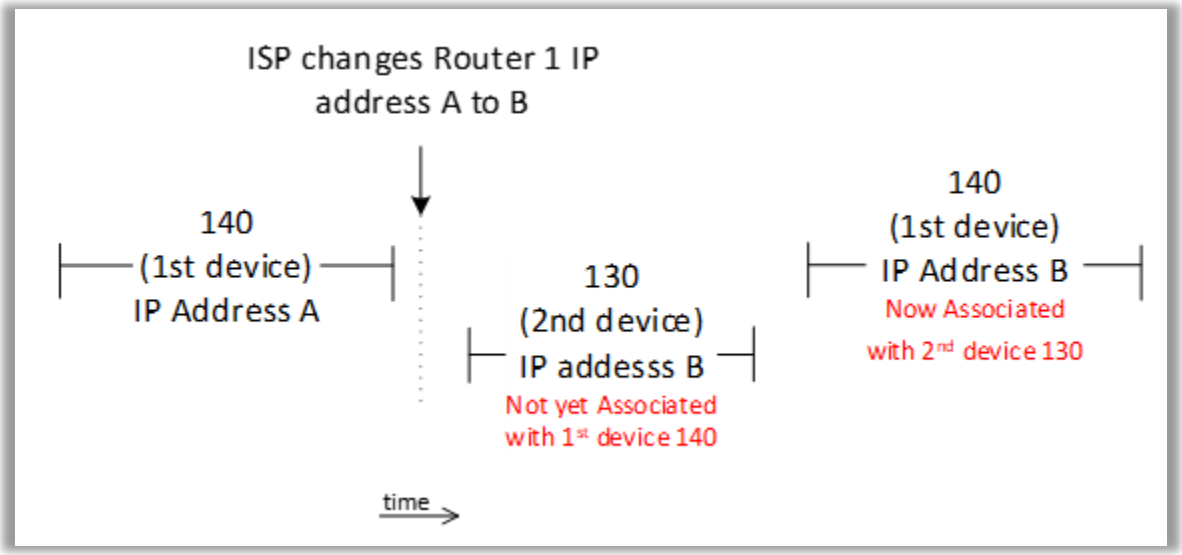


Figure 3: 3rd Example Figure for Ground A, Claim 3 discussion

This association, based on the criterion of claim 3, would beneficially enable the content service provider to confirm—using the devices' respective identification information—that the IP address used to link data from media device 140 with the user's profile was not reassigned to a different router associated with a different user when client machine 130 accessed the content service provider using the same IP address as media device 140.

254. The proposed combination thus teaches 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)."

255. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 4, which depends from claim 1. *See* my comments regarding elements [1A]-[1I] above. As I show above for elements [1E] and [1G]-[1I], the association of user devices (e.g., client machine 130 and media devices 140) within a user profile in Madhavan-Park-Martinez is based on device identifiers (identification information) of the respective user devices, which include the common, public IP address of the router used by the devices to access the Internet and port numbers for the user's devices. *See* e.g., XII.A.1.v and XII.A.1.vii-XII.A.1.ix; see also ¶¶204-205, 212, 220, 224, 229, 233 of my Declaration above. It is my further opinion that a POSA would have understood that this combination of the Madhavan-Park-Martinez router's public IP address used to connect the user's devices to the Internet and the port number associated with a device cannot be used, by itself, to identify any specific person and thus does not constitute "PII" as this term is used in the '015 Patent. Ex. 1101, 6:25-44 (defining PII and non-PII). The Madhavan-Park-Martinez 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.

256. The proposed combination thus teaches 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."

257. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 5, which depends from claim 1. *See* my comments regarding elements [1A]-[1I] above.

258. As I show above for element [1B], a user may access the content service provider of Madhavan's system via the Internet using client machine 130. Madhavan's client machine 130 corresponds to the claimed "**mobile device**." Client machine 130 may comprise a cellular telephone, personal digital assistant (PDA), or other wireless device, each of which show the claimed "**mobile device**." *See* Ex. 1122, 5:3-11 ("[E]ntity 100 may be accessed by a client program 132, such as a **browser** (e.g., the Internet Explorer™ browser[])…in the case of a **cellular phone, a PDA or other wireless device), that executes on**…**client machine 130**…and accesses…entity 100 via...network 120, such as,…the Internet."), 12:21-48. Accordingly, client machine 130 may comprise a smartphone that accesses the

Internet through a browser. *Id*. Additionally, client machine 130 accesses the content service provider 100 through network 120 via the Internet and/or other conventional networks such as a LAN or **cellular network**. Ex. 1122, 5:11-16. In my opinion, a POSA would have understood smartphones to be "**mobile devices**," connecting and disconnecting from networks as they move. *See* also Ex. 1124, ¶¶[0009]-[0011], [0036]-[0038], [0054] (describing electronic device as a "mobile phone").

259. Referring back to the example that I discuss above concerning element [1G], the user may connect, via the Internet, to the content service provider 100 of the Madhavan-Park-Martinez system using client machine 130 ("**second device of part (b) comprising a mobile device**"). Processing servers 104 of the content service provider 100 receive the device identifier for the client machine 130 along with corresponding user data. Madhavan teaches that this user data may include, among other types of data, events or activity performed by the user, demographic data about the user, geographic data detailing user access locations, behavioral data related to the user, and the like. *See* Ex. 1122, 3:1-47, 5:53-6:8, 7:7-14, 8:15. As I explain above, in view of this disclosure in Madhavan, it is my opinion that a POSA would understand that a user may access the content service provider 100 from various different geographic locations at various different times as he travels with his device. *See* e.g., ¶¶219 and 233 of my Declaration above. It is my further opinion that a POSA would recognize that because the user accesses the content service

provider 100—via the user's device—from various different geographic locations, the user may also access the content service provider via the Internet using different routers (or access points), which have been assigned different IP addresses.

260. As I discuss above, the content service provider 100 of Madhavan-Park-Martinez receives identification information (**device identifier**) from a user's device along with corresponding user data when the user connects to the content service provider. *See* § XII.A.1. Madhavan teaches that this identification information may include a unique IP address of the user's device and, further that this identification information may additionally (or alternatively) include password information. *See* Ex. 1122, 7:15-22, 7:33-36, 7:60-67, 8:42-48. Because the user may also access the content service provider 100 of the Madhavan-Park-Martinez system using password information, it is my opinion that a POSA would understand the user would have been able to access the content service provider 100 from any network access location (e.g., a different router), which would have used a different IP address than that of the Madhavan-Park-Martinez shared IP router. Further, because Madhavan teaches that the content service provider uses identification information—which may include a "unique IP address **and/or** password information" (emphasis added)—obtained from the user's device to link the device and corresponding user data to the user's profile, even if a user were to use the password information to access the content service provider, the content service

provider may still receive a device identifier (including the dynamically-assigned IP address of the router used to connect to the Internet) from the user's device and use this device identifier to link the collected user data to the user's profile. *See* Ex. 1122, 7:32-36, 7:48-53, 7:63-67, 8:42-48, 8:63-67. For example, to the extent that the shared IP router was assigned a new IP address, by using the password information to access the content service provider, the content service provider would still receive a device identifier (the newly assigned IP address of the router used to connect to the Internet) from the user's device and use this device identifier to link the collected user data to the user's profile. *Id*.

261. In view of Madhavan's disclosure that identification information received from a user's device may be used to link user data to the user's profile (*see* e.g., Ex. 1122, 5:37-6:19, 7:33-36, 7:48-53, 8:42-67, 10:21-25), in my opinion, a POSA would also understand that user data collected from a user's devices may additionally or alternatively be linked to the user's profile using password information, and would thus allow for the content service provider to associate user devices that had previously been associated because of a common IP address even when one of the user devices later accesses the network from a different location. *Id*. To the extent it is argued that Madhavan's "password information" comprises personally identifiable information (PII), neither claim 5 nor claim 1 require that all "associations" must be determined without the use of PII. *See* Ex. 1101, claims 1, 5.

Rather, claim 1 simply requires that "***at least some*** of the associations…is determined without out use of personally identifiable information." (Emphasis added). Accordingly, it is my opinion that the limitations of claim 1 (as well as claim 5) are satisfied even when some of the "multitude of associations" contained in the "electronic database" are associations that were determined using personally identifiable information.

262. Referring to the example that I discuss above for element [1G], after the user has connected to the content service provider 100 using client machine 130 and media device 140, the user's profile would have associated these devices and any corresponding user data using the respective device identifiers for the user's devices, which includes a common IP address of the router used by the devices to access the content service provider via the Internet, e.g., the IP address of the Madhavan-Park-Martinez shared IP router. *See* XII.A.1.vii; see also ¶¶220 and 221 of my Declaration above. In this example, the user may again access the content service provider 100 at a later time using one of the client machine 130 or media device 140, and may do so using password information. Since the user's profile has already been associated with the client machine 130 and media device 140, via device identifiers (IP address and port number), the content service provider 100 would have already stored a record of the association between these devices and their corresponding user data within database 200. *Id*. As a result, when the user

accesses the content service provider 100 (e.g., via Madhavan-Park-Martinez's shared IP router) using password information with one of the user's devices and provides additional user data, the content service provider 100 would link this additional user data with the user's profile based on the received password information. Moreover, as I explain above, the content service provider 100 may also receive a device identifier from the user's device even though the user accessed the content service provider using password information. *See* e.g., ¶260 of my Declaration above.

263. Additionally, even if the user accesses the content service provider 100 from a different network location (e.g., using a different router than the Madhavan-Park-Martinez's shared IP router), because the user's profile is also linked to the password information, the content service provider would link any additional user data provided by the user's device with the user's profile based on the received password information. In this instance, the user data collected from the user's device that is accessing the Internet from the different network location will be added to the database 200 (e.g., user tables 210, activities table 230) and may subsequently be used by the content service provider to retrieve and send advertisements to the user. *See* Ex. 1122, 5:48-6:19, 7:43-53, 8:9-33, 8:57-9:67, 10:41-64, 11:38-61, FIGs. 3, 5-10. As I discuss above, in this instance, although the user accessed the content service provider using password information, the content service provider may still

receive a device identifier (e.g., the IP address of the router in the different network location and port number) from the user's device and use this device identifier to link the collected user data to the user's profile. *See* Ex. 1122, 7:32-36, 7:48-53, 7:63-67, 8:42-48, 8:63-67. Moreover, even if the user were to access the content service provider 100 using password information with a different user device (e.g., not one of the user devices that previously connected to the content service provider), the Madhavan-Park-Martinez system would still be able to link the corresponding user data to the user's profile based on received identification information (e.g., device identifier and/or password information), thereby associating this different user device with the previous user devices that have accessed the content service provider and are linked to the user's profile. *See* e.g., Ex. 1122, 5:37-6:19, 7:33-36, 7:48-53, 8:42-67, 10:21-25.

264. Accordingly, in view of the above discussion, prior to (and/or after) the user connects to content service provider 100 via the IP address of the Madhavan-Park-Martinez shared IP router using client machine 130, the user may again access the content service provider using the client machine 130, but may do so by connecting to the content service provider via a different router having a different IP address ("**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**"). For example, the user may connect to the content service provide via the Internet using

a router in a different network location (e.g., public hotspot, office building, etc.). In this example, as I explain above, the content service provider 100 may collect user data associated with the online activity of client machine 130 while accessing the Internet using the different router, and may store that user data to database 200 using password information **and/or** a device identifier (IP address and port number) obtained from client machine 130, thus linking the stored data with the user's profile. Ex. 1122, 3:9-38, 5:53-59, 6:3-8, 8:1-8, 8:42-56, FIG. 6; *see* e.g., ¶¶260-263 of my Declaration.

265. Continuing the example discussed above, after the user connects to the content service provider 100 via client machine 130, the user may subsequently access the content service provider using the media device 140. *See* Ex. 1122, FIG. 6. As I explain above concerning element [1G], the content service provider 100 will retrieve classification categories related to the previously-stored actions of the user. As I note above, this previously-stored user data would include, for example, the events or actions performed by the user while using client machine 130 to access the Internet, including user data that was collected from the client machine when it was accessing the Internet from a different network location. The content service provider 100 of the Madhavan-Park-Martinez system will also send, to the media device 140, targeted advertisements related to this previously-stored user data ("**user profile information"**). *See* e.g., Ex. 1122, 9:30-46, 11:30-61, FIGs. 6, 10.

266. The proposed combination thus teaches 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)."

267. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 6, which depends from claim 5. *See* XII.A.5.

268. As I show above for claim 5, two of the user's devices (e.g., client machine 130 and media device 140) may be linked to each other, via respective device identifiers, in a user profile stored within the content service provider 100 (e.g., user tables 210 of database 200) of the Madhavan-Park-Martinez system. *See* e.g., ¶262 of my Declaration above. This linking of the two devices in the user profile (the "**first association**") is based on the respective device identifiers (e.g., a common IP address used to access the internet and a port number) provided by the devices when connecting to the content service provider. *See* XII.A.1.vii, XII.A.5..

269. As I further explain above for claim 5, after the content service provider 100 associates, in the user's profile, the client machine 130 and media device 140 via their respective identifiers, one of the user's devices—in particular the user's client machine 130 (**mobile device**)—may access the content service provider 100 via the Internet from a different network location, e.g., accessing the content service provider 100 via the Internet using a router that differs from the Madhavan-Park-

Martinez shared IP router. *See* XII.A.5. As I explain above, the content service provider 100 of the Madhavan-Park-Martinez system may collect user data ("**the user profile information of part (b)**") associated with the online activity of the client machine 130, which is accessing the Internet using a router that differs from Madhavan-Park-Martinez's shared IP router, and may store that user data to database 200 using password information and/or a device identifier (IP address and port number) obtained from the user device, thereby linking the stored data with the user's profile. Ex. 1122, 3:9-38, 5:53-59, 6:3-8, 8:1-8, 8:42-56, FIG. 6; XII.A.5. The content service provider 100 may use previously-stored user data to target the advertisements to any of the user's devices. *See* Ex. 1122, 4:57-5:2, 8:16-33, 8:42-67, 9:36-67, 10:41-67, 11:38-61, FIGs. 5-9.

270. For example, advertising servers 105 of the content service provider 100 access respective tables within advertising storage module 108 to: (i) retrieve advertisements related to the previously-stored user data that was collected when the client machine 130 accessed the Internet from a different network location, and (ii) target the retrieved advertisements to any of the user's devices such as media device 140, when the media device 140 is later used by the user to access the content service provider 100 from the common IP address (i.e., using the Madhavan-Park-Martinez shared IP router to access the content service provider via the Internet). As I discuss above, in this example, "**the user profile information of part (b)**" corresponds to

the user data that was obtained when the client machine 130 accessed the content service provider from the different network location, e.g., accessed the content service provider 100 via the Internet using a router that differs from the Madhavan-Park-Martinez shared IP router. *See* XII.A.5. Additionally, as I further discuss above, "**the user profile information of part (b)**" (*i.e.*, the data obtained when client machine 130 accessed the content service provider from the different location) **"was collected after the computer system has determined the first association"** as required by claim 6 because the "first association" is made when client machine 130 and media device 140 access the content service provider 100 from the common IP address, which occurs before client machine 130 is used in the different network location. Ex. 1122, 5:53-6:8, 8:42-67, 9:9-67; *see* XII.A.1.vii, XII.A.5; see also ¶¶220-224, 260-265 of my Declaration above.

271. As I show above for element [1E], the "first association" between the user's devices (e.g., client machine 130 and media devices 140) in Madhavan-Park-Martinez is based on device identifiers for the respective user devices, which include the common, public IP address of the router (e.g., the Madhavan-Park-Martinez shared) used by the devices to access the Internet and port numbers for the user's devices. *See* XII.A.1.v; see also, ¶¶204-205, 212, 220, 224, 229, 233 of my Declaration above. It is my opinion that the Madhavan-Park-Martinez 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 6. *See* §§ XII.A.1.v, XII.A.4.

272. The proposed combination thus teaches 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."

273. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 7, which depends from claim 5. *See* my comments regarding claim 5 above.

