

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREEWHEEL MEDIA, INC.,
Petitioner,

v.

ALMONDNET, INC.,
Patent Owner.

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

Inter Partes Review No.: IPR2024-00419

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *et seq.***

Petition 1 of 2

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EXHIBITS

- Ex. 1001: U.S. Patent No. 11,564,015 (“the ’015 Patent”)
- Ex. 1002: Declaration of Dr. David B. Lett in Support of Petition For *Inter Partes* Review Of U.S. Patent No. 11,564,015
- Ex. 1003: *Curriculum Vitae* of Dr. David B. Lett
- Ex. 1004: Certified Prosecution History for U.S. Patent No. 11,564,015
- Ex. 1005: Excerpts from Case Docket of *Meta Platforms Inc v. AlmondNet Inc et al.*, IPR2022-00773 (March 28, 2022)
- Ex. 1006: U.S. Patent Application Publication No. 2004/0076180 (“Satapati”)
- Ex. 1007: U.S. Patent Application Publication No. 2008/0113674 (“Baig”)
- Ex. 1008: U.S. Provisional Patent Application No. 60/858,204 (“Baig Provisional”)
- Ex. 1009: Redline Comparison Between Baig (Ex. 1016) and Baig Provisional (Ex. 1008)
- Ex. 1010: Reserved
- Ex. 1011: U.S. Patent No. Application Publication No. 2006/0128364 (“Costa”)
- Ex. 1012: Excerpts from E. D. Zwicky *et al.*, *Building Internet Firewalls* (2d ed. 2000) (“Zwicky”)
- Ex. 1013: Declaration of Sylvia Ellis
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- Ex. 1015: U.S. Patent Application Publication No. 2006/0265507 (“Banga507”)
- Ex. 1016: U.S. Patent Application Publication No. 2006/0271690 (“Banga690”)

Ex. 1017:	U.S. Patent Application Publication No. 2006/0242294 (“Damick”)
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Ex. 1033:	U.S. Patent Application Publication No. 2005/0096978 (“Black”)
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Ex. 1035:	Hagel <i>et al.</i> , <i>Net Worth: Shaping Markets When Customers Make the Rules</i> (1999) (“Hagel”)

- Ex. 1036: Request for Comments: 1631, “The IP Network Address Translator (NAT)” (1994) (“RFC 1631”)
- Ex. 1037: Zeff *et al.*, *Advertising on the Internet*, (2nd ed. 1999) (“Zeff”)
- Ex. 1038: Reserved
- Ex. 1039: Request for Comments: 793, “Transmission Control Protocol” (1981) (“RFC 793”)
- Ex. 1040: Request for Comments: 2663, “IP Network Address Translator (NAT) Terminology and Considerations” (1999) (“RFC 2663”)
- Ex. 1041: ANSI/IEEE Std 802.11, 1999 Edition, “Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications”
- Ex. 1042: Excerpts from Harley Hahn, *The Internet Complete Reference* (2d ed. 1996) (“Hahn”)
- Ex. 1043: U.S. Patent Application Publication No. 2003/0066085 (“Boyer”)
- Ex. 1044: U.S. Patent Application Publication No. 2007/0217436 (“Markley”)
- Ex. 1045: U.S. Patent Application Publication No. 2006/0230427 (“Kunkel”)
- Ex. 1046: U.S. Patent No. 6,543,052 (“Ogasawara”)
- Ex. 1047: U.S. Patent Application Publication No. 2002/0145621 (“Nguyen”)
- Ex. 1048: Excerpts from *Computer Dictionary*, Microsoft Press (2d ed. 1994)
- Ex. 1049: Excerpts from *Webster’s New World Computer Dictionary* (10th ed. 2003)
- Ex. 1050: International Publication No. WO 2007/078283 for International Patent Application No. PCT/US2005/047230 to Ashbaugh (“Ashbaugh PCT”)

- Ex. 1051: Claim Chart (Exhibit 8) Accompanying Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
- Ex. 1052: Notice of Allowance mailed on August 20, 2013, in U.S. Patent Application No. 13/167,605
- Ex. 1053: Notice of Allowance mailed on December 9, 2021, in U.S. Patent Application No. 16/925,655
- Ex. 1054: U.S. Patent Application Publication No. 2005/0108418 (“Bedi”)
- Ex. 1055: U.S. Patent Application Publication No. 2004/0177147 (“Joshi”)
- Ex. 1056: Mapping Between Baig Provisional (Ex. 1008) and Baig (Ex. 1007)
- Ex. 1057: Reserved
- Ex. 1058: Institution Decision from *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2023-01281, Paper 7 (February 21, 2024)
- Ex. 1059: Reserved
- Ex. 1060: Reserved
- Ex. 1061: Reserved
- Ex. 1062: Reserved
- Ex. 1063: US Pat. App. Pub. No. 2002/0083445 (“Flickinger”)
- Ex. 1064: US Pat. App. Pub. No. 2008/0040742 (“Howcroft”)
- Ex. 1065: Jakob Nielsen, *Request Marketing* (Oct. 2000), <https://www.nngroup.com/articles/request-marketing/>
- Ex. 1066: Bettina Fabos, *The Commercial Search Engine Industry and Alternatives to the Oligopoly* (Mar. 2006) EastBound Journal

- Ex. 1067: Susan Young, Getting the Message: How the Internet is Changing Advertising (May 16, 2000), <https://hbswk.hbs.edu/item/getting-the-message-how-the-internet-is-changing-advertising>
- Ex. 1068: US Pat. App. Pub. No. 2002/00998842 (“Jennings”)
- Ex. 1069: US Pat. App. Pub. No. 2002/0123928 (“Eldering”)
- Ex. 1070: US Pat. No. 7,634,789 (“Gerba”)
- Ex. 1071: U.S. Pat. App. Pub. No. 2007/0180147 (“Leigh”)

MANDATORY NOTICES

Real Parties in Interest (37 C.F.R. § 42.8(b)(1))

The real parties-in-interest for this petition are (i) FreeWheel Media, Inc., (ii) Beeswax.io Corp., (iii) Comcast Corporation, (iv) Comcast Cable Communications, LLC, and (v) Comcast Cable Communications Management, LLC.