274. I note that dependent claim 7 recites the same language as dependent claim 3. The proposed combination, therefore, teaches and renders obvious the requirements of claim 7 at least for the same reasons as claim 3. Section XII.A.3; Ex. 1122, 3:1-8, 3:52-4:13, 5:53-6:19, 7:2-8:15, 9:4-67, 10:1-25, 10:67-11:26, FIGs. 5-9. The dependency of claim 7 from claim 5 does not impact how claim 7 is met as described above for dependent claim 3.

275. The proposed combination thus teaches and renders obvious claim 7.

8. Dependent Claim 8: "The computer system of claim 7 wherein: (A) the first device of part (b) is a television set-top box; (B) the second device of part (b) is an online user interface device; (C) the user profile information of part (b) was collected after the computer system has determined the first association; and "(D) the first association of part (b) is one of the associations identified in part (a)(iii)."

276. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 8, which depends from claim 7. *See* XII.A.1.7.

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

277. In my opinion the combination of Madhavan, Park, and Martinez teaches and renders obvious element [8A].

278. Madhavan teaches that its media device 140 includes "a network-enabled television set 142," such as an Internet TV set, and "a digital video recording device [DVR] 144." Ex. 1122, 5:28-32. Madhavan also teaches that the user can perform various activities while using the network-enabled television set 142 and/or the digital video recording device 144, such as, for example, watching a television program broadcast via the Internet on the television set 142, or watching a program previously recorded on the digital video recording device 144. Ex. 1122, 1:55-60, 5:18-36, 7:7-14, 9:9-18.

279. I note that the '015 Patent specifically defines a "[s]et-top box" (STB) as "a device that connects a television and a signal source" and, further, that this

signal source can be a "wireless network connection" or any "suitable signal source." Ex. 1101, 1:49-2:7. The '015 Patent also states that the set-top box "might be implemented, for example, as a circuit board, integrated circuit, set of integrated circuits, or software that is physically integrated with another 'box,' such as the television." *Id*. Accordingly, as I show above, the media device 140 of the Madhavan-Park-Martinez system ("**first device of part (b)**") includes a "**television set-top box**" because the media device 140 enables the user to view a television broadcast on the television set 142 via the Internet. Ex. 1122, 1:55-60, 5:18-36, 7:7-14, 9:9-18.

280. The proposed combination thus teaches and render obvious element [8A].

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

281. In my opinion the combination of Madhavan, Park, and Martinez teaches and renders obvious element [8B].

282. 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. 1101, 2:52-56. As shown above in §§ XII.A.1.i-ii, the client machine 130 of the Madhavan-Park-Martinez system may be "a cellular phone, a PDA or other wireless device" that is used to access the content service provider 100 via the Internet. Ex. 1122, 5:3-17, 7:60-63, 8:42-44.

The client machine in the Madhavan-Park-Martinez system thus satisfies the '015 Patent's definition of the claimed "**online user interface device**." *Id.*; *see* e.g., XII.A.1.i-ii.

283. The proposed combination thus teaches and render obvious element [8B].

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

284. In my opinion the combination of Madhavan, Park, and Martinez teaches and renders obvious element [8C] at least for the same reasons as dependent claim 6. *See* XII.A.6.

285. As I show above for claim 5, two devices in Madhavan-Park-Martinez may be initially linked to each other in a user profile (the "**first association**") based on identification information such as a common IP address and a port number. *See* §§ XII.A.5-6. As I also explain above for claims 5 and 6, after this association is made, one of the devices such as client machine 130 (the user's **mobile device**) may access the content service provider from a different location and the data collected from that activity will be added to the user's profile and used to target advertising to the user's media device 140, when media device 140 is later used to access the content service provider from the common IP address again. *See* §§ XII.A.5-6. As I explain above concerning claim 6, the content service provider 100 of the

Madhavan-Park-Martinez system may collect user data ("**the user profile information of part (b)**") associated with the online activity of the client machine 130, which is accessing the Internet from the different network location, e.g., using a router that differs from Madhavan-Park-Martinez's shared IP router. Additionally, as I further discuss above, "**the user profile information of part (b)**" (*i.e.*, the data obtained when client machine 130 accessed the content service provider from the different location) **"was collected after the computer system has determined the first association"** because the "**first association**" was made when client machine 130 and media device 140 accessed the content service provider 100 from the common IP address, which occurred before client machine 130 was used in the different network location. *See* XII.A.1.ii-iv, XII.A.5-6; *see also* Ex. 1122, 1:64-2:3, 3:55-63, 5:53-66, 7:60-8:23, 9:36-46, 11:7-26, Abstract.

286. The proposed combination thus teaches and render obvious element [8C].

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

287. In my opinion the combination of Madhavan, Park, and Martinez teaches and renders obvious element [8D].

288. As I show above for element [1E] and claim 6, the "first association" between the user's devices (e.g., client machine 130 and media devices 140) in Madhavan-Park-Martinez is based on device identifiers for the respective user

devices, which include the common, public IP address of the router (e.g., the Madhavan-Park-Martinez shared) used by the devices to access the Internet and port numbers for the user's devices. *See* e.g., XII.A.1.v and XII.A.6. It is my opinion that the Madhavan-Park-Martinez 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 elements [8D]. *See* XII.A.1.v and XII.A.6.

289. The proposed combination thus teaches and render obvious element [8D].

9. 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."

290. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 9, which depends from claim 1. *See* XII.A.1.

291. I note that dependent claim 9 recites the same language as dependent claim 6. The proposed combination, therefore, teaches and renders obvious the requirements of claim 9 at least for the same reasons as claim 6. *See* XII.A.6; *see also* Ex. 1122, 1:64-2:3, 3:55-63, 5:53-66, 7:60-8:23, 9:36-46, 11:7-26, Abstract.

292. As I show above for claim 6, two devices in Madhavan-Park-Martinez may be initially linked to each other in a user profile (the "**first association**") based

on identification information such as a common IP address and a port number. *See* XII.A.6. As I also explain above for 6, after such an association is made, one of the devices such as client machine 130 (the user's mobile device) may access the content service provider a second time and the data collected from that activity will be added to the user's profile and used to target advertising to the user's media device 140, when media device 140 is later used to access the content service provider again. *See* XII.A.6; *see also* ¶¶220-224, 260-265 of my Declaration above. The content service provider 100 of the Madhavan-Park-Martinez system may collect user data ("**the user profile information of part (b)**") associated with the online activity of the client machine 130, which may access the Internet from a different network location as I explain above concerning claim 6, or the client machine 130 may access the content service provider using the shared IP router. Additionally, as I further discuss above, "**the user profile information of part (b)**" (*i.e.*, the data obtained from client machine 130) **"was collected after the computer system has determined the first association"** because the "**first association**" was made when client machine 130 and media device 140 accessed the content service provider 100 from the common IP address, which occurred before client machine 130 was used to access the content service provider a second time. *See* XII.A.1.ii-iv and XII.A.5-6; *see also* Ex. 1122, 1:64-2:3, 3:55-63, 5:53-66, 7:60-8:23, 9:36-46, 11:7-26, Abstract.

293. The proposed combination thus teaches and renders obvious claim 9.

10. 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."

294. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 9, which depends from claim 1. *See* XII.A.1.

295. Madhavan discloses "a system and method to facilitate targeting of advertisements based on mutual information sharing between devices over a network, such as the Internet." Ex. 1122, 1:7-11, 1:36-2:3, 3:52-4:13. As I show above for elements [1B]-[1D] and [1G], the content service provider 100 of the Madhavan-Park-Martinez system selects and sends targeted advertisements to one or more of the user's devices (e.g., client machine 130, media device 140) based on previously-stored user data (e.g., events or actions performed by the user while accessing the Internet) collected from the user's devices. *See* Ex. 1122, 4:57-65, 7:43-55, 8:9-15, 8:57-67, 9:36-67. More specifically, as I also show above for element [1G], the Madhavan-Park-Martinez the content service provider 100 determines and retrieves classification categories related to previously-stored user data that is linked to a user's profile based on device identifiers of the user's devices that provided the user data. Ex. 1122, 7:43-53, 8:9-15, 8:57-67, 9:36-40, 10:15-25,

10:41-46, 11:7-22, 11:38-40; *see* XII.A.1.vii. Advertising servers 105 of the content service provider use the retrieved classification categories to select an advertisement, from multiple advertisements stored in advertising storage module 108 of the content service provider, to send to the user's device(s) ("**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. 1122, 4:57-65; 7:43-55, 8:9-15, 8:57-67, 9:36-67.

296. Referring to the example that I discuss above for element [1G], the user data ("**user profile information"**) that the content service provider 100 collects from client machine 130 is "**associated with the device identifier of the second device**" because this user data is stored to database 200 of the content service provider (e.g., activity tables 230) and linked to the user's profile based on the device identifier (IP address and port number) of the client machine 130 ("**second device"**). *See* e.g., Ex. 1122, 5:48-66, 7:43-53, 8:9-15, 11:3-22, FIGs. 5-6, 8; *see also* XII.A.1.vii. As I explain above in §§ XII.A.1-3, XII.A.5-6, XII.A.9, when the media device 140 accesses the content service provider, the previously-stored user data maintained in database 200—which includes user data collected from client machine 130—is used to select an advertisement to send to the media device 140 ("**first device**"). *See* e.g., Ex. 1122, 5:48-66, 9:18-67, 10:35-64, 11:30-61.

297. Madhavan also contemplates that a user may connect to the content service provider 100 via the Internet using multiple user devices, e.g., more than one media device 140, at the same time. For example, Madhavan describes that the user may connect to the content service provider 100 using both the network-enabled television set and the digital video recording device. Ex. 1122, 1:46-54 ("the user connects to **one or more media devices**, such as, for example, a network-enabled television set **and**/or a digital video recording device, and the **media devices** are coupled to the entity via the network"), 3:53-63, 7:22-26 ("both the television set 142 and the digital video recording device 144 may be coupled to the network 120 and a network interface module 146"), 9:9-13 ("the user 110 initiates a connection to the network 120 via one or more media devices 140 coupled to the user 110, such as the network-enabled television set 142 and/or the digital video recording device 144"), 9:25-29, 9:58-68, 10:3-6 ("at processing block 610, user identification information is received **from at least one media device 140** coupled to a user 110"), 11:55-61, FIGs. 7, 10. Madhavan also describes that the content service provider 100 sends retrieved advertisements to be displayed on one or more user devices (e.g., one or more media devices 140).

298. It is my opinion that a POSA, exercising ordinary creativity, would have been motivated and found it obvious to enhance the targeted advertising functionality of the Madhavan-Park-Martinez system by enabling the user to use

both the client machine 130 and the media device 140 to access the content service provider 100 at the same time and, further, to enable the content service provider 100 to send targeted advertisements to each of the user's devices (e.g., devices connected to the content service provider 100). In my opinion, a POSA would have recognized that an advertisement selected by the content service provider 100, which is determined based on previously-stored user data collected from the user's multiple devices (including client machine 130 and media device 140), would have been relevant to the user regardless of which user device or user devices is being used to access the content service provider. Further, in my opinion, a POSA would have understood that increasing the likelihood of the user viewing a targeted advertisement by sending advertisements to multiple user devices (e.g., to each user device connected to the content service provider) would be highly desirable to an advertising entity and/or the content service provider. *See* e.g., Ex. 1122, 1:21-32. Similarly, that POSA would have recognized that, in many instances, the user may choose to operate both the client machine and media device at the same time, and would desire to connect both device to the content service provider. To provide a particular example, while the user is connected to the content service provider and watching a basketball game via media device 140, the user may also wish to connect to browse the Internet to check the scores of other sports games. In this instance, the content service provider would desire to collect user data associated with use of the

client device so as to target advertisements to the user on both devices, either now or in the future.

299. Additionally, a POSA would have had the skills and knowledge to connect the client machine 130 and media device 140 to the content service provider 100 at the same time and to send advertisements to both devices with a reasonable expectation of success. First, Madhavan 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. 1122, 12:63-13:1, 2:55-61. Second, as I explain above (*see* e.g., ¶297 of my Declaration), the Madhavan-Park-Martinez system already teaches connecting and sending targeted advertisements to multiple media devices 140. *See* e.g., Ex. 1122, 1:46-54, 7:22-26, 9:9-13, 9:25-29, 9:58-68, 10:3-6, 11:55-61, FIGs. 7, 10. Madhavan also describes that the content service provider 100 sends retrieved advertisements to be displayed on one or more user devices (e.g., one or more media devices 140. *Id*. Thus, a POSA would have recognized that the content service provider would have been capable and suitable to connect and send advertisements to each of devices 130 and 140. Third, to the extent required, any such changes to achieve this functionality would be primarily limited to software modifications, which would have been well within the skill set of a POSA.

300. Madhavan-Park-Martinez's modified system would have "**caus[ed] the selected advertisement to be directed to the second device**" at least because, when both the media device 140 and client machine 130 access the content service provider via the Internet, the previously stored user data—which is obtained from client machine 130 (**second device**)—is used to automatically select and send an advertisement to the media device 140 (**first device**), as I show above for element [1G]. *See* § XII.A.1.vii. And, because the Madhavan's modified system would be capable of connecting and sending advertisements to multiple user devices, in this example, the content service provider would likewise send the selected advertisement to the client machine 130 (**second device**). *See* e.g., Ex. 1122, 3:53-63, 7:60-8:33, 10:30-64, 11:55-61, FIG. 8.

301. In my opinion, a POSA would have found that adapting the Madhavan-Park-Martinez system to enable the content service provider 100 to connect with and send advertisements to each of client machine 130 and media device 140 would merely be the simple application of a known technique to improve a similar method in the same way. *See* § IV, *supra* (exemplary obvious rationale (C) above).

302. The known techniques include Madhavan's technique for sending advertisements to a user's multiple devices at the same time. *See* e.g., Ex. 1122, 1:46-54, 7:22-26, 9:9-13, 9:25-29, 9:58-68, 10:3-6, 11:55-61. The known/similar method includes the Madhavan-Park-Martinez's targeting of advertisements to a

user's devices connected to its content service provider 100 based on profile information collected from the user's devices, wherein the client machine 130 and media device 140 both connect to the content service provider. *See* e.g., Ex. 1122. 1:7-11, 1:46-54, 3:52-4:13, 8:16-34, 9:36-67, 10:41-55, 11:38-61, FIGs. 5-6, 8, 10, Abstract. The improvements would predictably result in introducing into the Madhavan-Park-Martinez system the ability to target advertisements to multiple user devices connected to the content service provider 100, more specifically, displaying advertisements at multiple user devices, including each of client machine 130 and media device 140, that are accessing the content service provider via the Internet.

303. The proposed combination thus teaches and renders obvious claim 10.

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."

304. In my opinion, the combination of Madhavan, Park, and Martinez teaches and renders obvious claim 13, which depends from claim 1. *See* § XII.A.1.

305. As I describe above for element [1E], the device identifiers for the respective user devices (e.g., client machine 130 and media devices 140), which are used to associate the two devices via a common user profile, include the common, public IP address of the router (e.g., the Madhavan-Park-Martinez shared) used by the devices to access the Internet and port numbers for the user's devices. *See* e.g.,

§§ XII.A.1.vi, XII.A.1.viii. It is my opinion that the device identifiers for client machine 130 and media devices 140, in the Madhavan-Park-Martinez system, would not have identified any particular person and thus would not have included any PII as that term is used in the '015 Patent, 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; *see also* Ex. 1101, 6:25-44 (defining PII and non-PII).

306. The proposed combination thus teaches and renders obvious claim 13.

12. Independent Claims 14 and Dependent Claims 15-23 and 26

307. 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."

308. Madhavan-Park-Martinez's computer memory (e.g., memory 1204) within the one or more servers (e.g., processing servers 104, advertising servicers, 105, etc.) of the content service provider 100 storing computer programs and software teaches 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. 1122, 4:43-65, 12:21-62, FIGs. 2, 12. 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 Madhavan 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). *Id.*

309. The proposed combination of Madhavan, Park and Martinez teaches and renders obvious independent claim 14 and dependent claims 15-23, and 26 for the same reasons as independent claim 1 and dependent claims 2-10 and 13. *See* my comments regarding elements [1A]-[1I] and claims 2-10 and 13 above.