No unnamed entity is funding, controlling, or directing this Petition for *inter partes* review (IPR) of U.S. Patent No. 11,564,015 (“the ’015 Patent”), or otherwise has an opportunity to control or direct this Petition or Petitioner’s participation in any resulting IPR.

The ’015 Patent is the subject of one other request for *inter partes* review filed by Petitioner. No arguments presented in this Petition were raised during prosecution of the ’015 Patent.

Related Matters (37 C.F.R. § 42.8(b)(2))

The ’015 Patent was asserted against FreeWheel Media, Inc. and Beeswax.io Corp. by AlmondNet, Inc. and Intent IQ, LLC (collectively “AlmondNet”) in the United States District Court for the District of Delaware: *AlmondNet, Inc. v. Freewheel Media, Inc.*, No. 1:23-cv-00220-MN (D. Del.) (“Corresponding District Court Litigation”). Ex. 1021. The earliest date of service of the complaint for the

Corresponding District Court Litigation on any of the real parties-in-interest was March 2, 2023.

This is the first of two petitions for *inter partes* review filed by Petitioner against the '015 Patent—the other petition is assigned IPR2024-00420. Petitioner is also filing four petitions for *inter partes* review against related U.S. Pat. No. 7,861,260—those four petitions are assigned IPR2024-00421, IPR2024-00422, IPR2024-00423, and IPR2024-00424.

According to the Office's records, the '015 Patent is a continuation of application Ser. No. 16/925,655, filed Jul. 10, 2020, now U.S. Pat. No. 11,303,973 ("the '973 Patent"), which is a continuation of application Ser. No. 16/228,479, filed Dec. 20, 2018, now U.S. Pat. No. 10,715,878 ("the '878 Patent"), which is a continuation of application Ser. No. 15/803,631, filed Nov. 3, 2017, now U.S. Pat. No. 10,178,442 ("the '442 Patent"), which is a continuation of application Ser. No. 15/179,356, filed Jun. 10, 2016, now U.S. Pat. No. 9,813,778 ("the '778 Patent"), which is a continuation of application Ser. No. 14/246,525, filed Apr. 7, 2014, now U.S. Pat. No. 9,369,779 ("the '779 Patent"), which is a divisional of application Ser. No. 13/097,885, filed Apr. 29, 2011, now U.S. Pat. No. 8,695,032 ("the '032 Patent"), which is a divisional of application Ser. No. 12/860,666, filed Aug. 20, 2010, now U.S. Pat. No. 8,281,336 ("the '336 Patent"), which is a

continuation of application Ser. No. 11/736,544, filed Apr. 17, 2007, now U.S. Pat. No. 7,861,260 (“the ’260 Patent”).

According to the Office’s records, the ’015 Patent is also related to: application Ser. No. 13/167,605, filed Jun. 23, 2011, now U.S. Pat. No. 8,677,398 (“the ’398 Patent”), which is a continuation of the ’336 Patent; and application Ser. No. 14/089,645, filed Nov. 25, 2013, now U.S. Pat. No. 10,321,198 (“the ’198 Patent”), which is a continuation of application Ser. No. 12/981,925, filed Dec. 30, 2010, now U.S. Pat. No. 8,595,069 (“the ’069 Patent”), which is a continuation of application Ser. No. 11/968,117, filed Dec. 31, 2007, now U.S. Pat. No. 8,566,164 (“the ’164 Patent”), which is a continuation-in-part of the ’260 Patent.

In addition to the Corresponding District Court Litigation, the ’015 Patent or its related patents have been the subject of the following district court cases:

- *AlmondNet, Inc. v. Viant Technology Inc.*, 1-23-cv-00174 (D. Del.), which is currently pending.
- *AlmondNet, Inc. v. Samsung Electronics Co., Ltd.*, 4-22-cv-07515 (N.D. Cal.) (“7515 N.D. Cal. case”), which is currently pending but stayed.
- *AlmondNet, Inc. et al. v. Samsung Electronics Co., Ltd. et al.*, 6-21-cv-00891 (W.D. Tex.), which was transferred to the 7515 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”), which was reassigned to the 7515 N.D. Cal. case and is otherwise stayed.
- *AlmondNet, Inc. v. Meta Platforms, Inc. f/k/a Facebook, Inc.*, 6-22-cv-01205 (W.D. Tex.), which was transferred to the 8911 N.D. Cal. case.
- *AlmondNet, Inc. v. Amazon.com, Inc.*, 6-22-cv-01204 (W.D. Tex.), which was terminated.
- *AlmondNet, Inc. v. Microsoft Corp.*, 6-22-cv-01206 (W.D. Tex.), which was consolidated into the 897 W.D. Tex. Case.
- *AlmondNet, Inc. et al v. Oath Holdings Inc.*, 1-19-cv-00247 (D. Del.) (“247 D. Del. case”), which was terminated on March 4, 2019, without a claim construction order.
- *AlmondNet, Inc. et al v. Yahoo! Inc.*, 1-16-cv-01557 (E. D. N.Y.), which was transferred to the 247 D. Del. case.
- *Roku, Inc. v. AlmondNet, Inc. et al.*, 1-21-cv-01035 (D. Del.), which is currently pending and awaiting a claim construction order.

The '015 Patent has not been subject to any prior U.S. Patent Office proceedings. Patents related to the '015 Patent have been the subject of the following U.S. Patent Office proceedings. Petitioner and its real parties-in-interest were not involved in any of these cases:

- *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2022-00773, challenging claims of the '398 Patent on different grounds from those presented herein, was granted institution, but terminated due to settlement. Ex. 1005.
- *Amazon.com, Inc. et al. v. Intent IQ, LLC, et al.*, IPR2023-00227, challenging claims of the '398 Patent on different grounds from those presented herein, was denied institution.
- *Microsoft Corporation et al. v. Intent IQ, LLC*, IPR2022-01420, challenging claims of the '398 Patent on different grounds from those presented herein, was denied institution.
- *Roku, Inc. v. Intent IQ, LLC et al.*, IPR2022-01236, challenging claims of the '398 Patent on different grounds from those presented herein, was denied institution.
- *Yahoo! Inc. v. Intent IQ, LLC et al.*, IPR2017-01299, challenging claims of the '398 Patent on different grounds from those presented herein, was denied institution.
- *Roku, Inc. v. Intent IQ, LLC*, IPR2022-01315, challenging claims of the '878 Patent on different grounds from those presented herein, was denied institution.