B. Ground B: Claims 1-10, 13-23, and 26 Are Obvious Over Madhavan in View of Park, Martinez, and Kato

310. As I show and explain in further detail in the subsections below, the combination of Madhavan, Park, Martinez, and Kato renders obvious both using user device identifiers, such as a MAC address, to associate mobile computing devices that access the Internet using a common IP address and automatically causing cross device action (e.g., providing targeted advertisements) to those computing devices

based on the mutual sharing of information indicating user actions and online activity on the computing devices. For example, one such cross device action includes sending a targeted advertisement to one mobile computing device based on profile information (e.g., records of user activity) from an associated second mobile computing device. A POSA would have found it obvious to combine Madhavan, Park, Martinez, Kato, and this combination teaches independent claims 1 and 14 as well as their dependent claims 2-10, 13, 15-23, and 26.

1. Claim 1: Elements [1B]-[1C] and [1G]

311. In my opinion, the combination of Madhavan, Park, Martinez, and Kato teaches and renders obvious elements [1B]-[1C] and [1G]. Further, to the extent it is argued that the use of a common IP address and a port number in Madhavan-Park-Martinez does not teach the claimed "**device identifier**" as recited in elements [1B], [1C], and [1G] of claim 1, Madhavan-Park-Martinez-Kato teaches these limitations. As I discuss in more detail below, it is my opinion that a POSA would have found it obvious to incorporate Kato's teachings of using a MAC address to uniquely identity a user device within the Madhavan-Park-Martinez system.

312. Kato generally relates to methods for identifying a user terminal which communicated through networks having different address systems, for example, to identify a user terminal of a plurality of user terminals that may communicate on the Internet using a common IP address. Ex. 1125, ¶¶ [0002], [0004]-[0005], Abstract.

More specifically, Kato recognized that content providers, such as Madhavan's content service provider 100, use IP addresses to identify which device sent information over a network based on an IP address associated with the sending device. Ex. 1125, ¶ [0004]. Kato also recognized that this effort becomes more difficult when multiple devices may use a common IP address:

> [A] set of laws provides for limitations on liability relating to compensation for damages, which should be borne by specific telecommunication service providers including so-called providers, server managers, etc. when an infringement of right is caused by circulation of information via specific telecommunication, and provides for a right to make a claim for the disclosure of sender information. This allows a person who claims to have suffered from infringement of his/her right due to circulation of information via specific telecommunication to claim the disclosure of sender information against relevant providers. Therefore, in order to cope with such sender information disclosure requests, it is desirable that each provider can identify the sender based on information

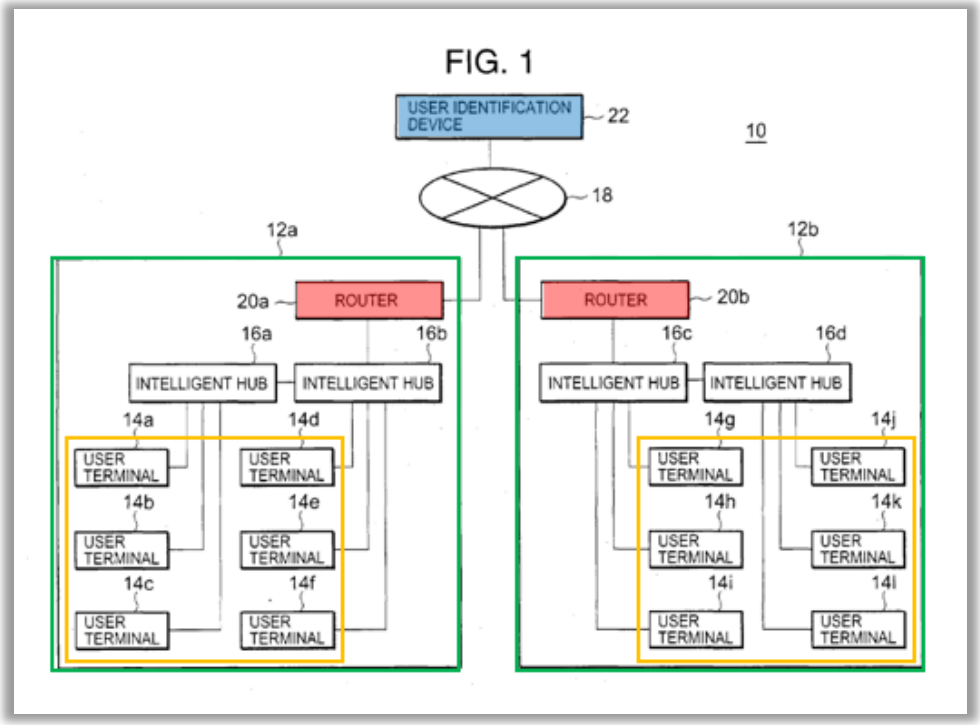
(e.g. IP address of the sender) supplied from the claiming person.

However, in the case where Internet access services-are provided to each apartment of an apartment house such as "Internet apartment house", a plurality of users communicate on the Internet by use of the same IP address. **In such a case, it is difficult to identify a particular user based on a source IP address and therefore the provider cannot respond quickly to the sender information disclosure request**.

Ex. 1125, ¶¶ [0004]-[0005] (emphasis added). To address this problem, Kato teaches a method for identifying a particular terminal device based on associations between terminal identification information (e.g., MAC address), a private IP address, and a common IP address assigned to user terminals. Ex. 1125, ¶¶ [0006], [0009]-[0011], [0031]-[0036], [0038]-[0046], [0049]-[0057].

313. As I show below in Figure 1 from Kato, Kato describes an identification system 10 that includes: intelligent hubs (16 *a*-16 *d*), each of which is placed in a Local Area Network (LAN) 12 *a* or 12 *b* (**green**) and provided with a plurality of physical ports to which a plurality of user terminals 14 *a*-14 *l* (**orange**) that are respectively connected to routers 20 *a* and 20 *b* (**red**) that are used to connect the

LANs 12 *a* and 12 *b* to the Internet 18; and an identification device 22 (**blue**) for identifying a user terminal—via the terminal's MAC address—that communicated on the Internet 18. Ex. 1125, ¶¶ [0030]-[0031], FIG. 1.



Ex. 1125, FIG. 1 (annotated).

314. Kato's system collects and maintains information (e.g., "first communication information") indicating a correspondence between the physical ports of intelligent hub 16 and terminal identification information identifying a user terminal (e.g., user terminals 14 *a*-14 *l*) connected to the port. Ex. 1125, ¶¶ [0008], [0013], [0016]-[0020], [0031], [0040]-[0041], [0049]. Kato describes that this information is collected and maintained by the intelligent hub (e.g. hubs 16 *a*-16 *d*).

Id. Kato describes that the "terminal identification information" is a MAC address associated with a particular user terminal. Ex. 1125, ¶¶ [0009]-[0011], [0031], [0033]-[0034], [0050]-[0051], Abstract. Additionally, Kato's system collects and maintains information (e.g., "second communication information") indicating a relationship between a MAC address and a private IP address assigned thereto." Ex. 1125, ¶¶ [0008], [0010]-[0011], [0013], [0017]-[0020], [0033]-[0034], [0040], [0050]. More specifically, Kato describes that each of router (e.g., router 20 *a*, 20 *b*) stores information indicating a relationship between the terminal identification information (MAC address) of each user terminals and each private IP address assigned to each terminal identification information, and each router sends to the identification device 22 the "second communication information" indicating a correspondence between a MAC address and the private IP address assigned thereto. Ex. 1125, ¶ [0033]. Further, Kato's router includes "an address converter" that performs network address translation—to convert between private IP addresses and global/public IP address for data packets relayed between a LAN and the Internet—and stores "third communication information" indicating a relationship between the private IP address and the global IP address. Ex. 1125, ¶¶ [0008], [0013], [0017]-[0020], [0035]-[0038]. More specifically, Kato describes that this "third communication information" is sent to the identification device 22 when the router has released a global IP address and, if the router has IP masquerade function, the

router may store a private IP address assigned to each user terminal together with a global IP address and a port number assigned to the private IP address such that the third communication information indicates "a correspondence of the private IP address, the global IP address and the port number being associated with one another." Ex. 1125, ¶ [0036].

315. The stored first through third communication information is sent to Kato's user identification device 22, which uses this information to determine the MAC address of a terminal, associated with a particular user, that communicated via the Internet using a designated global IP address. *See* e.g., Ex. 1125, ¶¶ [0031]-[0038], [0040]-[0041]. To identify a particular terminal device and thus the user of that device, Kato's identification device 22 "detects the physical port of an intelligent hub (16 *a*-16 *d*) to which a user terminal that has communicated on the Internet 18 is connected, based on the first communication information received from the intelligent hub (16 *a*-16 *d*) and the second and third communication information received from the router (20 *a*, 20 *b*)." Ex. 1125, ¶¶ [0038], [0049]-[0053], [0064], [0070], FIG. 4. Accordingly, as I explain above, Kato's system uses a MAC address to identify a particular user terminal, and also tracks the global IP address that was used by the terminal to access the Internet. Ex. 1125, ¶¶ [0017]-[0020], [0031]-[0038], [0040]-[0041], [0049]-[0053], Abstract.

316. As I discuss above, Kato teaches that its terminal devices (e.g., user terminals 14 *a*-14 *l*) each include terminal identification information (e.g., device identifier), which comprises a media access control (MAC) address. Ex. 1125, ¶¶ [0009]-[0011], [0031], [0033]-[0034], [0050]-[0051], Abstract. Although not explicit in Madhavan, given the similarity between Madhavan's user devices (e.g., client machine 130, media device 140) and Kato's user terminals, in my opinion, a POSA would have understood that Madhavan's devices, and thus the devices in the Madhavan-Park-Martinez system, would have had equivalent device identifiers like those in Kato (e.g., MAC addresses). For example, Madhavan explains that its user devices can access the content service provider 100 via the Internet, wireless networks, and other known networks, either directly or via network interface. *See* e.g., Ex. 1122, 5:3-17, 5:28-36, 12:21-48, FIGs. 1, 12; *see also* Ex. 1123, ¶¶ [0034], [0040], [0057], [0059]-[0060], [0064]. Further, as seen below, a POSA also would have understood that user devices using wireless networks and WiFi technology, such as Madhavan's user devices, 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. 1141, 41 (annotated), 8 ("WM" being the abbreviation for "wireless medium"). Furthermore, in my opinion, a POSA would understand that even if Madhavan's user devices used ethernet (rather than or in addition to using WiFi technology) to connect the Internet Madhavan's user devices would still have included device identifiers, specifically MAC addresses. In my opinoin, a POSA would understand that devices can be connected using wireless and/or ethernet connections and, regardless, would have a MAC address, that is used to identify the device (e.g., the network interface of the device) on the network. Thus, both ethernet devices and wireless devices would have a MAC address. So, as an example, a personal computing device with ethernet and WiFi would have 2 MAC addresses because both ethernet devices and wireless devices have MAC addresses.

317. I also note that the '015 Patent specifically identifies MAC addresses as one example of a device identifier. Ex. 1101, 15:33-37 ("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."), 16:2-3 ("If a unique identifier is used (such as a complete MAC address or a complete device serial number) …"). The use of a MAC address as a device identifier was well known. *See* e.g., Ex. 1123, ¶ [0034]; Ex. 1115, ¶¶ [0025], [0035], [0041]; Ex. 1157, ¶¶ [0041], [0052]. For example, Park teaches that the MAC address can be used to

identify a network interface (and thus a device). Ex. 1123, ¶ [0034]. Thus, the device identifiers (e.g., common IP address and MAC addresses) of the user devices in the Madhavan-Park-Martinez system teach the claimed "**device identifiers**."

318. As I explain further below, it is also my opinion that a POSA would have found it obvious to utilize the relationship between the public IP address, private IP address, port information, and MAC address of a user's device (e.g., client machine 130, media device 140), as taught by Kato, to identify a user device and corresponding user data in the Madhavan-Park-Martinez system, including identifying a user's devices that may access the Internet using a common IP address (e.g., using Madhavan-Park-Martinez's shared IP router).

319. The Madhavan-Park-Martinez-Kato system distinguishes a user's various devices (e.g., client machine 130, media devices 140) using identification information ("**device identifiers"**) provided by each user device when it connects to the content service provider 100. *See* Ex. 1122, 7:33-36, 7:60-67, 8:41-48, 10:3-9, 10:33-40. In particular, the Madhavan-Park-Martinez-Kato system identifies and/or distinguishes between a user's various devices based on a relationship between the device's MAC address and the global IP address used by the device to access the content service provider via the Internet, for example, the IP address of the shared IP router. Ex. 1125, ¶¶ [0017]-[0020], [0033]-[0038], [0040]-[0047], [0049]-[0053]. As an example, instead of the Madhavan-Park-Martinez system using the

combination of the public IP address of the shared IP router and device port number as a device identifier (e.g., "identification information") for a user's device that is used to associate user data collected from the user device with the user's profile, the resulting Madhavan-Park-Martinez-Kato system identifies the user's profile based on the relationship between the device's MAC address and the common/global IP address used by that device to access the Internet, as well as their port numbers. Alternatively, in addition to using the combination of the router's IP address and device port number as a device identifier, the Madhavan-Park-Martinez-Kato system may also identify the user's profile based on the relationship between the device's MAC address and the common/global IP address, as taught by Kato.

320. In my opinion, a POSA would have been motivated, for example, to incorporate Kato's teaching of using an associated MAC address as a device identifier in the Madhavan-Park-Martinez system to accurately identify a user's device, and corresponding user data, that shares a common IP address with other devices. *See* e.g., Ex. 1125, ¶¶ [0005]-[0006], [0030]-[0047]. A POSA would have recognized that, by identifying user devices via a MAC address as taught by Kato, the Madhavan-Park-Martinez system would have been able to quickly correlate user data collected from a user's device with a particular user profile by leveraging a determined relationship between a MAC address of the user device and a common/global IP address used by the device to access the content service provider

100 via the Internet, as well as device port number. *Id.* A POSA would have recognized that the use of MAC address as a device identifier would provide additional flexibility for correlating a user's profile to user data obtained from a particular device. Because a MAC address is a unique hardware identification number that is assigned to a network interface card of a device, this identification number may be used to identify the device regardless of network and/or geographic location. A POSA would have also recognized that such a static identifier would be a valuable means of identifying a particular device beyond the use of a port number assigned to the device, which may change over time.

321. Further, by associating the MAC address of a user device with the user's profile, for example, by using the device's MAC address as identification information, the Madhavan-Park-Martinez-Kato system would more readily associate user data collected from the user's device with the user's profile across different online sessions. *See* e.g., Ex. 1122, 3:1-8 (discussing user engaging in multiple online session), 7:15-19. As I discuss above, a user may attempt to access the content service provider 100 from various different network locations, and the content service provider may use, as a device identifier, password information provided by the user to identify a user's profile. *See* e.g., §§ XII.A.5-6, including ¶¶260-264 and 269 of my Declaration above. However, because a MAC address is used to identify and ensure the physical address of the user's device and thus does

not change with time or the device's environment/location, in my opinion, a POSA would recognize that using a device's MAC address as a form of identification information would be beneficial. For example, similar to Madhavan's use of password information to associate a device with a particular user profile (Ex. 1122, 7:33-36, 8:63-67), using a MAC address as a device identifier, the content service provider would be able to identify and associate the user device with the user's profile even when the user attempts to access the entity from different network locations or using different IP addresses, or in the event that an IP address of the shared router is changed over time. Moreover, as compared to MAC addresses, a POSA would recognize that the use of password as identification information may provide some disadvantages—e.g., passwords can be forgotten which may be time consuming or arduous to reset, passwords can be duplicated by different users, and passwords can be stolen through phishing attacks or by malware, resulting in increased vulnerability to security breaches.