- *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2023-01281, challenging claims of the '878 Patent on different grounds from those presented herein, was granted institution. Ex. 1058.
- *Samsung Electronics Co., Ltd. v. AlmondNet, Inc. et al.*, IPR2022-01505, challenging claims of the '878 Patent on different grounds from those presented herein, was denied institution.
- *Samsung Electronics Co., Ltd. v. Intent IQ, LLC*, IPR2022-01506, challenging claims of the '164 Patent on different grounds from those presented herein, was denied institution.
- *Roku, Inc. v. Intent IQ, LLC*, IPR2022-00953, challenging claims of the '164 Patent on different grounds from those presented herein, was denied institution.
- *Roku, Inc. v. Intent IQ, LLC*, IPR2022-00959, challenging claims of the '069 Patent on different grounds from those presented herein, was denied institution.
- *Roku, Inc. v. Intent IQ, LLC*, IPR2022-00960, challenging claims of the '198 Patent on different grounds from those presented herein, was denied institution.

- *Samsung Electronics Co., Ltd. v. Intent IQ, LLC*, IPR2022-01507, challenging claims of the '198 Patent on different grounds from those presented herein, was denied institution.

Lead and Back-Up Counsel (37 C.F.R. § 42.8(b)(3))

Petitioner designates counsel listed below. A power of attorney for counsel is being concurrently filed.

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Petitioner consents to electronic service by email at the following address and the above emails: ComcastIPRService@bannerwitcoff.com.

I. INTRODUCTION

FreeWheel Media, Inc. (“Petitioner”) petitions for *inter partes* review and cancellation of claims 1-26 of U.S. Patent No. 11,564,015 (Ex. 1001). This patent describes online access and delivering targeted advertisements “without employing personally identifiable information.” Ex. 1001, 1:27-31, Abstract. The claims recite basic, well-known technology for carrying out this business method and are unpatentable as obvious.

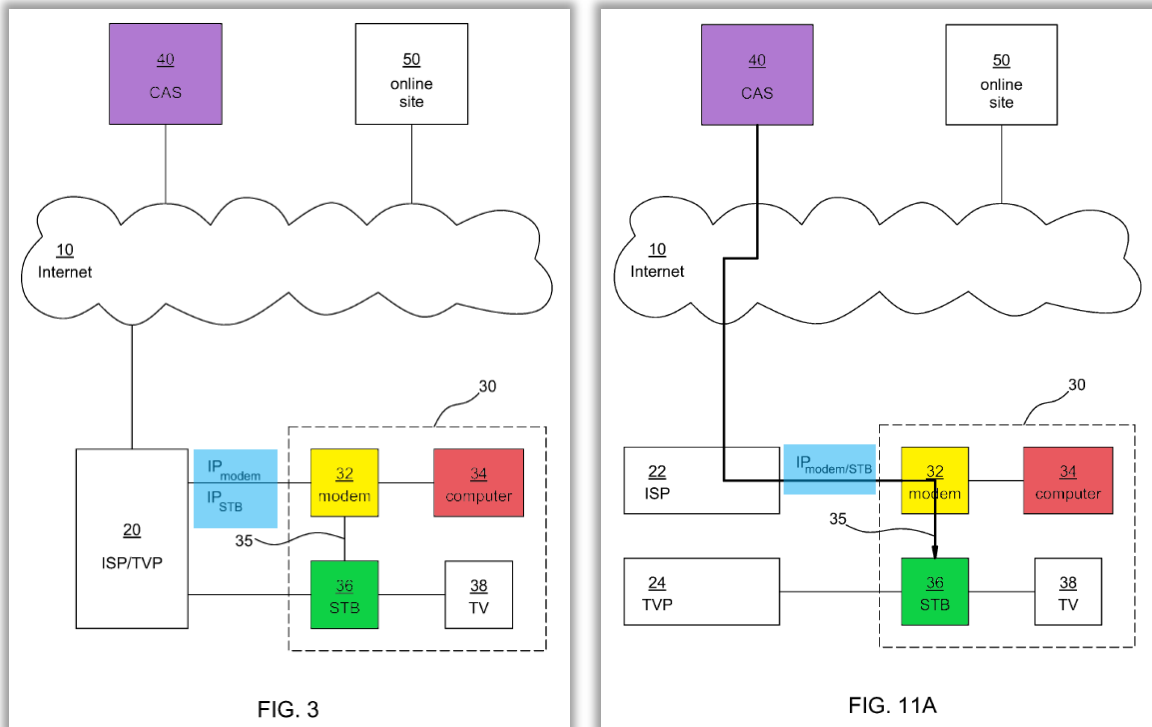
II. OVERVIEW OF THE ’015 PATENT

A. Brief Description

The ’015 Patent describes “a method for delivering targeted television advertisements based on online behavior.” Ex. 1001, Abstract, 8:17-23, 1:27-31, 8:56-9:12, 17:54-61. It admits using well-known devices and technologies, including an online user device, set-top box (STB), central ad server (CAS), and user profiles. *Id.*, 1:49-2:7, 4:61-5:17. A user’s device is associated with another device (e.g., an STB), based on both devices having a common IP address. *Id.*, 1:49-2:7, 9:54-10:9, 10:42-55, 13:18-47. Such associations are used to deliver targeted television advertisements to the user’s device based on user profiles. *Id.*, 11:6-17, 11:47-56.