322. In my opinion, a POSA further would have found that combining Madhavan-Park-Martinez with Kato would have been merely applying a known technique to a known system ready for improvement. *See* § IV, *supra* (exemplary obvious rationale (D) above). The system to be improved is Madhavan-Park-Martinez's system including the content service provider 100, which associates devices in user profiles, but lacks the express ability to correlate user data with a

user profile based on a relationship between a device's MAC address and the public IP address used by the device to access the Internet, e.g., the IP address of the Madhavan-Park-Martinez shared IP router. *See* e.g., Ex. 1122, 5:53-66, 7:15-19, 7:33-36, 7:63-67. As I discuss above, Kato teaches the known technique of identifying a user's terminal device based on a determined relationship between the MAC address, private IP address, port information, and public IP address used by the device to access the Internet. *See* e.g., Ex. 1125, ¶¶ [0005]-[0006], [0017]-[0020], [0033]-[0038], [0040]-[0047], [0049]-[0053]. The predictable result is that the MAC address of a device that accesses the content service provider is included in the user's profile, along with the public IP address and port number, and is used to identify user devices. As I also explain above, because the MAC address of a device does not change with time, a POSA would have recognized the benefits of using this information as a device identifier in the Madhavan-Park-Martinez system, particularly given Madhavan's teaching that the user may attempt to access the content service provider 100 from various different network access locations. *See* e.g., Ex. 1122, 1:35-2:3, 3:1-8, 3:52-4:13, 5:59-66, 7:60-8:5, 9:9-15; *see* §§ XII.A.1.vii, XII.B.1; see also ¶¶219 and 321 of my Declaration above.

323. It is my further opinion that a POSA also would have found that adapting the Madhavan-Park-Martinez system to use a MAC address as a means for identifying a user device based on a determined relationship between the MAC

address, private IP address, port information, and public IP address used by the device to access the Internet, as taught by Kato, would merely using known techniques to improve a similar method in the same way. *See* § IV, *supra* (exemplary obvious rationale (C) above). The known techniques include Kato's technique of identifying a user device based on a determined relationship between the MAC address, private IP address, port information, and public IP address used by the device to access the Internet. *See* e.g., Ex. 1125, ¶¶ [0017]-[0020], [0033]-[0038], [0040]-[0047], [0049]-[0053]. The similar method includes the Madhavan-Park-Martinez system's method of using identification information ("**device identifier"**) collected from a user device to associate corresponding user data, also provided by the device, to a particular user profile and, further, to retrieve user data associated with any of the user's devices previously used to access the content service provider. *See* Ex. 1122, 5:53-66, 7:33-36, 7:48-53, 8:9-15, 8:57-67, 9:36-46, 10:15-25, 10:41-46, 11:18-22, 11:38-52, FIGs. 5-9. The improvements include introducing into Madhavan-Park-Martinez's system the ability to track and associate user data collected from a user device with a particular user profile irrespective of whether the device is used to access the content service provider from different locations or different IP addresses. *See* § XII.B.1. The predictable results include a system that provides a supplemental or alternative mechanism for identifying devices that access

the content service provider and associating those devices, along with any user data collected from each device, with a profile associated with a particular user.

324. In my opinion, a POSA would have had the skills and knowledge to combine the teachings of Madhavan-Park-Martinez and Kato with a reasonable expectation of success in arriving at the subject matter recited in claim 1, in particular elements [1B]-[1C] and [1G]. First, Madhavan contemplates "various modifications" being made to its system, and indicates that such "various modifications" are within the capabilities of those having ordinary skill in the art. Ex. 1122, 12:63-13:1, 2:55-61. Second, as I explain above (*see* § XII.A.1), the Madhavan-Park-Martinez system already teaches receiving identification information ("**device identifier"**) from a user device and storing that information within a user profile (e.g., within user tables 210 of database 200). *See* Ex. 1122, 5:37-67, 7:63-67, 8:42-48, 10:3-9, 10:35-40, 11:30-37, FIGs. 3, 6-9; *see* e.g., §§ XII.A.1.ii, XII.A.1.iii, XII.A.1.vii, XII.A.1.xi, XII.A.5. Additionally, a POSA would understand that each of the user devices within the Madhavan-Park-Martinez system would already have a MAC addresses assigned thereto. *See* e.g., § XII.B.1, including ¶316 of my Declaration above. Madhavan also describes that the content service provider 100 collects identification information (e.g. IP address and/or password information) from a user device attempting to access the content service provider 100. *See* e.g., Ex. 1122, 7:15-26, 7:63-67, 8:42-48, 10:3-9. Thus, a POSA would

have recognized that the content service provider 100 of the Madhavan-Park-Martinez system would have been capable and suitable to connect to and collect MAC address information from each of devices 130 and 140. *See also* Ex. 1123, ¶¶ [0034], [0040], [0057], [0059]-[0060], [0064].

325. Therefore, it is my opinion a POSA would have recognized that using the MAC address information assigned to a user device and associating the MAC address information with IP address(es) already used by the device to access the Internet (e.g., the public, common IP address of the Madhavan-Park-Martinez IP router) would require relatively simple software modifications to the Madhavan-Park-Martinez system, e.g., to collect and store MAC address information from a user device within database 200 of the content service provider, which would have been well within the skill set of a POSA. It is my further opinion that a POSA would have recognized that it would have been straightforward to program Madhavan-Park-Martinez's system to collect MAC address information from a user device, and to use this information to associate collected user data with a user's profile. For example, the resulting Madhavan-Park-Martinez-Kato system would receive MAC address information from a user device, along with corresponding user data, and store this information to database 200 based on the received MAC address information (and other device identification information, e.g. IP address of the router

used to access the Internet), which may subsequently be used to target advertisements to the user.

326. The proposed combination thus teaches and renders obvious element [1B]-[1C] and [1G].

2. Claim 1 (Element [1E]) and Claims 4, 6, 8, 10, and 13

327. In my opinion, the combination of Madhavan, Park, Martinez, and Kato teaches and renders obvious elements [1E] and claims 4, 6, 8, 10, and 13.

328. As I explain above in § XII.B.1, the content service provider 100 of the Madhavan-Park-Martinez-Kato system receives identification information ("**device identifier"**) from a user device that connects to the content service provider, and this identification information may include, for example, a common IP address used by the user device to access the Internet (e.g., the IP address of Madhavan-Park-Martinez-Kato's shared IP router) and MAC address information for the user device. *See* Ex. 1122, 7:15-26, 7:63-67, 8:42-48, 10:3-9; Ex. 1125, ¶¶ [0017]-[0020], [0033]-[0038], [0040]-[0047], [0049]-[0053]; *see* e.g., § XII.B.1. The content service provider 100 uses the received identification information (e.g., common IP address, MAC address) to link user data, also collected from the user device, to a particular profile associated with the user, and to store the user data database 200 of the content service provider 100. *See* e.g., Ex. 1122, 5:53-66, 7:33-35, 8:57-67, 10:15-18, 11:18-22. Based on user identification provided by one of the user's

multiple devices, the content service provider retrieves previously-stored user data, collected from the user's multiple devices, that has been linked to the user's profile and, further, may determine content classification categories and target the user with advertisements relating to the previously stored data. *See* e.g., Ex. 1122, 7:43-53, 8:9-33, 8:57-67, 9:36-67, 10:21-25, 10:41-60.

329. As I explain above in § XII.B.1, in the proposed Madhavan-Park-Martinez-Kato combination, the claimed "**device identifier**" is disclosed by the "identification information" that the content service provider 100 obtains from a user's device (e.g., client machine 130, media device 140) that connects to the content service provider. As I discuss above, this identification information includes the IP address of a router that is used by the user's device to access the content service provider 100 via the Internet (e.g., the public, common IP address of Madhavan-Park-Martinez-Kato's shared IP router), as well as MAC address information associated with the user's device. As I explain above for element [1E] (*see* § XII.A.1.v), the IP address of a router that is used by the user's device to access the content service provider cannot be used to identify a specific person. *See* § XII.A.1, particularly ¶¶154, 204 of my Declaration above. Similarly, as I discuss above in § XII.B.1, the '015 Patent's definition of non-PII specifically includes device identifiers such as MAC addresses. Ex. 1101, 15:30-37 (emphasis added); *see* e.g., § XII.B.1. 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. 1101, 6:41-44; Ex. 1129, 5 (definition of "MAC address"); Ex. 1130, 5 (definition of "MAC address"). Therefore, it is my opinion that the Madhavan-Park-Martinez-Kato system, therefore, would have determined the associations between device identifiers of a user's 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 directly or indirectly in claims 1, 4, 6, 8, 10, and 13. *See* §§ XII.A.1.v, XII.A.4, XII.A.6, XII.A.10, XII.A.11.

330. In sum, Madhavan-Park-Martinez-Kato teaches [1E] and dependent claims 4, 6, 8, 10, and 13 for at least the same reasons as I discussed above under Ground A for the proposed Madhavan-Park-Martinez combination, except that the identification information ("**device identifier"**) for a user's device also includes the device's MAC address. *See* §§ XII.A.1.v, XII.A.4, XII.A.6, XII.A.8, XII.A.10-11, and XII.B.1.

331. The proposed combination thus teaches and renders obvious element [1E] and claims 4, 6, 8, 10, and 13.

3. Claim 1 (Element [1A], [1D], [1F], and [1H]-[1I]), and claims 2-5, 7, and 9

332. In my opinion, the combination of Madhavan, Park, Martinez, and Kato teaches and renders obvious elements [1A], [1D], [1F], and [1H]-[1I]), and claims 2-5, 7, and 9.

333. In particular, claim 1 (e.g., elements [1A], [1D], [1F], and [1H]-[1I]) and dependent claims 2-5, 7, and 9 are taught by Madhavan-Park-Martinez-Kato for at least the same reasons as I discuss above under **Ground A** for the proposed Madhavan-Park-Martinez combination, except that the identification information ("**device identifier"**) for a user's device also includes the device's MAC address. *See* §§ XII.A.1.i, XII.A.1.iv, XII.A.1.vi, XII.A.1.viii-ix, XII.A.2-5, XII.A.7, XII.A.9 and XII.B.1.

334. The proposed combination thus teaches and renders obvious element [1A], [1D], [1F], and [1H]-[1I]) and claims 2-5, 7, and 9.

4. Independent Claim 14 and Dependent Claims 15-23, and 26

335. In my opinion, the combination of Madhavan, Park, Martinez, and Kato teaches and renders obvious independent claims 14 and dependent claims 15-23 and 26.

336. 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 Madhavan, Park, Martinez, and Kato also teaches independent claim 14 for the same reasons as for claim 1.

337. 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**." Madhavan-Park-Martinez-Kato's computer memory (e.g., memory 1204) within the one or more servers (e.g., processing servers 104, advertising servicers, 105, etc.) of the content service provider 100 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. 1122, 4:43-65, 12:21-62, FIGs. 2, 12. 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 Madhavan-Park-Martinez-Kato 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). *Id.*

338. Thus, it is my opinion that Madhavan-Park-Martinez-Kato teaches and renders obvious claims 14, 17, 19, 21, 23, and 26 for the same reasons as discussed above under **Ground B** (*see* my comments above in §§ XII.B.1-XII.B.3). It is my further opinion that Madhavan-Park-Martinez-Kato teaches and renders obvious claims 15-16, 18, 20, and 22 for the same reasons as the Madhavan-Park-Martinez combination that I discuss above under **Ground A**, except that the identification information for a user device also includes the device's MAC address. *See* § XII.A.12; *see also*, ¶¶318-325 of my Declaration above.

339. The proposed combination thus teaches and renders obvious independent claim 14 and dependent claims 15-23 and 26.

C. Grounds C-D and E-F: Claims 1-10, 13-23, and 26 Are Obvious Over Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) in view of Brookes or Koran

340. As I show above for Grounds A and B, the combination of Madhavan, Park, and Martinez (and Madhavan, Park, Martinez, and Kato) teach and render obvious independent claims 1 and 14. *See* my comments regarding independent claims 1 and 14 above. §§ XII.A.1, XII.A.12, XII.B.1-4. As I explain below, in my opinion, the combination of Madhavan, Park, Martinez, and Brookes or Koran (and Madhavan, Park, Martinez, Kato, and Brookes or Koran) teach and render obvious dependent claims 2-10, 13, 15-23, and 26.

1. Claim 1 (Elements [1D] and [1H]) and Claims 2, 3, and 7

341. Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) in view of either Brookes (**Grounds C-D**) or Koran (**Grounds E-F**) teaches element [1D], element [1H], and claims 2-3 and 7. *See* §§ XII.A.1.iv, XII.A.1.viii, XII.A.2-3, XII.A.7, XII.B.3.

342. To the extent it is argued that Madhavan-Park-Martinez (or Madhavan-Park-Martinez-Kato) does not teach the claimed "**predetermined time-relation criterion**" as recited directly or indirectly in elements [1D] and [1H] of claim 1, and claims 2-3 and 7, Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) in view of either Brookes (**Grounds C-D**) or Koran (**Grounds E-F**) teach these limitations. As explained above for element [1D] (*see* § XII.A.1.iv, including ¶¶198-200 of my Declaration above), Madhavan's modified system would have associated a user's devices using corresponding device identifiers that are stored to a common user profile and, further, would have provided user data to content service provider 100 that is stored to database 200 and linked with the common user profile. More specifically, Madhavan's user profile contains user data, obtained from particular user devices, that indicate short term behavior of a user, and is used to target advertisements based on recent user behavior:

> ***The user identification information may further include a user profile containing demographic data about the user 110, geographic data detailing user access***

locations, behavioral data related to the user 110, such behavioral data being generated by a behavioral targeting system, which analyzes user activities in connection with the entity 100, and other identification information related to each specific user 110. In one embodiment, ***the stored data may also include near short term behavior of the user, or, in the alternative, long term behavior of the user*** or an algorithmic combination of short term and long term behavior of the user.

Ex. 1122, 5:59-6:2 (emphasis added).

In one embodiment, the system and methods to facilitate ***matching of advertising information to actions and interests of users within a network***, described in detail above in connection with FIGS. 2 through 10, may be used in a behavioral targeting system, which is configured to identify interests of users based on the users' online activities.

FIG. 11 is a block diagram illustrating a generalized behavioral targeting system. The behavioral targeting system 1000 includes a behavioral targeting processing module 1020, which captures the user input 1010, such as, for example, one or more events. The behavioral targeting processing module 1020 generates a plurality of user interest profiles specific for a target objective. ***A user interest profile further provides an indication of interest***

> ***in a subject matter for a particular objective***. For example, the user profile output may indicate that the user is a good candidate for a particular objective regarding a "finance" topic, and a poor candidate for the specific objective regarding a "music" topic.
>
> In one embodiment, ***the behavioral targeting processing module 1020 generates user interest profiles for marketing objectives. As shown in FIG. 11, the behavioral targeting system 1000 outputs user interest profiles for direct response advertising (1030), brand awareness advertising (1050), personalization activities (1070), and purchase intention activities (1080)***.

Ex. 1122, 11:62-12:20 (emphasis added).

343. Generating user profiles for advertisement targeting based on recent user behavior was well known and, as I explain in more detail below, both Koran and Brookes teach these techniques. It would have been obvious to improve the targeting of advertisements in Madhavan's modified system using such well-known techniques taught by Koran and Brookes, including using timing information and recency data to weight profile information, as taught by Brookes and Koran.

344. Koran serves targeted advertisements by determining user behavioral profiles based on online activity:

> A behavioral targeting system ***determines user behavior from online activity***. The system stores at least one model.

> A model contains a plurality of parameters for determining a user score for a target objective. ***The system receives event information from at least one event***. In general, the event comprises on-line activity between the user and the entity. ***A user profile is generated using the model and the event information to predict user propensity for success in the target objective***.

Ex. 1127, 1:38-46 (emphasis added); *see also*, Ex. 1127, Abstract, 6:21-25 (discussing that events include any type of online navigational interaction or search related events, such as advertisement clicks, search queries, search clicks, sponsored listing clicks, page views, and advertisement views).

345. Koran employs a behavioral targeting system to determine the user behavioral profiles based on identified user interests and behaviors:

> A behavioral targeting system has application to ***identify interests and behavior of online users for one or more target objectives***. FIG. 1 is a block diagram illustrating a generalized behavioral targeting system 100. In general, the behavior targeting system 100 ***profiles interests and behavior of Internet users based on the user's online activities***. As shown in FIG. 1, user input (110) is captured by behavioral targeting processing (120). In one embodiment, user input comprises one or more "events." As described more fully below, ***an event is a type of action initiated by the user (e.g., user clicks on a banner***

advertisement). As diagrammatically shown in FIG. 1, behavioral targeting processing (120) generates a plurality of user profiles specific for a target objective. In general, a user behavioral profile predicts user success for a particular target objective. For example, a ***user behavioral profile may predict a user's propensity to respond to a direct marketing advertisement campaign***. In one embodiment, the user behavioral profile is expressed in a per category basis. For example, the user profile output may indicate that the user is a good candidate for the objective regarding the topic, "finance", and a poor candidate for the objective regarding the topic, "music."

The behavioral targeting processing 120 generates user behavioral profiles for various target objectives. In one embodiment shown in FIG. 1, the ***behavioral targeting system 100 outputs user behavioral profiles for direct response advertising (130), brand awareness advertising (150), purchase intention activities (180) and intra-company business unit marketing***. In one embodiment, the behavioral targeting processing 120 generates user interest profiles for marketing objectives.

Ex. 1127, 2:27-56 (emphasis added); *see also*, Ex. 1127, 3:23-35 (discussing using a user profile to targeted users in a different business unit area and/or retain users based on previous visits to a website).

346. Koran further teaches that profile scores may be determined and used to predict user propensities:

> In one embodiment, the behavioral targeting system of the present invention generates ***profile scores, by category, to predict user propensity for subject matter in the category for the target objective***. For example, the interest score may be used to ***model the strength of the user's interest*** in purchasing a product or service within a category. FIG. 4 is a block diagram illustrating one embodiment for the behavioral targeting system of the present invention. For this embodiment, input events, referred to herein as "events", are input to an event categorization module 410. The event categorization module 410 operates in conjunction with taxonomy 420.

Ex. 1127, 4:50-60 (emphasis added).

347. Koran's targeting system uses recency, decay and other parameters to generate the profile scores and corresponding user profile that is used to predict user propensity for marketing efforts (e.g., direct response advertising). *See* Ex. 1127, 2:37-47 (discussing the user behavioral profile predicts a user's propensity to respond to a direct marketing advertisement campaign), 5:44-60 (user events are accumulated and classified in a category of the taxonomy), 13:59-67, 22:39-48 (discussing parameters may decay based on the amount of time elapsed), 14:2-17:13.

348. More specifically, Koran's targeting system categorizes and processes received user events, and then applies various parameters—including a recency parameter that "weighs one or more events depending upon how recent the events have occurred" and a decay parameter that indicates how fast user event data is phased out—to generate interest scores for different event types:

> FIG. 5 is a flow diagram illustrating one embodiment for the generalized behavioral targeting system of the present invention. ***When the system receives a user event or after a predetermined amount of time for accumulating events, the system classifies the event in a category of the taxonomy*** (FIG. 5, blocks 510 and 520). A model is selected based on the user/marketing objective (FIG. 5, block 530). In blocks 540, 550 and 560, the ***behavioral targeting system processes one or more events to generate a raw user interest score for a category***. For this embodiment, the behavioral targeting system applies a recency dimension based on the model selected (FIG. 5, block 540). In general, ***the recency dimension weighs one or more events depending upon how recent the events have occurred***. To apply a second dimension, the behavioral targeting system applies an intensity dimension based on the model selected (FIG. 5, block 550). The intensity dimension applies a weight or factor to ascribe a value indicative of how effective the event measures the user's interest in the subject category. For this

> embodiment, the behavioral targeting system also applies a third dimension, frequency (FIG. 5, block 560). In general, the frequency dimension modifies the user score, for the subject category, based on how frequently the event occurs.

Ex. 1127, 5:42-64 (emphasis added); *see also*, Ex. 1127, 12:29-67 (describing long-term direct response user interest scores), 13:23-26 (Koran's recency parameter is generated for the logged events, including logging the most recent day that a user has an activity of type event in the category), 14:29-42 (describing a short-term direct response user behavioral profile and score), 16:2-40 (describing example decay speeds for hourly and daily periods), 22:39-42 (discussing parameters may decay based on the amount of time elapsed).

349. Koran's system also generates long-term and short-term user behavioral profiles that compile activities of the user, for example, over "a relatively long period of time (e.g., over at least 24 hours)" and/or "a short period of time, such as an hour." Ex. 1127, 6:2-7, 11:29-48, 14:29-42. Koran further provides that the complied short-term and long-term activities are processed to determine respective short-term and long-term user interest scores. *Id.*

350. More specifically, for long-term activities, Koran teaches:

> In one embodiment, the behavioral targeting processing of the present invention generates a long-term user behavioral profile. ***The long-term user behavioral profile***

compiles activities of the user over a relatively long period of time (e.g., over at least 24 hours) to generate the user behavioral profile. In one embodiment, the long-term user behavioral profile is used to ***predict user interests within the next day. For example, the long-term user behavioral profile may be used to determine what ads to serve the user in the next day***.

The long-term user behavioral profile has application for use ***to serve advertisements conducive to a user's long-term interest***. For example, a user may show an interest, over a several month period of time, to purchase an automobile. The interest score may be compiled from the user's activities generated by the user learning acquiring information about automobiles online (e.g., page views of automotive site, ad clicks on automotive ads, etc.). For this example, the user's long-term direct response score in the automotive category is high, and therefore an advertising application may serve the user advertisements for the sale of automobiles.

Ex. 1127, 11:29-48 (emphasis added).

351. Similarly, for short-term activities, Koran provides:

...the short-term user behavioral profile is used to ***serve an advertisement to the user within the next hour***. The short-term user behavioral profile has application for use to serve advertisements conducive to a user's very near term

> purchasing intentions. For example, a user may show an interest, over the last few minutes, to purchase flowers online. Typically a small purchase, such as flowers, is typically made by a purchase in a relatively short period of time. For this example, the ***behavioral targeting system accumulates user activity, in real-time, and serves ads to users in a short period of time***.

Ex. 1127, 14:29-42 (emphasis added).

352. Koran's system uses the generated interest scores for target optimization purposes as they provide predictive information regarding a user's action relative to categories of interest:

> Raw scores indicate a relative interest measure of a user in a category for a target objective. However, the raw scores do not directly measure the propensity of a user's action. As such, raw scores are converted or mapped to more useful scores, referred to herein as mapped scores, for target optimization purposes. In some embodiments, mapped scores are behavior-orientated scores that reflect user tendencies for a particular action. ***Mapped scores are useful for target optimization purposes as they provide predictive information regarding a user's action relative to categories of interest***.
>
> Some examples of mapped scores are click propensity, expressed as a percentage, click-through-rate, and

> conversion propensity, also expressed as a rate. In other embodiments, other mapped scores may also be produced.

Ex. 1127, 20:38-51 (emphasis added).

353. Similarly, Brookes describes a method for efficiently disseminating information to users. Ex. 1126, 1:9-14, 1:36-50, Abstract. Brookes' system generates an interest profile for each user that lists categories of information of interest to the user:

> ***For each user of the system an interest profile is created which lists categories of information of interest to the user*** and comprises another list of keywords taken from one or more thesauri with, for each keyword, the ***priority level that an item must have for it to be of interest to that user***. Thus a user will only be alerted to information he or she wants to see. The user may also nominate an `all message` priority which indicates interest by the user in any item at that priority, or higher.

Ex. 1126, 7:1-9 (emphasis added); *see also*, Ex. 1126, 1:66-2:3, Abstract.

354. Data parameters are stored in association collected information items and also include "a value indicative of an expiry date, at which time the utility of the information item is deemed to be negligible." Ex. 1126, 2:66-3:5. The data parameters, such as a time stamp, are assigned to the collected information items to assist in system administration:

> ***Further parameters are assigned to each information item to assist in system administration. These parameters include: author identification, source identification and a time stamp***. To further facilitate dissemination of information the system recognises that users may form distinct groups. Thus, for example, an information item may be labelled so as to restrict dissemination to only those users specified as a security group.

Ex. 1126, 5:38-45 (emphasis added).

355. Brookes further teaches deleting and/or archiving of information items by Brookes' system after the expiry date is reached:

> In practice ***items are deleted, or preferably archived***, from the database at the discretion of the system administrator. Where items may form part of a discussion caution must be exercised so that important comments are not lost. The system automates this procedure by ***assigning to every item (or prompting the users to do so) an expiry date at which time the information is deemed to be of no interest***.

Ex. 1126, 9:60-67 (emphasis added); *see also* Ex. 1126, 6:13-19, 13:11-15, 5:38-45.

356. In my opinion, a POSA would have found it obvious to apply either Koran's or Brookes' teachings to Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato. Specifically, a POSA would have found it obvious for the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to associate,

via device identifiers, user devices that are linked to user data indicating online user activity at times satisfying predetermined recency criteria of a user behavioral profile, as taught by Koran and Brookes. As I explain above, and like both Koran and Brookes, Madhavan similarly teaches user behavioral profiles "containing user data which may be linked to multiple items," including "user identification information, user account information, and other known data related to each user." Ex. 1122, 5:55-58. Further, Madhavan similarly teaches that user profiles may include user "behavioral data" generated by a behavioral targeting system, which, like the systems of Koran and Brookes, analyzes user activities to determine user interests in a particular subject matter. *Id*.; Ex. 1122, 11:62-12:20; Ex. 1127, 6:2-7, 11:29-48; Ex. 1126, 2:66-3:5, 5:38-45. Madhavan further provides, like Koran and Brookes, user interests may be identified based on user behavior, including "near short term behavior of the user" and/or "long term behavior of the user." Ex. 1122, 5:59-6:2; *see also*, Ex. 1127, 6:2-7, 11:29-48, 14:29-42; Ex. 1126, 2:66-3:5, 5:38-45. Additionally, both Madhavan and Koran were originally assigned to Yahoo! Inc. (*see* Ex. 1122, cover; Ex. 1127, cover), and disclose analogous, profile-based behavioral targeting systems that are configured to identify interests of users based on the user's online activities. *Compare* Ex. 1122, 12:1-12:20, FIG. 11 *with* Ex. 1127, 2:26-56, FIG. 1. Thus, in my opinion, it would have been natural for a POSA to look to disclosures by the same company regarding their targeted advertising

systems and methods. Additionally, while Koran refers to certain features as exemplary "embodiments," Koran expressly discloses that those skilled in the art would appreciate that various modifications and alterations might be made without departing from the dope of the invention. Ex. 1127, 24:4-8.

357. Given the similarities between the systems of Madhavan, Koran, and Brookes discussed above, in my opinion, a POSA would have found it obvious to apply either Koran's or Brookes' teachings to Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato). Additionally, Madhavan's system uses a "conventional" network architecture, and Madhavan teaches that the devices within this system include typical computing components such as processors, memory, data, and supporting circuitry that run programs for carrying out the functionality of Madhavan's system. Ex. 1122, 4:26-27, 12:21-62. Thus, a POSA would have been familiar with the design and components of Madhavan's system for the purpose of programming that system to associate, via device identifiers, devices that are linked to user data indicating online user activity at times satisfying predetermined recency criteria of a user behavioral profile, as taught by Koran and Brookes. *Id.*; *see also* Ex. 1127, 6:2-7, 11:29-48; Ex. 1126, 2:66-3:5, 5:38-45.

358. Further, as I explain above, Madhavan's system already distinguishes between and tracks—within a user profile—near short term and long term behavior of a user (*see* Ex. 1122, 5:53-6:2, 11:62-20), so using temporal data to identify user

data indicating the short term and/or long term behavior of the user and to associating, via device identifiers, devices that are linked to user data indicating online user activity at times satisfying predetermined recency criteria of a user behavioral profile would require relatively simple modifications to the Madhavan-Park system (e.g., software modifications), which would have been well within the skill set of a POSA. *See* Ex. 1126, 4:12-14 ("a software package implementing the system of the invention is executed by the computer system of FIG. 1 in conventional manner"), 11:16-19 ("Although reference has been made to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms."); Ex. 1127, 23:61-65 ("The behavioral targeting system may be implemented in either hardware or software. For the software implementation, the behavioral targeting system is software that includes a plurality of computer executable instructions for implementation on a general-purpose computer system."), 23:65-24:8.

359. The content service provider 100 of Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato would have associated, in database 200, device identifiers of user devices that have provided user data satisfying a predetermined time-based criterion for a desired user behavioral profile. For example, the modified systems of Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato would have associated two or more user devices of a user's multiple devices that have

provided the content service provider 100 with user data indicating online activity or actions of the user that have occurred within a particular number (e.g., 24 hours) or a particular number of days (e.g., three days). This association would be determined when the content service provider stores, via a user profile, the device identifiers of those user devices from which the user data indicating short term user behavior was collected.

360. The determination by the content service provider 100 that a user's devices accessed the Internet to conduct activities online, thereby producing user data, at respective times satisfying the predetermined recency criterion would have been determined using stored time stamps indicating the date and time of the user's online activity ("**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**"). *See* my comments above in §§ XII.A.1.iii-iv; *see also* Ex. 1124, ¶¶ [0006], [0037]-[0041], [0047], [0049]-[0050], [0051] (discussing temporal data as "time based data (e.g., time stamps) that, relate to specific times and/or events associated with a user and/or the electronic device"), [0052]-[0054], [0057]-[0058], [0070], [0077].

361. It is my opinion that a POSA would have been motivated to implement the time-based profile management and content targeting techniques, as taught by Brookes or Koran, in the Madhavan-Park-Martinez system (**Grounds C/E**) and the Madhavan-Park-Martinez-Kato system (**Ground D/F**) to determine useful associations between user data and devices (via their respective device identifiers) and to provide advertising directed to a user's recent or long-term interests. In my opinion, a POSA would have recognized that by determining useful associations among user data collected from multiple user device, including data providing an indication of a user's time-based interests in certain subject matter, the content service provider and/or other advertising entities would be able to determine whether the user is a good candidate for particular advertising campaigns. This enhanced targeting functionality would facilitate the content service provider's (or other entities') ability to target advertisements to users. Further, by applying the teachings of Brookes and Koran to the Madhavan-Park-Martinez system (**Grounds C/E**) and the Madhavan-Park-Martinez-Kato system (**Ground D/F**), the content service provider 100 would improve the accuracy and/or relevancy of the user data associated with a user's current interests by disregarding user data—that would otherwise be linked to a user's profile and thus used to determine an association between the user's devices (via their respective identifier)—that is stale or does not reflect user interests reflecting a desired user behavioral profile and, thus, would be

less relevant for facilitating the targeting of advertisements to the user. By implementing the above-discussed teachings of Brookes or Koran, the Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) systems would facilitate the targeting of advertisements based on the mutual sharing of more relevant profile information (e.g., data indicating user events or actions that satisfy a predetermined time-based criterion) between user devices. *See*, Ex. 1122, 1:8-12, Abstract, FIGs. 5-6; Ex. 1127, 5:42-64, 6:2-7, 11:29-48, 12:29-67, 13:23-26, 14:29-42, 16:2-40, 22:39-42; Ex. 1126, 2:66-3:5, 5:38-45, 6:13-19, 9:64-67, 13:11-15.