The same or different providers may provide online access and television services. *Id.*, 8:38-45. As shown below, both configurations include a **CAS**, **modem**, **computer** (user online interface device), and **STB**. *Id.*, 9:35-60, 10:64-67,

13:8-13, FIGS. 3, 11A. The user device and STB access the Internet through the same modem, and both devices share the modem's **IP address**. *Id.* Nothing about this topology/system is new. *Id.*, 12:35-13:4; Ex. 1002, ¶¶29-41.



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

B. Priority

For these proceedings, Petitioner assumes an April 17, 2007 priority date.

Ex. 1001, 1-2.

III. STATE OF THE ART

A. Technical Background

All claimed technical aspects were well-known, including targeting advertisements, information sharing between devices in a network, and network address translation. Ex. 1002, ¶¶77-86.

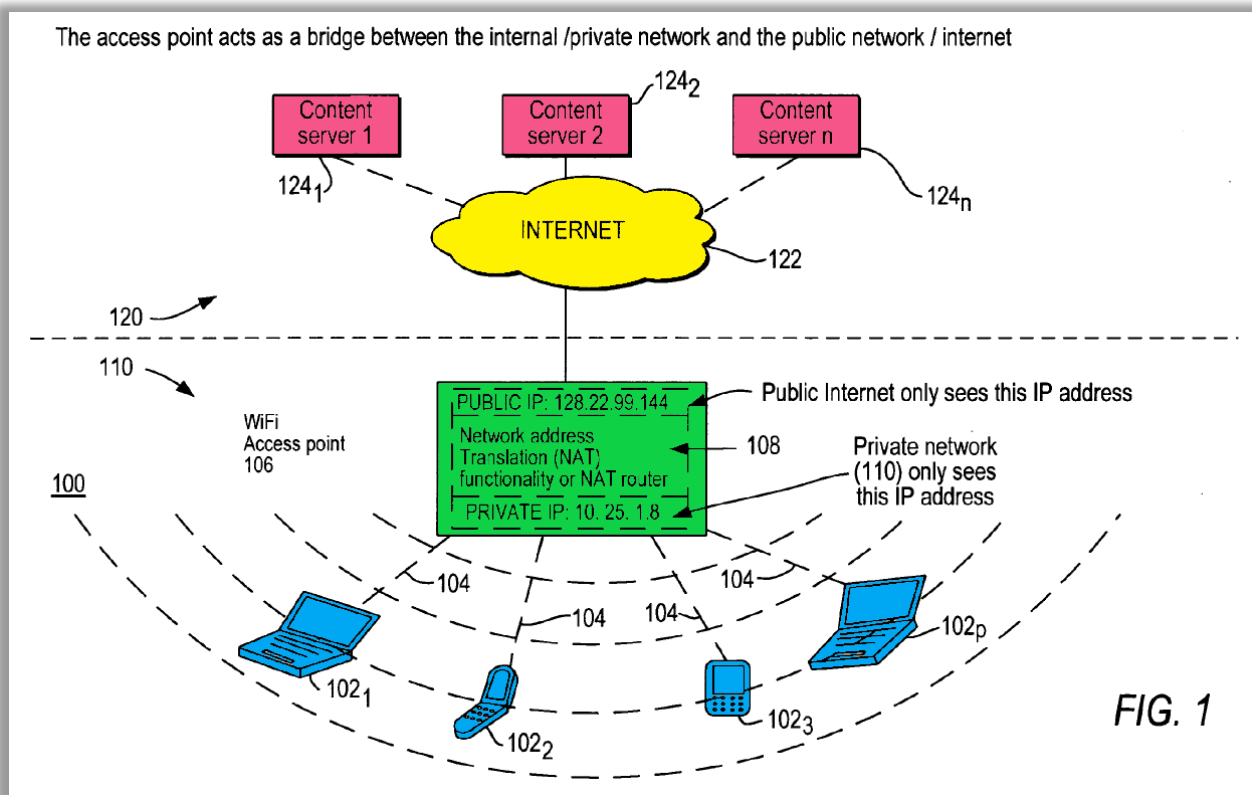
B. Prior Art

1. Baig

Baig, published May 15, 2008, claims priority to and incorporates the Baig Provisional, filed November 10, 2006, thus constituting prior art under 102(e) as of its provisional filing date.¹ Ex. 1007, ¶1; Ex. 1008. The provisional includes all relied-upon disclosures in Baig. Ex. 1009 (redline comparison); Ex. 1002, ¶87; Ex. 1056 (mapping description and figures of Baig Provisional to Baig's). Baig's provisional supports at least one claim in Baig. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1381 (Fed. Cir. 2015); Ex. 1002, ¶¶88-89.