362. In my opinion, as I noted above, a POSA would have found it obvious to configure the content service provider 100 in the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to incorporate time-based user profile and data management techniques—as taught by Koran and Brookes—for example to associate (via device identifiers) user devices that are linked to user data indicating online user activity at times satisfying predetermined recency criteria of a user behavioral profile. This would have been merely applying a known technique to a known device ready for improvement to yield predictable results. *See* § IV, *supra* (exemplary obvious rationale (D) above). The known technique includes Koran's or Brookes' use of timing information and predetermined recency criteria to identify and compile user activities, within a profile, that are relevant to a user's current interests, thereby improving advertisement targeting and the dissemination of

information to a user. Ex. 1127, 6:2-7, 11:29-48, 14:29-42; Ex. 1126, 2:66-3:5, 5:38-45. The known device includes the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems and content service providers 100, which collect user data and corresponding temporal data, and use this collected information to determine associations between user devices and facilitate the targeting of advertisements to those devices. *See* e.g., Ex. 1122, 1:7-11, 5:53-6:2, 7:33-9:67, 10:3-25, 10:34-64, 11:3-22, 11:30-61, FIGs. 5-9; Ex. 1124, ¶ [0051]. The improvement to the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems include the use of more relevant profile information (e.g., user data), which satisfies predetermined time-based criterion, for determining associations between devices and leading to the better targeting of advertisements based on a user's current or long-term interests. In my opinion, a POSA would have recognized that another benefit of the proposed combination would be the efficient use of storage space within database 200 that would otherwise be occupied by stale or irrelevant data, for example, by automatically deleting or archiving user data that is determined by the content service provider 100 to be stale or irrelevant based on particular time-based criterion, such as an expiry date for maintaining or storing user data, as taught by Brookes. *See* e.g., Ex. 1126, 9:60-67, 13:11-15. The predictable results include the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems determining an association between user devices, via their respective identifiers, and facilitating

the targeting of advertisements to said devices based on user data (and corresponding temporal data) that satisfy predetermined time-based criteria of a desired user behavioral profile and/or advertising objective. *See* Ex. 1122, 5:59-6:2, 11:62-12:20; Ex. 1127, 1:38-45, 2:27-56, 3:23-35, 4:50-60, 5:44-60, 6:21-25, 11:29-48, 13:59-67, 14:2-17:13, 22:39-48, ; Ex. 1126, 1:9-14, 1:36-2:3, 2:66-3:5, 5:38-45, 6:13-19, 7:1-9, 9:64-67, 13:11-15.

363. Additionally, the proposed combination would have merely been the simple combination of prior art elements according to known methods to yield predictable results. *See* § IV, supra (exemplary obvious rationale (A) above). The prior art elements include Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems, including the modified content service provider 100, and Koran's behavioral targeting system or Brookes' information dissemination system. The known methods include programming the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to implement Koran's and Brookes' techniques for using recency data and timing information to identify user data that satisfy time-based criteria for a desired user behavioral profile. The predictable results include a system that uses recency data and timing information to determine user data collected from multiple user devices profile information that satisfy predetermined time-based criteria, to associate—via device identifiers and within a user profile—

those devices that provided the user data, and to target advertisements to the user via the associated user devices.

364. A POSA would have also had the skills and knowledge to implement the combinations of Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato with either of Brookes or Koran with a reasonable expectation of success. *See* e.g., § XII.C.1. As I explained above, Madhavan's content service provider 100 is already configured to obtain, store, and analyze user data (including temporal data reflecting short-term and long-term behaviors) generated by a behavioral targeting system. *See* e.g., Ex. 1122, 5:59-66, 11:62-12:20, FIG. 11; Ex. 1127, 1:38-45, 2:27-56, Abstract. It would have been straightforward for a POSA to program the Madhavan's modified systems to use stored temporal data to identify user data that satisfies predetermined recency criteria and, as taught by Koran and Brookes, to associate, via device identifiers, devices that are linked to the relevant user data and to improve advertisement targeting and the dissemination of information to a user that is more relevant to and accurately reflects the user's current or long-term interests. *See* e.g., § XII.C.1.

365. The proposed combinations thus teach and render obvious element [1D], element [1H], and claims 2-3 and 7.

2. Claim 1 (Elements [1A]-[1C], [1E]-[1G] and [1I]) and Claims 4-6, 8-10, and 13

366. In my opinion, claim 1 (elements [1A]-[1C], [1E]-[1G], and [1I]), and claims 4-6, 8-10, and 13 are taught by Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato in further view of Brookes (**Grounds C-D**) or Koran (**Grounds E-F**) for the same reasons as discussed under **Ground A** for the proposed Madhavan-Park-Martinez combination and under **Ground B** for the proposed Madhavan-Park-Martinez-Kato combination. *See* §§ XII.A.1.i-iii, XII.A.1.v-vii, XII.A.1.ix, XII.A.4-6, XII.A.8-10, XII.B, *supra*.

367. The proposed combinations thus teach and render obvious claim 1 (elements [1A]-[1C], [1E]-[1G], and [1I]), and claims 4-6, 8-10, and 13.

3. Independent Claim 14 and Dependent Claims 15-23 and 26

368. As I note above for Ground A (*see* § XII.A.12), 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. In my opinion, Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato in view of Brookes (**Grounds C-D**) or Koran (**Grounds E-F**) teach and render obvious independent claim 14 for the same reasons as claim 1. *See* §§ XII.A.12, XII.C.1-2.

369. 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."

370. Independent claim 14 recites substantially the same language as independent claim 1. Any differences between claims 1 and 14 are not substantive. *See* Claims Appendix. Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato in view of Brookes (**Grounds C-D**) or Koran (**Grounds E-F**) teaches and renders obvious claims 14-23 and 26 for the same reasons as discussed above under Grounds C-F. §§ XII.C.1-2, *supra*.

371. The proposed combinations thus teach and render obvious independent claim 14 and dependent claims 15-23 and 26.

D. Grounds E-F (continued): Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) in view of Koran Also Render Claim 12 and 25

372. As I show above for Grounds A and B, the combination of Madhavan, Park, and Martinez (and Madhavan, Park, Martinez, and Kato) teach and render obvious independent claims 1 and 14. *See* my comments regarding independent claims 1 and 14 above. §§ XII.A.1, XII.A.12, XII.B. As I explain below, in my opinion, the combinations of Madhavan-Park-Martinez-Koran and Madhavan-Park-Martinez-Kato-Koran teach and render obvious dependent claims 12 and 25.

373. The Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato combinations do not expressly disclose that a device identifier "**is stored in a cookie readable by the computer system**." *See* §§ XII.A-B However, storing a device identifier in a cookie readable by a computer system was well known and is taught by Koran. *See* e.g., Ex. 1127, 23:49-60; Ex. 1115, ¶¶ [0007], [0031]; Ex. 1128, 2:40-43, 5:31-48, 6:55-67, FIG. 3. As explained above in § XII.C.1, Koran's behavioral targeting system determines user profiles from online activity, including interests and behavior of online users, to target users with advertisements. Ex. 1127, Abstract. In Koran, a user profile database (e.g., user profile database 1520) stores user profiles for multiple users or client systems, and each user profile assigns a unique identifier (e.g., user-identification number) to a particular client device associated with a user. *See* Ex. 1127, 23:33-60, Abstract. Koran teaches that this unique identifier may be stored, in a cookie on the associated client device and used by the user. *Id*. Koran further teaches that when the user requests content from a content server (e.g., content server 1510), the stored cookie is transferred—via the content server—from the client system to a behavioral targeting server (e.g., target server 1535) that uses the device identifier in the cookie "to retrieve the particular user profile from the user profile database 1520." *Id*.

374. In my opinion, a POSA would have found it obvious to configure the Madhavan-Park-Martinez system (**Ground E**) to store identification information,

such as the IP address of the router used to access the Internet and a port number of a user device, in a cookie readable by the one or more servers of Madhavan-Park-Martinez's content service provider 100 because cookies are useful ways to efficiently and easily transfer information and identify devices, which are used when tracking user activity and determining targeted advertisements. *See* § XII.A.1; Ex. 1122, 5:48-66, 7:33-8:19, 8:42-9:46, 11:30-52, FIGs. 5-6. It is my further opinion that a POSA would have found it obvious to configure the Madhavan-Park-Martinez-Kato system (**Ground F**) to store identification information, e.g., the IP address of the router used to access the Internet and a MAC address of a user device, in a cookie readable by the one or more servers of Madhavan-Park-Martinez-Kato's content service provider 100 to identify (and subsequently use) a profile associated with a particular user when tracking user activity and determining targeted advertisements. *See* § XII.B.1-2; Ex. 1122, 5:48-66, 7:33-8:19, 8:42-9:46, 11:30-52, FIGs. 5-6; Ex. 1125, ¶¶ [0017]-[0020], [0033]-[0038], [0040]-[0047], [0049]-[0053], [0066]-[0070]. As the '015 Patent admits, it would be beneficial to use a cookie "to identify a computer that has already been in contact with the same domain", i.e. to include a device identifier in a stored cookie. Ex. 1101, 6:49-51. The '015 Patent states that "[t]he use of cookies enables an ad server to recognize an Internet site visitor who has been previously presented with ads by the ad server or who has conducted searches or accessed content at sites linked to the ad server."

Id., 7:16-20. Further, a POSA would understand by including a device identifier in a stored cookie it simplifies the server design to immediately, explicitly, and uniquely identify the device when it logs onto the content service provider 100 system.

375. Implementing the Madhavan-Park-Martinez-Koran and Madhavan-Park-Martinez-Kato-Koran combinations would merely have been the simple combination of prior art elements according to known methods to yield predictable results. *See* § IV, *supra* (exemplary obvious rationale (A) above). The prior art elements include (i) the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems, which use device identifiers to associate, within a same user profile, user data that has been collected from multiple devices, and (ii) Koran's cookies comprising device identifiers. *See* Ex. 1122, 5:53-6:13, 7:33-53, 7:60-8:15, 8:37-67, 9:19-40, 10:6-25, 10:33-46, 10:67-11:22, 11:30-40, FIGs. 5-9; Ex. 1127, 23:33-60. The known methods include programming or otherwise configuring user devices (e.g., client machine 130, media device 140) to store cookies containing identification information, and programming or otherwise configuring content service provider 100 of the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to retrieve the cookies containing the identification information. *Id*. The predictable results include a communications system that uses a unique cookie, containing identification information (device identifier) collected

from user devices, to identify a profile associated with the user and to retrieve stored user data that is linked to the profile based on the identification information. *Id*.

376. As I discuss above (*see* § XII.D), cookies were well-known, and widely used in network communications, and it would have been straight forward for the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to be configured to store a device identifier within a cookie. *See* Ex. 1122, 7:33-8:19, 8:42-9:46; Ex. 1127, 23:33-60. In my opinion, a POSA would have been familiar cookies as well as the use of cookies to transfer information from a user's device (such as device identifiers). *See* e.g., Ex. 1115, ¶¶ [0007], [0031]; Ex. 1128, 2:40-43, 5:27-67, 6:55-67, 7:58-8:14, FIG. 3. Thus, using a cookie to transfer identification information (device identifiers) from a user device to the content service provider 100 of the combined system would have been well within the skill set of a POSA. *See also* § XII.D. Further, both Madhavan and Koran were originally assigned to Yahoo! Inc. (*see* Ex. 1122, cover; Ex. 1127, cover), and disclose analogous, profile-based behavioral targeting systems that are configured to identify interests of users based on the user's online activities. *Compare* Ex. 1122, 11:152-12:20, FIG. 11 *with* Ex. 1127, 2:26-56, Abstract, FIG. 1. For example, the targeting systems of Madhavan and Koran both include "behavioral targeting processing" that enables the system to receive user input comprising one or more events, generate a plurality of profiles for specific for a target objective, and outputs the behavioral

profiles for various advertisement targeting uses, e.g., direct responds advertising, brand awareness advertising, and/or purchase intention activities. *Id*.

377. In my opinion, a POSA would have had the skills and knowledge to implement this combination with a reasonable expectation of success. As I explain further below, the proposed combination would have been well within the skill of a POSA because it would have merely involved programming the Madhavan-Park-Martinez and Madhavan-Park-Martinez-Kato systems to store identification information, collected from a user's device, within a cookie readable by the one or more servers of the content service provider 100. Madhavan indicates, for example, that "various modifications and changes" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex. 1122, 12:63-13:1, 2:55-61. As I discuss above, Koran expressly teaches that it's behavioral targeting system can be implemented in software using a "general-purpose computer system", such as that of Madhavan's modified system. *See* e.g., Ex. 1127, 23:61-24:3.

378. The proposed combinations thus teach and render obvious claims 12 and 25.

E. Grounds G-H: Claims 11 and 24 Are Obvious Over Grounds A and B in further view of Ashbaugh

379. As I show above for Grounds A and B, the combinations of Madhavan, Park, and Martinez (and Madhavan, Park, Martinez, and Kato) teach and render

obvious independent claims 1 and 14. As I explain below, in my opinion, the combinations of Madhavan, Park, Martinez, and Ashbaugh (and Madhavan, Park, Martinez, Kato, and Ashbaugh) teaches 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. §§ XII.A.10, XII.A.12, XII.B.2, XII.B.4.

380. Claim 11 recites "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." Ex. 1101, claim 11. Claim 24 recites "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." Ex. 1101, claim 24.

381. 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:

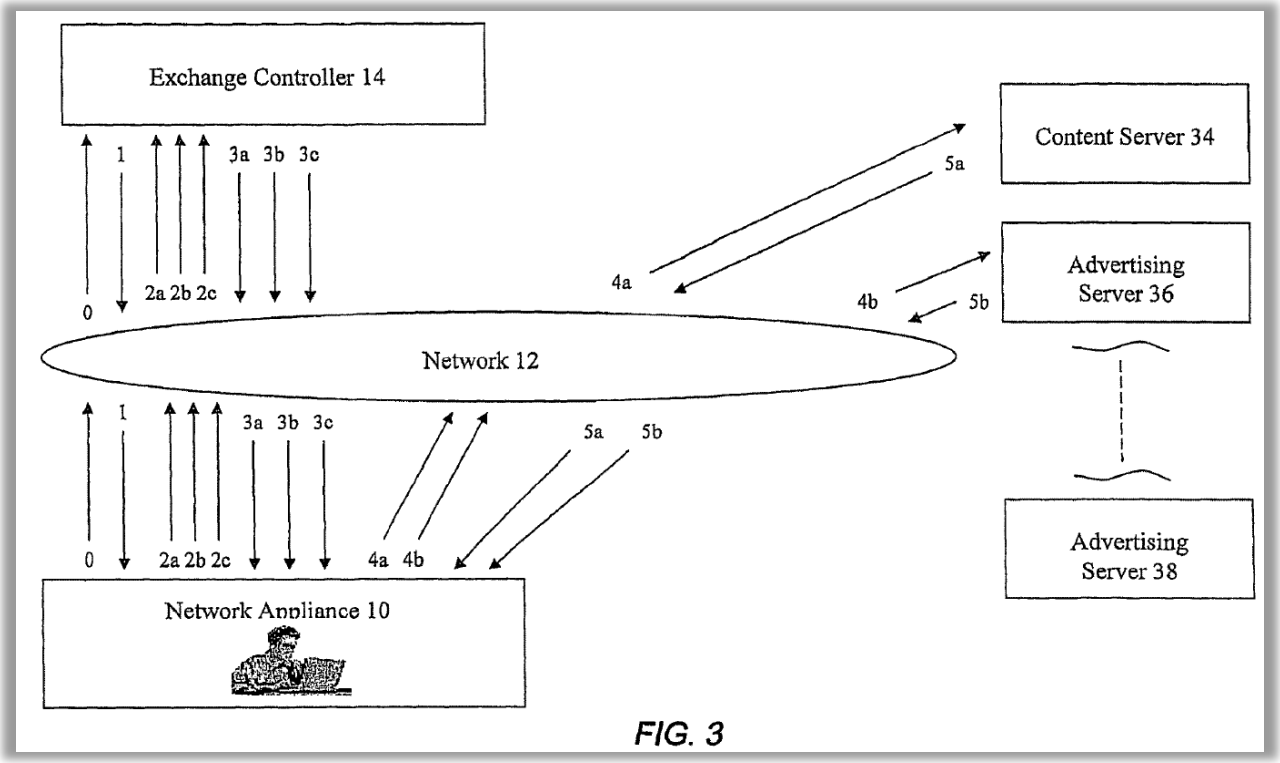


FIG. 3

Ex. 1119, FIG. 3; Ex. 1150, FIG. 3.

382. Ashbaugh teaches using frames to deliver content, advertising, and/or other information in single window of a webpage:

> 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.

Ex. 1119, 8:67-9:9 (emphasis added); Ex. 1150, 13.

383. Ashbaugh teaches using the redirect feature of Hypertext Transfer Protocol (HTTP) to request advertisements for display in an advertising frame of a webpage, including describing an advertising frame for a webpage:

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

Ex. 1119, 10:1-9 (emphasis added); *see also id.*, 9:36-38, FIG. 1; Ex. 1150, 14-15.

384. More specifically, Ashbaugh teaches:

> 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. 1119, 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. 1150, 14-15, 17, FIGs. 1, 3.