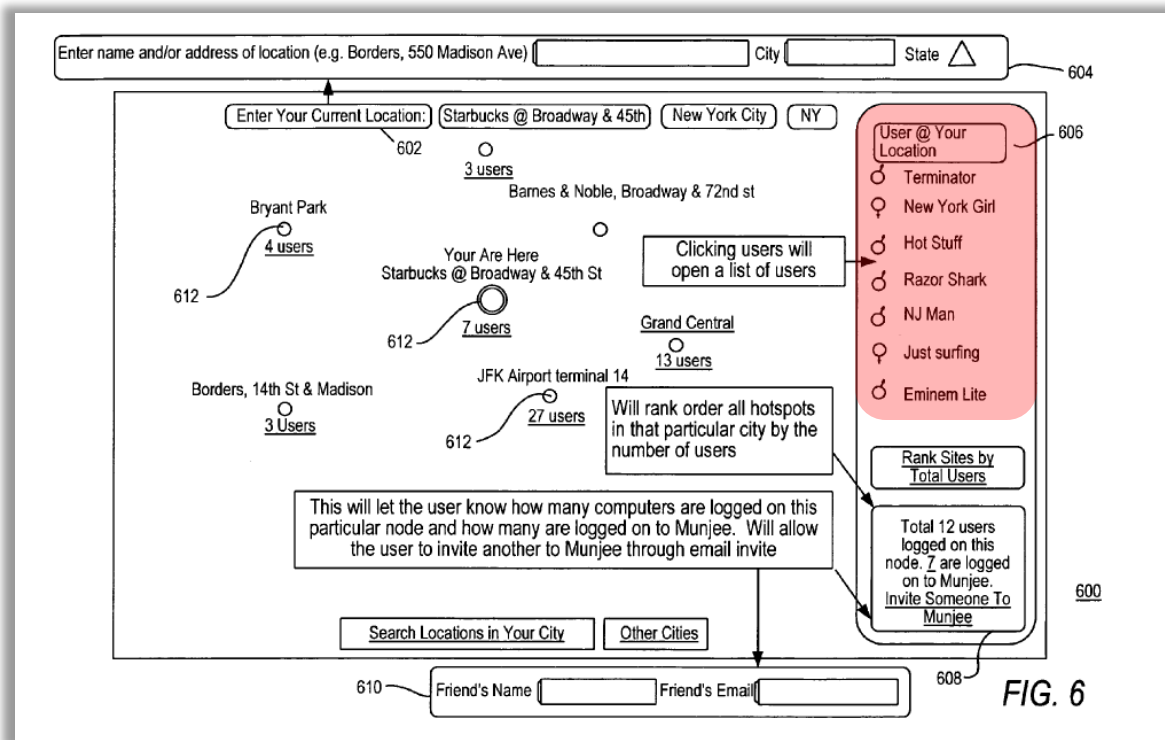
Baig's system provides vicinity-based services to **mobile devices** connected to **content servers** over the **Internet** via the same **access point** (AP). Ex. 1007, ¶¶4, 42-43, 52, 55-60, FIGS. 1-3; Ex. 1002, ¶¶90-94.

¹ Citations to pre-AIA 35 U.S.C. §§102-103.



Ex. 1007, FIG. 1 (annotated)

Servers provide a vicinity-based service provider (VCSP) and host webpages that **devices** access. Ex. 1007, ¶¶53, 55-60, 63-64, 74. Users access the VCSP using the AP's common IP address and network address translation (NAT) router. *Id.*, ¶¶44-46, 49-52, FIG. 2. Baig's VCSP identifies and groups users that log in via the same AP, and displays a list of those **users**. *Id.*, ¶¶6, 37-38, 52, 56, 59, 63, 75-76, 94, FIG. 6.



Ex. 1007, FIG. 6 (annotated).

2. Other Prior Art

The Petition's analogous prior art describes targeted advertising and collecting profile information. Ex. 1013 (librarian declaration addressing authenticity and public availability of Exs. 1012, 1035-1037, 1039, 1040-1042); Ex. 1014 (attorney declaration addressing authenticity of Exs. 1012, 1029-1030, 1048-1049).

Reference	Filed/Priority	Published/Issued	Basis	Expert Declaration (Ex. 1002)
Banga507	12-May-2006	23-Nov-2006	102(a)/(e)	¶¶107-110

Banga690	11-May-2006	30-Nov-2006	102(a)/(e)	¶¶111-115
McFarland	29-Mar-2006	1-Sep-2015	102(e)	¶¶116-120
Costa	10-Dec-2004	15-Jun-2006	102(a)/(e)	¶¶121-123
Ashbaugh	29-Dec-2005	6-Jan-2015	102(e)	¶¶124-126
Satapati	22-Oct-2002	22-Apr-2004	102(b)	¶¶95-99
Zwicky		June 2000	102(b)	¶¶100-102
Damick	3-Apr-2006	26-Oct-2006	102(a)/(e)	¶¶103-106

IV. IDENTIFICATION OF CHALLENGE

A. Claims Challenged and Grounds

Petitioner requests review of claims 1-26 as follows:

Ground	References	Basis	Claims
A	Baig-Banga507-Banga690-McFarland	§103	1-7, 9-10, 12-20, 22-23, 25-26
B	Baig-Banga507-Banga690-McFarland-Costa	§103	8, 21
C	Baig-Banga507-Banga690-McFarland-Ashbaugh	§103	11, 24
D/E	Baig-Zwicky/Satapati-Damick	§103	1-7, 9-10, 13-20, 22-23, 26
F/G	Baig-Zwicky/Satapati-Damick-Costa	§103	8, 21
H/I	Baig-Zwicky/Satapati-Damick-Ashbaugh	§103	11, 24
J/K	Baig-Zwicky/Satapati-Damick-Banga507	§103	12, 25

The expert testimony of David Lett and Exhibits 1001-1009, 1011-1019, 1021-1022, 1029-1033, 1035-1037, 1039-1056, 1058, 1063-1071 support this petition. Ex. 1002, ¶¶1-523. The Claims Appendix lists the claims.

B. 314(a) Discretion Does Not Apply

The *Fintiv* factors in the Director’s June 21, 2022 Guidance Memorandum do not warrant discretionary denial.

Factor one appears neutral. Petitioner has filed an IPR petition challenging the ’015 Patent asserted in the District Court. If trial is instituted, Petitioner expects to request a stay, as a decision in Petitioner’s favor would resolve the dispute regarding the ’015 Patent.

Factor two favors institution. Trial is set for March 23, 2026—about 6 months after a final decision is expected.

Factor three does not warrant denial. Claim construction has not begun and fact discovery does not close until December 2024.

Factor four strongly favors institution. The petition challenges all claims in the ’015 Patent while only claim 14 is asserted in the District Court as of the petition’s filing date. Ex. 1021, 13-14; Ex. 1051.

Factor five does not warrant denial as Petitioner is a defendant in the District Court case.

Factor six favors institution. Petitioner presents compelling unpatentability challenges.

C. 325(d) Discretion Does Not Apply

The grounds herein are not the same or substantially the same as what the examiner considered during prosecution. Ex. 1002, ¶¶42-49 (summarizing prosecution history). To the extent they are, the examiner materially erred by not recognizing that features purportedly missing from the prior art (e.g., automatically taking an action with respect to Internet-accessing devices connected to a common access point) were well-known and by failing to consider such teachings when combined (e.g., Baig combined with Banga507's and McFarland's teachings of targeted advertising or with Zwicky's and Satapati's teachings of network address translation). *Id.*, ¶¶50-53; Ex. 1052, 8-9; Ex. 1053, 6-7.

D. Level of Ordinary Skill

A person of ordinary skill in the art (a "POSA") at the time of the alleged invention would have had a degree in computer or electrical 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. Ex. 1002, ¶¶127-132. Petitioner's expert, David Lett, at least meets this level of skill of a POSA. *Id.*, ¶16; *see also id.*, ¶¶1-15.

E. Claim Construction

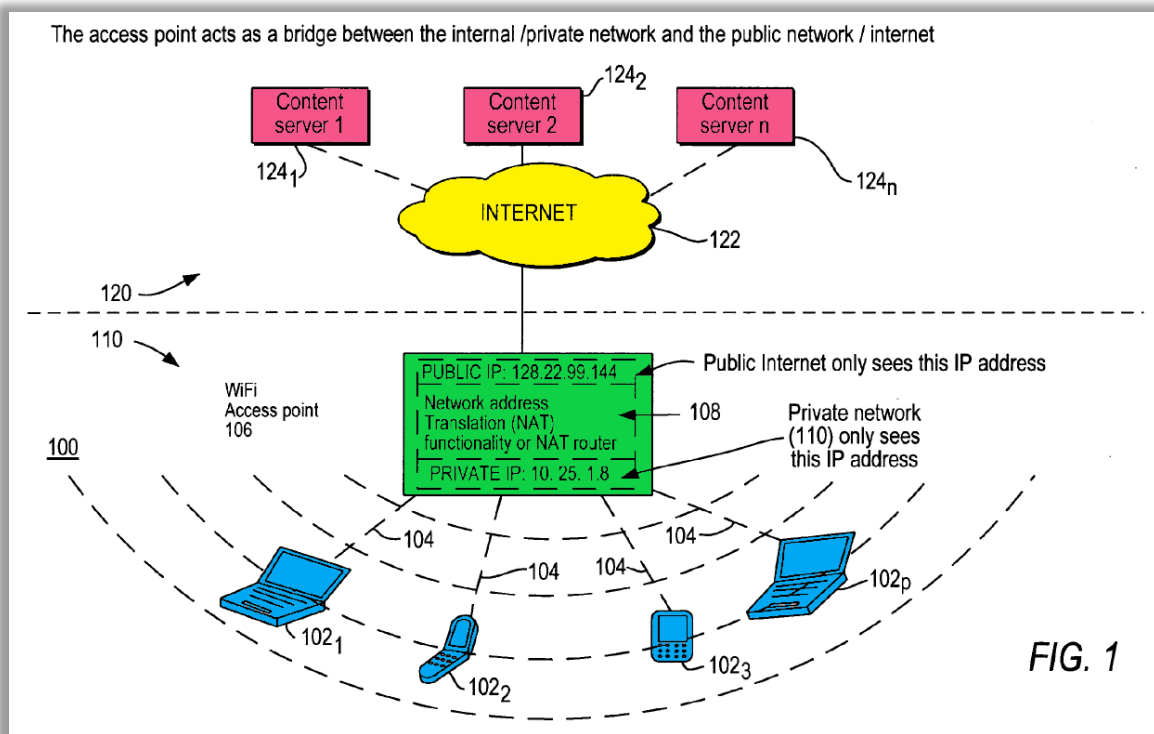
Petitioner applies the plain meaning for all claim terms. No express construction is necessary at this time. *Id.*, ¶133.

V. SPECIFIC GROUNDS FOR UNPATENTABILITY

A. Ground A: Baig-Banga507-Banga690-McFarland Render Claims 1-7, 9-10, 12-20, 22-23, and 25-26 Obvious

The combination of Baig, Banga507, Banga690, and McFarland renders obvious (1) associating, via device identifiers, mobile devices accessing the Internet from a common AP and (2) automatically sending targeted advertisements to those devices based on users' collective preferences, specifically sending an advertisement to one device based on profile information from an associated second device. This combination teaches claims 1-7, 9-10, 12-20, 22-23, and 25-26. §§V.A.1-12; Ex. 1002, ¶¶134-286.

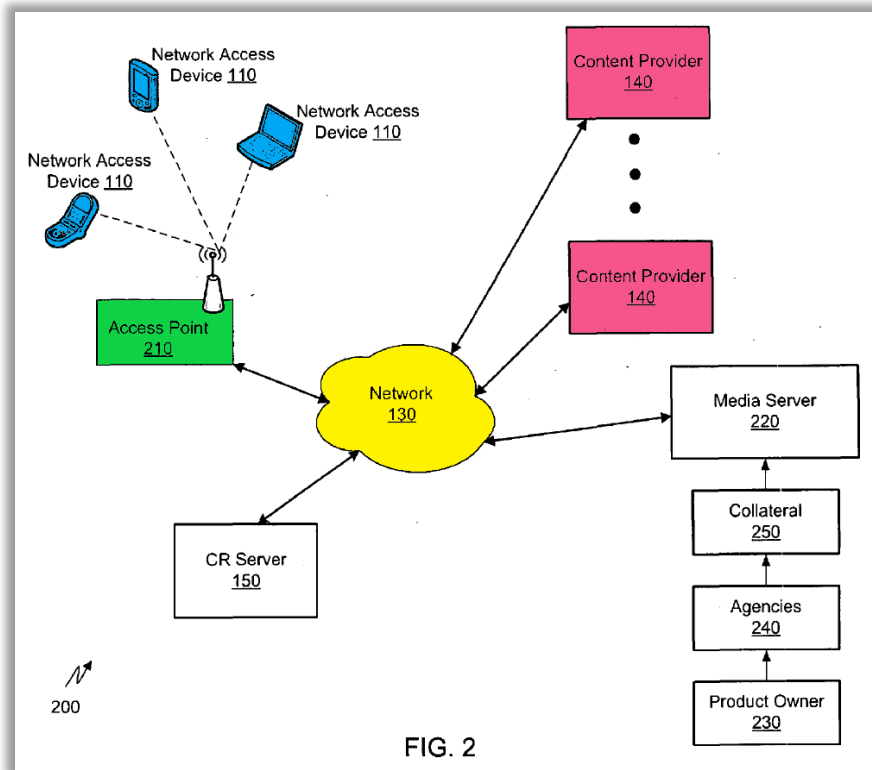
Baig's system has **computing devices** 102_p connected to **content servers** 124_n over the **Internet** 122 via shared **AP** 106. Ex. 1007, ¶¶42-43, 52, FIG. 1. Baig's system does not keep historical network access records for its mobile devices and does not identify network access patterns for them. Ex. 1002, ¶¶107-110, 136.