385. It is my opinion that a POSA would have been motivated and would have found it obvious to apply Ashbaugh's teachings to the Madhavan-Park-Martinez system and the Madhavan-Park-Martinez-Kato system, which present targeted advertisements to Madhavan's users (e.g., user 110) via the webpages provided by content service provider 100:

> [N]etwork-based content and advertising entity 100 is a network content service provider, such as, for example, an Internet portal like Yahoo! and its associated properties, and includes one or more front-end web servers 102, which may, for example, ***deliver web pages to multiple users***, (e.g., markup language documents), handle search requests to the entity 100, provide automated communications to/from users of the entity 100, deliver images to be displayed within the web pages, deliver content information to the users in various formats, and ***deliver advertising information to the users***.

Ex. 1122, 4:46-56 (emphasis added); *see also*, Ex. 1122 5:3-27, 8:5-8.

386. More specifically, it is my opinion that a POSA would have been motivated and would have found it obvious to apply Ashbaugh's teachings to Madhavan's modified systems, which present advertisements on its website that is

accessible to users via a client program 132 (e.g., browser). Ex. 1122, 5:3-12. Client machine 130 of Madhavan-Park-Martinez (and Madhavan-Park-Martinez-Kato) executes client program 132 (e.g., web browser) to access content service provider 100, which delivers web content and targeted advertisements to client machine via the browser. Ex. 1122, 4:46-56, 5:3-27, 8:1-8, 11:27-61, Abstract. It is my opinion that a POSA would have been motivated to apply Ashbaugh's teachings to Madhavan's modified systems in order to include an advertising frame, as taught by Ashbaugh, in the webpages provided by the content service provider 100 and use HTTP's redirect feature to receive the targeted advertisements presented to Madhavan's users (e.g., user 110) as I show above for element [1G] and claim 10. *See* §§ XII.A.1, XII.A.10, XII.B.1-2; Ex. 1122, 4:46-56, 5:3-27, 8:5-8; Ex. 1119, 9:36-38, 10:1-9, 11:43-66, FIG. 1; Ex. 1150, 14-15, 17, FIG. 1. The Madhavan-Park-Martinez (**Ground G**) and Madhavan-Park-Martinez-Kato (**Ground H**) systems thus would have included advertising frames in the webpages sent to a user's devices and those devices would have been redirected to the source of the advertisements to obtain the advertisements presented in the frames ("**wherein part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement**"). *Id*.

387. Ashbaugh's teachings about the benefits of using advertising frames and redirection would have motivated a POSA to modify Madhavan's systems to

include such features because using advertising frames and redirection to display advertisements would make it significantly more difficult for a third-party to prevent the display of intended content, thereby improving the user's web-browsing experience. 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. 1119, 3:41-46, 10:21-43 (emphasis added); Ex. 1150, 5, 15.

388. 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 a known technique to a known device ready for improvement to yield predictable results. *See* § 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. 1119, 10:1-9, 11:43-66; Ex. 1150, 14-15, 17. The known or similar device includes the content service provider 100 and associated website(s) of Madhavan's modified

systems, which send targeted advertisements from one or more servers to user devices:

> In one embodiment, the ***network-based content and advertising entity 100 is a network content service provider, such as, for example, an Internet portal*** like Yahoo! and its associated properties, and includes one or more front-end web servers 102, which may, for example, ***deliver web pages to multiple users***, (e.g., markup language documents), handle search requests to the entity 100, provide automated communications to/from users of the entity 100, deliver images to be displayed within the web pages, ***deliver content information*** to the users in various formats, ***and deliver advertising information to the users***.
>
> The entity 100 further includes one or more back-end servers, for example, one or more processing servers 104 and one or more advertising servers 105...

Ex. 1122, 4:46-59 (emphasis added); *see also*, Ex. 1122, 3:55-63, 4:7-25, 4:46-5:27, 8:5-8, 8:30-33, Abstract. The improvement to the website of Madhavan's content service provider 100 includes better resistance to known ad-blocking techniques as described in Ashbaugh and noted above. Ex. 1119, 3:41-46, 10:21-43.

389. The predictable results include the webpages and online content provided by content service provider 100 using advertising frames in the webpages

sent to the mobile devices to display targeted advertisements selected as I show above for element [1G] and claim 10 and using redirection to provide, via advertising frames of its webpages, the targeted advertisements sent to the user devices of Madhavan-Park-Martinez (**Ground G**) and Madhavan-Park-Martinez-Kato (**Ground H**), thereby providing better resistance by Madhavan's content service provider 100 to known ad-blocking techniques by using native HTML and HTTP features—specifically advertising frames and redirection—that were not easily circumvented without detriment to web browsing. Using redirection to obtain the targeted advertisements included in the webpages sent to devices in Madhavan's system thus discloses the requirement that "**wherein 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. Ex. 1122, 4:46-56, 5:3-27, 8:5-8; Ex. 11199:36-38, 10:1-9, 11:43-66; Ex. 1150, 14-15, 17.

390. Referring to the example that I discuss for element [1G] (*see* § XII.A.1.vii), after the user accesses the content service provider 10 using both media device 140 ("**first device**") and client machine 130 (second device), the user's profile will have an association ("**first association**") between the respective device identifiers of the first and second devices. *See* e.g., § XII.A.1.vii. As I also discuss above for claim 10 (*see* e.g., § XII.A.10), Madhavan's modified system may connect multiple user devices (e.g., media device 140, client machine 140) to content service

provider 100 at the same time and send advertisements to one or more of the user's devices at the same time. Consider for example that Madhavan's modified systems are configured, as I discuss above, to include an advertising frame (as taught by Ashbaugh) in the webpages of the content service provider 100 that are sent to the user's devices such that one more devices are redirected to the source of the advertisements (e.g., content service provider 100) to obtain the advertisements presented in the frames. In this example, when the user connects to the content service provider 100 using at least media device 140 ("**first device**"), the content service provider sends to the media device 140 a webpage comprising the advertising frame and the media device 140 would have been redirected to the source of the advertisements to obtain the advertisements presented in the frames ("**wherein part (b) takes place when the first device is redirected to the computer system to receive delivery of an advertisement.**")

391. The proposed combinations thus teach and render obvious claims 11 and 24.

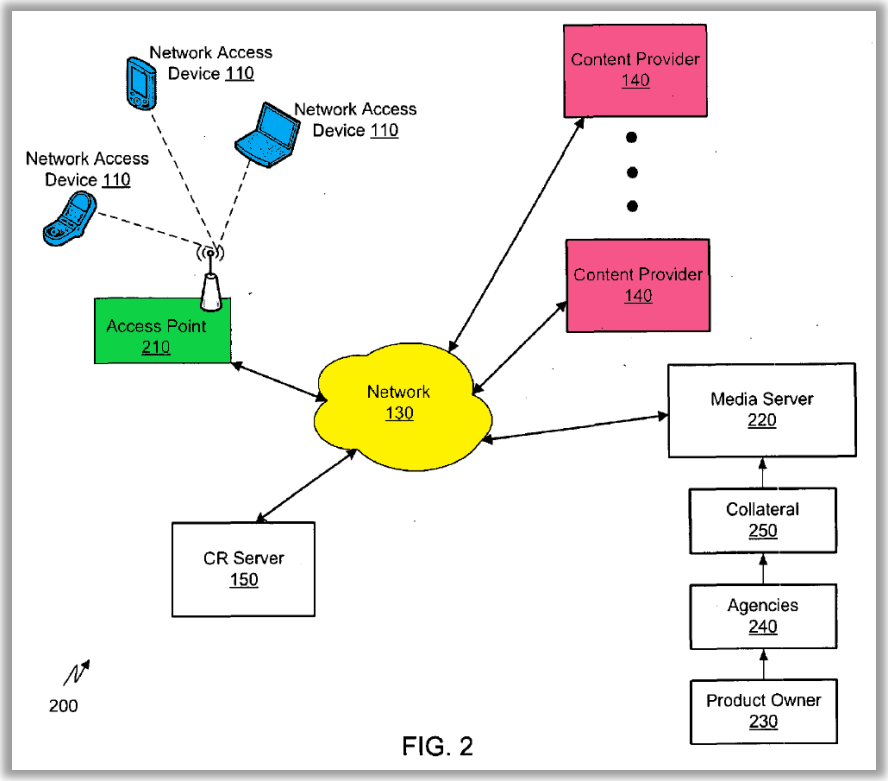
F. Grounds I-J: Claims 12 and 25 Are Obvious Over Grounds A and B in further view of Banga507

392. As I show above for Grounds A and B, the combinations of Madhavan, Park, and Martinez (and Madhavan, Park, Martinez, and Kato) teach and render obvious independent claims 1 and 14. As I explain below, the combinations of

Madhavan, Park, Martinez, and Banga507 (and Madhavan, Park, Martinez, Kato, and Banga507) teach and render obvious dependent claims 12 and 25.

393. In my opinion the combination of Madhavan, Park, Martinez, and Banga507 (and Madhavan, Park, Martinez, Kato, and Banga507) teaches and renders obvious dependent claims 12 and 25, which respectively depend from independent claims 1 and 14. *See* my comments regarding claims 1 and 14 above. *See* §§ XII.A.1, XII.A.12, XII.B. None of Madhavan, Park, Martinez, or Kato, however, discloses a device identifier being stored in a cookie readable by the computer system as required by dependent claims 12 and 25. However, as I explain further below, Banga507 does.

394. As I show below in Figure 2, Banga507 describes a system that includes multiple network access devices 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. 1115, ¶¶ [0022]-[0023], [0026]-[0027], [0033]-[0034], FIGs. 1-2.



Ex. 1115, FIG. 2 (annotated).

395. Banga507 teaches that the network access devices 110 are identifiable using various identifiers. Ex. 1115, ¶¶ [0022]-[0023], [0026]-[0027], [0033]-[0034], FIGs. 1-2. More specifically, Banga507 teaches that its "network access device 110 may be identified by a hybrid cookie/device identifier combination." Ex. 1115, [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. 1115, ¶ [0031]; *see also id.*, ¶ [0007] (providing background information on the use of cookies).

396. Banga507 also 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. 1115, ¶ [0007] (emphasis added).

397. 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 Madhavan-Park-Martinez's and Madhavan-Park-Martinez-Kato's identification information (common IP address, port number, MAC address, etc.). More specifically, in my opinion, a POSA would have recognized that a cookie would have been able to store or include the information included within Madhavan-Park's device identifiers, namely, the common IP address of the IP sharing router a device is connected to, the TCP/IP port number assigned to that device, and/or the device's MAC address, 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 claims 12 and 25.

398. It is my opinion that a POSA would have been motivated to apply Banga507's teachings to the Madhavan-Park-Martinez system (**Ground I**) and the Madhavan-Park-Martinez-Kato system (**Ground J**) because Banga507 teaches 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. 1115, ¶ [0031]. A POSA, therefore, would have understood that providing such functionality and flexibility would have been desirable to the content service provider 100 of Madhavan's

modified systems and associated advertising entities. Ex. 1115, ¶¶ [0007], [0031]; Ex. 1122, 1:22-32, 1:36-2:3, 3:52-4:13, 4:37-56, 5:3-36, 7:7-9:67, 10:33-64, 11:30-12:13, FIGs. 1-2, 5-9; Ex. 1123, ¶¶ [0010]-[0011,] [0030]-[0038], FIGs. 1-2.

399. A POSA would have had the skills and the knowledge to carry out these combinations, which would have merely required using a known technique to improve a known and similar system in the same way and applying a known technique to a known device or method ready for improvement to yield predictable results. *See* § IV, *supra* (exemplary obvious rationales (C) and (D) above). The known and similar devices/systems to be improved, are Madhavan-Park-Martinez's system and Madhavan-Park-Martinez-Kato's system including respective content service providers 100, which lack the ability to store and retrieve cookies containing unique device identifiers as taught by Banga507. The known technique includes Banga507's technique of employing a "hybrid cookie/device identifier combination" for identifying user devices. The predictable results include device identifiers being stored in cookies, allowing a content provider, such as content service provider 100 to retrieve a cookie to identify a user and then update the cookie as appropriate thereby providing improved integration by Madhavan's systems with advertising entities that rely on cookie-based systems. 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.

400. Using a hybrid cookie/device identifier combination as taught by Banga507 that respectively includes Madhavan-Park-Martinez's and Madhavan-Park-Martinez-Kato's device identifier (common IP address, port number, MAC address, etc.) thus teach the 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 claims 12 and 25.

401. The proposed combinations thus teach and render obvious claims 12 and 25.

G. Grounds K-O: Claims 1-26 Are Obvious Over Grounds A, C, E, G, and I in further view of Sitaraman

402. As I show above for Grounds A and C, the combinations of Madhavan-Park-Martinez and Madhavan-Park-Martinez-Brookes teach and render obvious claims 1-10, 13-23 and 26. As I show above for Ground E, the combination of Madhavan-Park-Martinez-Koran teaches and renders obvious claims 1-10, 13-23 and 25-26. As I show above for Ground G, the combination of Madhavan-Park-Martinez-Ashbaugh teaches and renders obvious claims 11 and 24. As I show above for Ground I, the combination of Madhavan-Park-Martinez-Banga507 teaches and

renders obvious claims 12 and 25. As I explain below, the above-identified combinations (described in Grounds A, C, E, G, and I) in further view of Sitaraman teach and render obvious claims 1-26.

403. As I explain above in Sections XII.A.1.a and XII.A.1.v, a POSA would understand, in view of their general knowledge, that the common IP address of the router in Madhavan's modified system would be dynamically assigned using the industry-standard Dynamic Host Configuration Protocol (DHCP), which was well-known and admitted prior art in the '015 patent. *See* e.g., ¶¶154 and 204 of my Declaration above. Additionally, a POSA would have found it obvious to dynamically assign the common IP address of the router in Madhavan's modified system because there were only two options of assigning IP addresses—dynamic assignment and static assignment of IP addresses. However, I have been asked to consider a scenario where the shared router of Madhavan's modified system has a static IP address, rather than a dynamically-assigned IP address. Under such a scenario, to the extent that it is argued that the various combinations of Madhavan-Park-Martinez described above in Grounds A, C, E, G, and I do not expressly disclose that at least some associations between the device identifiers of the user's devices (e.g., client machine 130, media device 140) are "determined without use of personally identifiable information", as recited in at least elements [1E] and [14E], because the router of Madhavan's modified systems does not have a dynamically-

assigned IP address, this would have been obvious based on the general knowledge of a POSA, as confirmed by Sitaraman.

404. Sitaraman discloses a method for managing dynamic IP address allocation in a data communications network. Sitaraman, Abstract. As I explain above (Section XII.A.1.v), my Declaration primarily relies on disclosures in the Background of Sitaraman, which would have been basic knowledge of ordinarily skilled artisans. Sitaraman acknowledges that with the exponential growth of the Internet, companies and users are faced with an increasing shortage of IP addresses, since there is a finite number of static addresses. Sitaraman, 3:21-29; see also Ex. 1123, ¶¶[0009]-[0010]. A well-known approach to address this issue is the use of "dynamic" IP addresses, in which a device is dynamically assigned an IP address by a Dynamic Host Configuration Protocol server. As I explain above (Section XII.A.1.v), Dynamic Host Configuration Protocol (DHCP) refers to a well-known and industry-standard technique in which a device on a network (such as a user device) can ask a DHCP server "to provide it with an IP address and configuration parameters. A DHCP server on the network that is authorized to configure this client will offer an IP address by sending a reply to the client." Ex. 1160, 3:34-40. Sitaraman explains that DHCP servers are used, for example, by ISPs who typically maintain a "pool" of available IP addresses that can be dynamically assigned to the user device. Ex. 1160, 3:64-4:1, 6:63-66.

405. In my opinion, a POSA would have found it obvious to combine Madhavan's modified systems (as described above in Grounds A, C, E, G, and I) with Sitaraman to incorporate well-known DCHP techniques including dynamically assigning a public IP address to a shared router. This would have been merely applying a known technique to a known device ready for improvement to yield predictable results. *See* § IV, *supra* (exemplary obvious rationale (D) above).