Ex. 1007, FIG. 1 (annotated).

Banga507's system has **network access devices** (ADs) 110 that access **content providers** 140 over **network** 130 (e.g., the Internet) via shared **AP** 210.

Ex. 1015, ¶¶22-23, 26-27, 33-34, FIGS. 1-2.



Ex. 1015, FIG. 2 (annotated).

Banga507's system also includes a "client relationship" (CR) server 150 that records each time an AD accesses the Internet. *Id.*, ¶¶23, 28-29, 37, 47, 54, FIGS. 1-2. Banga507's AP 210 reports network access information to CR server 150. *Id.*, ¶¶29, 36-37. That network access information includes an AD's device identifier, date and time of network access, and the AP's IP address. *Id.*, ¶36. Banga507 uses these records to identify patterns of network usage. *Id.*, ¶¶12, 54; Ex. 1002, ¶¶137-138.

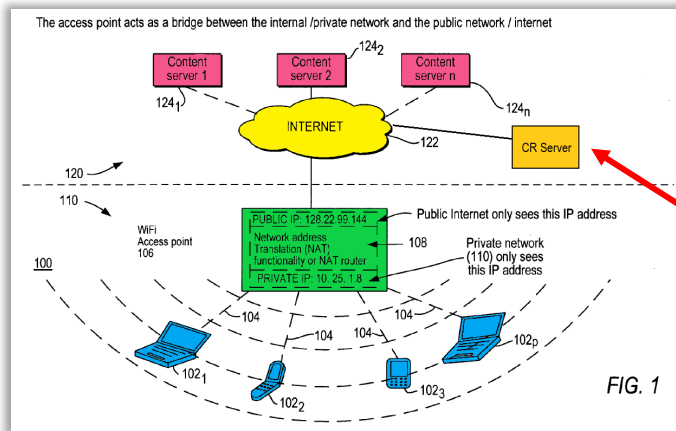
Both Baig and Banga507 automatically send targeted advertisements to the devices connected to their respective APs. Ex. 1007, ¶¶11-12, 54, 58-59, 61-62, 93-95, 98-106, 115, 120; Ex. 1015, ¶¶13, 38, 45, 60, 68-70, 78-79. Baig sends

targeted advertisements based on users' profile information, time of day, and statistical network traffic data. Ex. 1007, ¶¶61-62, 103, 114-117. Banga507 sends them based on users' preferences, network access histories, and observed network access patterns. Ex. 1015, Abstract, ¶¶11-13, 21-22, 30, 38, 42, 47, 49, 59, 61, 67-72, 74, 76-79. Banga507 also teaches sending targeted advertisements to user groups by creating profiles having the ADs' device identifiers. *Id.*, ¶¶41, 43-45, 49. Banga507 does not explicitly teach that its profiles include the AP's IP address. Ex. 1002, ¶139.

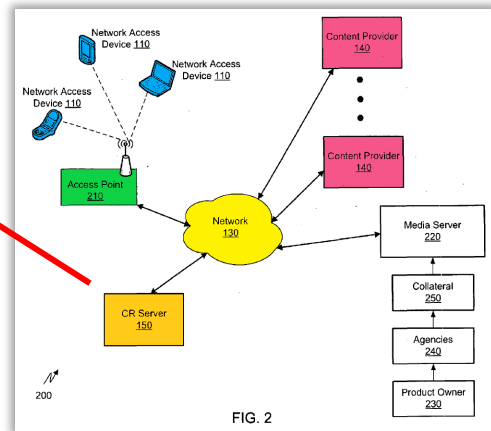
Banga690 (naming the same inventors and including disclosures overlapping with Banga507) teaches profiles identifying IP addresses associated with AD device identifiers. Ex. 1016, ¶46; Ex. 1002, ¶¶111-115, 140. McFarland teaches providing recommendations to group members based on preferences of other group members. Ex. 1018, Abstract, 3:53-64, 4:15-19; Ex. 1002, ¶¶116-120, 141.

A POSA would have been motivated and would have found it obvious to incorporate these teachings of Banga507, Banga690, and McFarland in Baig's system to select targeted advertisements for groups of users demonstrating a pattern of accessing the Internet from a shared AP (e.g., at a coffee shop every Sunday) based on the group members' collective preferences because doing so would have allowed Baig's modified system to advantageously improve the relevance of the targeted advertisements provided to the group members. Ex. 1007, ¶39; Ex. 1015,

¶54; Ex. 1002, ¶¶142-146. In Baig-Banga507-Banga690-McFarland, a POSA would have added to Baig's system a **CR server** like Banga507's, for example, as illustrated below.² Ex. 1002, ¶¶147-148. A POSA also would have added the reporting functionality of Banga507's **AP 210** to Baig's system, for example, by programming Baig's AP to report network access information to the CR server or simply substituting an AP like Banga507's for Baig's. *Id.*



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



Ex. 1015, FIG. 2 (annotated)

² It would have been obvious to add Banga507's CR server to Baig's system as a standalone device or incorporate its functionality into server 224 hosting Baig's website because a POSA would have recognized that either approach would have been a suitable design choice within that POSA's skill level. Ex. 1015, ¶28, FIGS. 1-2; Ex. 1007, ¶¶52-53; Ex. 1002, ¶148.