406. The known technique includes Sitaraman's use of DHCP techniques to dynamically assign IP addresses to different devices. Ex. 1160, 3:31-4:1, 6:63-66, FIGs. 2-3. The known device ready for improvement includes the shared IP router of Madhavan's modified systems (as described above in Grounds A, C, E, G, and I), which is assigned a public IP address from ISPs and enable connected devices in a local network to access the Internet. *See* e.g., Ex. 1123, ¶¶[0007]-[0016], [0030], [0035]-[0038]. The improvement to Madhavan's modified systems include the shared IP router's (e.g., Park's router 110/210) use of a dynamically-assigned IP address. Ex. 1160, 3:31-4:1, 6:63-66, FIGs. 2-3. A POSA would have recognized and understood that the dynamic assignment of IP addresses would provide many benefits (see also ¶¶ 409 and 412 of my Declaration below), including allowing newly added/replaced network devices such as routers to be quickly and accurately configured, thereby minimizing network downtime for devices\ connecting to the network (e.g., through the router). Additionally, a POSA would have also recognized

that dynamic assignment of IP addresses would allow the use and re-use of IP address and that this would have been beneficial given that internet service providers were increasingly facing IP address shortages. Ex. 1160, 3:25-33. The combination would have predictably resulted in the Madhavan's modified systems described above, with the further ability of the shared IP router (e.g., Park's router 110/210) to have a dynamically-assigned IP address, for example, using the well-known DHCP techniques described in Sitaraman. Ex. 1160, 3:31-4:1, 6:63-66, FIGs. 2-3

407. Under the proposed combinations, therefore, the IP address of the shared router would have been dynamically assigned by a DHCP server. Accordingly, the identification information (device identifier) received from a user's devices by content service provider 100, of Madhavan's modified systems, would include the dynamically-assigned IP address of the shared IP router used by the device to access the Internet and the port number assigned the device. Therefore, as I explain above (Section XII.A.1.v), the association between the respective device identifiers of at least two user devices (e.g., client machine 140, user devices 140) of Madhavan's modified systems would have been "**determined without use of personally identifiable information [PII]**" because, under the proposed combinations, a POSA would have understood that the router's dynamically-assigned public IP address used to connect the user's devices to the Internet and the port number associated with a device cannot be used, by itself, to identify any

specific person and thus does not constitute "PII" as this term is used and defined in the '015 Patent. *See* Ex. 1101, 6:25-44 (defining PII and non-PII). In fact, the '015 Patent expressly states that a dynamically assigned IP address constitutes non-PII. Ex. 1101, 6:35-44.

408. Further, a POSA would have had the knowledge and skills to implement the combination with a reasonable expectation of success. Sitaraman is an analogous reference in the same field of communication between devices over the Internet, including use of dynamic IP addresses. See Section IX.I. Sitaraman would also have been reasonably pertinent to a number of problems facing the inventor, including understanding DHCP and how dynamic IP addresses are assigned to requesting devices.

409. It is my opinion that a POSA would have been motivated to combine Sitaraman with Madhavan's modified systems. More specifically, a POSA would have been motivated to use a dynamically-assigned IP address for the shared IP router of Madhavan's modified systems in order to more efficiently assign and use available IP addresses. Sitaraman expressly acknowledges this motivation by explaining that Internet Service Providers (ISPs) "are faced with an increasing shortage of IP addresses," and that DHCP was developed in part "to help solve the shortage of IP addresses." Ex. 1160, 3:25-33; *see* also Ex. 1106, ¶[0003]; Ex. 1123, ¶¶[0009]-[0010]. For example, traditional iPv4 addresses (which are typically

represented as four numbers, *e.g.*, 209.112.123.30), which were the most common types of IP addresses in use as of April 2007, allow only a set number unique addresses worldwide (e.g., 4 billion addresses). DHCP allows for more efficient utilization of scarce IP addresses, for example, by allowing IP addresses to be temporarily used, and then recycled and used by other devices.

410. Furthermore, as I explain above, it is my opinion that a POSA would have understood that, despite any alleged use of static IP addresses for a router in Madhavan's modified system, the content service provider 100 in these systems do not depend on router's only having static IP addresses. Rather, the content service provider 100 determines whether a user device and corresponding user data is associated with a particular user profile based on the identification information (e.g., IP address and port number) obtained from the device when connecting to the content service provider. *See* e.g., Ex. 1122, 5:53-6:12, 7:15-19, 7:33-36, 7:63-67, 8:9-15, 8:42-48, 8:63-67, 10:3-9, 10:21-25, 10:33-46, 10:67-11:22, FIGs 6-9. Associating a user device and corresponding user data with a particular user profile would have functioned the same way regardless of whether the underlying IP address of the router used by the user device to access the Internet was static or dynamically assigned. In fact, Madhavan expressly acknowledges that a device's IP address, which is used as identification information by the content service provider 100, may

be dynamically assigned. Ex. 1122, 7:9-15 (describing that a unique IP address assigned to a user's device is dedicated for use during an online session).

411. This correlating/associating functionality in Madhavan's modified systems would have remained even if the shared router had a dynamic IP address. The only difference would be that the content service provider 100 may have to occasionally use other identification information (e.g., password information) to initially identify a user profile when a different dynamic IP address is assigned (*see* e.g., ¶260 of my Declaration above), or request previously-assigned IP addresses for a device from the DHCP server. But this would not have prevented a POSA from pursuing the proposed combination and does not outweigh the advantages of allowing dynamic IP addresses as I discuss above. Moreover, instances requiring the use of identification information, other than an IP address, to associate user data with a user profile would likely have been relatively infrequent. For example, the shared router could have leased a dynamic IP address for an extended period of time (such as multiple days or weeks) that far exceeds a predetermined time period for assessing/determining a short term or long term behavioral profile (see e.g., Sections XII.A.1.iii-.v), and even after the lease expires, it is not uncommon for DHCP servers to assign the same dynamic IP address to a device that it previously assigned (if available).

412. It is also my opinion that a POSA would have also recognized other well-known benefits of dynamic IP addresses. As I explain above (Section XII.A.1.v), for example, dynamic addresses are less costly compared to maintaining static IP addresses and, thus more widely used. Ex. 1101, 4:37-42, 9:61-65. Additionally, it was also well-known that systems that use of static IP addresses were more susceptible to attacks by hackers and other malicious parties. For example, once a hacker or malicious party gains knowledge of a target system's static IP address, the party could continue attempting to penetrate that system for long periods using that same IP address. However, by using a dynamically-assigned IP address, the target system could be assigned a new and different dynamic IP address using DHCP, thus preventing the malicious party from accessing the target system until or unless it finds a way to obtain the newly-assigned dynamic IP address.

413. It is my further opinion that a POSA would have had at least a reasonable expectation of success in achieving the proposed combinations. As noted previously, the dynamic IP address techniques in Sitaraman, were within the general knowledge of a POSA. Further, Madhavan indicates, for example, that "various modifications and changes" to its disclosed system are within the capabilities of those having ordinary skill in the art. Ex.1122, 12:63-13:1, 2:55-61. Also, as I previously explained, Madhavan already contemplates the use of dynamic IP addresses as identification information.

414. In my opinion, a POSA would have implemented the proposed combinations using conventional programming techniques, and the disclosures of the prior art provide more than sufficient detail to carry out the proposed combinations without undue experimentation. Madhavan's system uses a "conventional" network architecture, and Madhavan teaches that the devices within this system include typical computing components such as processors, memory, data, and supporting circuitry that run programs for carrying out the functionality of Madhavan's system. Ex. 1122, 4:26-27, 12:21-62. Thus, a POSA would have been familiar with the design and components of Madhavan's system for the purpose of programming that system to function with a router having a dynamically-assigned IP address.

415. For at least the same reasons as I discussed above in §XII.A.3 and XII.A.12 of my Declaration, it would have been obvious to determine and use associations based on a first device (e.g., client machine 130) accessing the Internet between two separate instances of a second device (e.g., media device 140) having accessed the Internet all using a same common IP address, which has been dynamically assigned using known DHCP techniques as taught by Sitaraman.

416. The proposed combinations thus teach and render obvious claims 11 and 24

XIII. EVIDENCE OF NON-OBVIOUSNESS

417. 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

418. 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

David B. Lett

APPENDIX A

References I considered include:

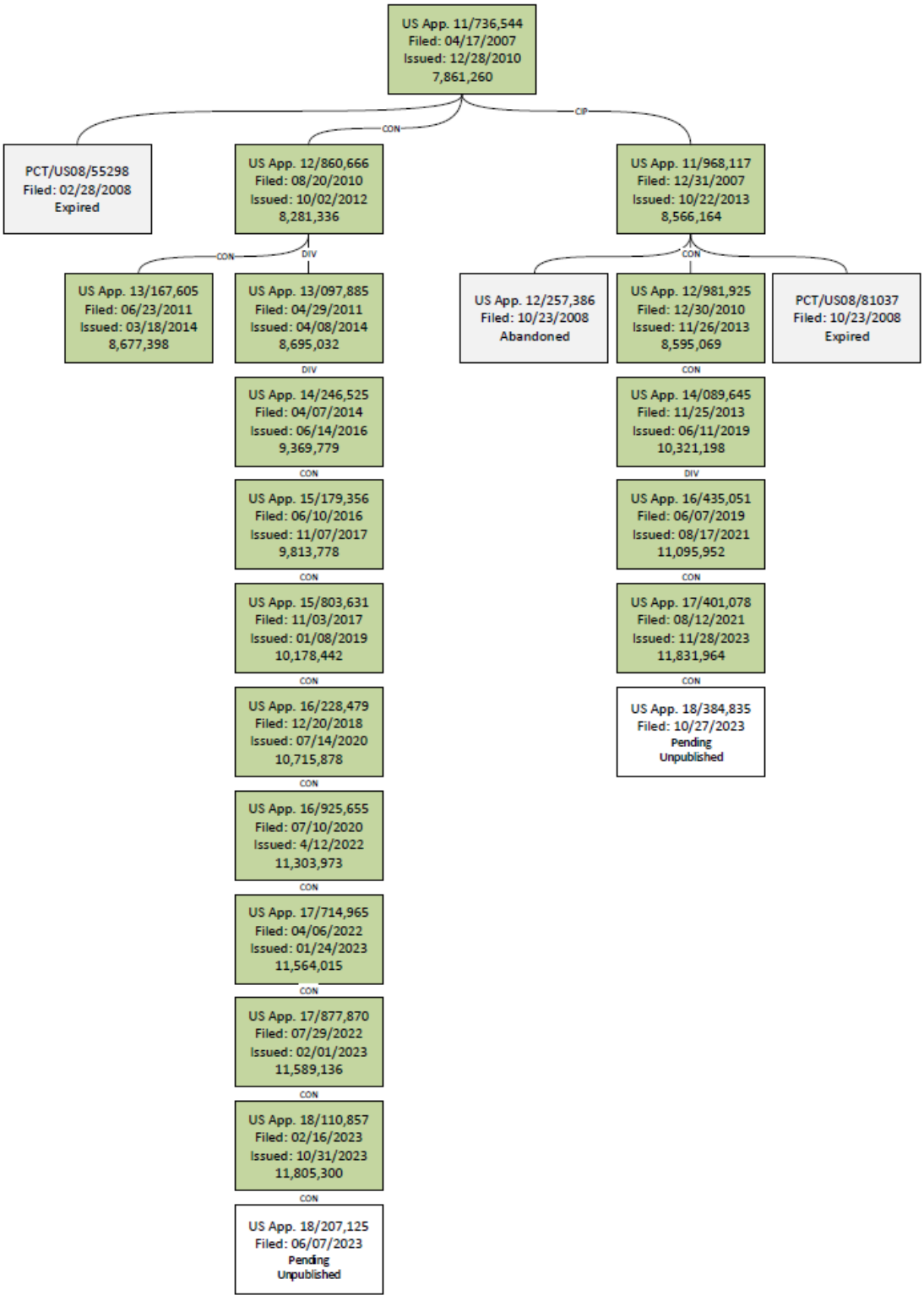
Ex. 1101:	U.S. Patent No. 11,564,015 ("the '015 patent")
Ex. 1104:	Certified Prosecution History for U.S. Patent No. 11,564,015
Ex. 1105:	Excerpts from Case Docket of *Meta Platforms Inc v. AlmondNet Inc et al.*, IPR2022-00773 (March 28, 2022)
Ex. 1106:	U.S. Patent Application Publication No. 2004/0076180 ("Satapati")
Ex. 1112:	Excerpts from E. D. Zwicky *et al.*, *Building Internet Firewalls* (2d ed. 2000) ("Zwicky")
Ex. 1115:	U.S. Patent Application Publication No. 2006/0265507 ("Banga507")
Ex. 1117:	U.S. Patent Application Publication No. 2006/0242294 ("Damick")
Ex. 1119:	U.S. Patent No. 8,930,239 ("Ashbaugh")
Ex. 1120:	U.S. Pat. App. Pub. No. 2007/0025306 ("Cox")
Ex. 1121:	Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
Ex. 1122:	U.S. Patent No. 8,180,674 ("Madhavan")
Ex. 1123:	U.S. Patent Application Publication No. 2006/0039386 ("Park")
Ex. 1124:	U.S. Patent Application Publication No. 2008/0120178 ("Martinez")
Ex. 1125:	U.S. Patent Application Publication No. 2004/0003292 ("Kato")
Ex. 1126:	U.S. Patent No. 5,428,778 ("Brookes")
Ex. 1127:	U.S. Patent No. 8,438,170 ("Koran")

Ex. 1128:	U.S. Patent No. 6,415,322 ("Jaye")
Ex. 1129:	Excerpts from Downing *et al.*, *Dictionary of Computer and Internet Terms* (8th ed. 2003)
Ex. 1130:	Excerpts from Newton, *Newton's Telecom Dictionary* (21st ed. 2005)
Ex. 1131:	U.S. Patent No. 6,282,548 ("Burner")
Ex. 1132:	U.S. Patent No. 6,036,601 ("Heckel")
Ex. 1133:	U.S. Patent Application Publication No. 2005/0096978 ("Black")
Ex. 1135:	Hagel *et al.*, *Net Worth: Shaping Markets When Customers Make the Rules* (1999) ("Hagel")
Ex. 1136:	Request for Comments: 1631, "The IP Network Address Translator (NAT)" (1994) ("RFC 1631")
Ex. 1137:	Zeff *et al.*, *Advertising on the Internet*, (2nd ed. 1999) ("Zeff")
Ex. 1141:	ANSI/IEEE Std 802.11, 1999 Edition, "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications"
Ex. 1150:	International Publication No. WO 2007/078283 for International Patent Application No. PCT/US2005/047230 to Ashbaugh ("Ashbaugh PCT")
Ex. 1151:	Claim Chart (Exhibit 8) Accompanying Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
Ex. 1152:	Notice of Allowance mailed on August 20, 2013, in U.S. Patent Application No. 13/167,605
Ex. 1153:	Notice of Allowance mailed on December 9, 2021, in U.S. Patent Application No. 16/925,655
Ex. 1157:	U.S. Patent Application Publication No. 2004/0111640 ("Baum")

Ex. 1159:	U.S. Patent No. 7,376,714 (“Gerken”)
Ex. 1160:	U.S. Patent No. 6,427,170 (“Sitaraman”)
Ex. 1161:	Korean Pat. App. Pub. No. 2006-0065969 (“Han”)
Ex. 1162:	Certified Translation of Korean Pat. Pub. App. No. 2006-0065969 (“Han”)
Ex. 1163:	US Pat. App. Pub. No. 2002/0083445 (“Flickinger”)
Ex. 1164:	US Pat. App. Pub. No. 2008/0040742 (“Howcroft”)
Ex. 1165:	Jakob Nielsen, *Request Marketing* (Oct. 2000), https://www.nngroup.com/articles/request-marketing/
Ex. 1166:	Bettina Fabos, The Commercial Search Engine Industry and Alternatives to the Oligopoly (Mar. 2006) EastBound Journal
Ex. 1167:	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. 1168:	US Pat. App. Pub. No. 2002/00998842 (“Jennings”)
Ex. 1169:	US Pat. App. Pub. No. 2002/0123928 (“Eldering”)
Ex. 1170:	US Pat. No. 7,634,789 (“Gerba”)
Ex. 1171:	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).
Claim 5	

Designation	Claim Language
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.