This would have resulted in a modified version of Baig's system whereby the AP reports network access information, as taught by Banga507, to a CR server that identifies network access patterns and creates profiles for groups of users that access the Internet from the same AP at the same time each week in order to send targeted advertisements to the users' mobile devices. Ex. 1002, ¶149. The profiles, stored by the CR server in this combination, would have included the mobile devices' device identifiers as taught by Banga507 and the AP's IP address as taught by Banga690. *Id.* The targeted advertisements would have included advertisements based on the preferences of other group members as taught by McFarland. *Id.*

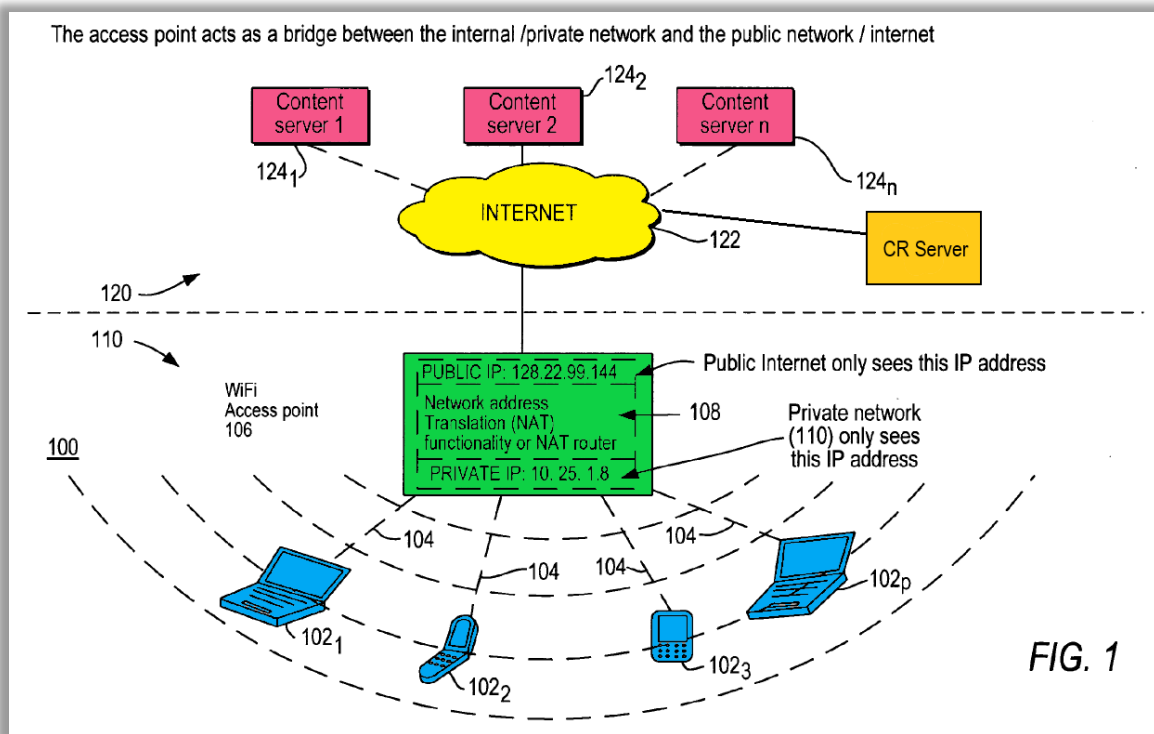
Baig-Banga507-Banga690-McFarland would have been an obvious combination of the prior art. Specifically, this would have been the simple combination of known elements according to known methods, the simple use of known techniques to improve a known or similar system and method in the same way, and the application of known techniques to a known system ready for improvement yielding predictable results. *KSR Intl. Co. v. Teleflex Inc.*, 550 U.S. 398, 401-402 (2007); Ex. 1002, ¶¶150-151; §§V.A.1.b, V.A.1.g. A POSA would have been motivated to combine this art to create profiles indicating device identifiers as taught by Banga507 and include the shared AP's IP address as taught by Banga690 to send additional targeted advertisements that might be relevant to Baig's users. Ex. 1002, ¶¶142-143. That POSA further would have been motivated

to select targeted advertisements by accounting for preferences of other users that exhibit the same network access pattern, as taught by McFarland. *Id.* A POSA would have recognized that, by targeting advertisements based on preferences of users with similar habits, this combination advantageously would have made a more informed evaluation of what advertisements a particular user might find useful. *Id.*, ¶¶144-146. A POSA would have reasonably expected success in combining the prior art’s teachings. *Id.*, ¶150; §§V.A.1.b, V.A.1.g.

1. Claim 1

a. [1A]

If limiting, Baig-Banga507-Banga690-McFarland discloses [1A]. Ex. 1002, ¶¶152-156. This combination yields a system (“computer system”) with **CR server** 150 (“at least one hardware server computer”), **mobile devices** 102_p, and **AP** 106 connected to **Internet** 122. Ex. 1007, ¶¶42-43, 49-51, FIGS. 1-2; Ex. 1015, ¶¶22-23, 26-27, 33-34, FIGS. 1-2; Ex. 1002, ¶153.



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

The resulting system would be “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 discussed below. Ex. 1002, ¶154; §§V.A.1.b-i. Given the system’s components reside in a computing network, their functionalities would have been implemented using programmed instructions. Ex. 1002, ¶155; Ex. 1007, ¶¶2, 52-53, 63, FIGS. 1-2; Ex. 1015, ¶¶3, 10, 23, FIGS. 1-2; Ex. 1016, ¶¶77-78, FIG. 7.

b. [1B]

Baig-Banga507-Banga690-McFarland discloses [1B]. Ex. 1002, ¶¶157-183.

Baig's modified system ("computer system") has a CR server and multiple devices ("a multitude of Internet-accessing electronic devices") connected to the Internet via a shared AP. Ex. 1007, ¶¶38, 42-43, FIG. 1; Ex. 1002, ¶158; §§V.A, V.A.1.a. Banga507 discloses ADs similar to Baig's mobile devices. *Compare* Ex. 1015, ¶24 and FIG. 2 *with* Ex. 1007, ¶¶3, 49 and FIG. 1; Ex. 1002, ¶158. Banga507 teaches that ADs each include a device identifier, e.g., a media access control (MAC) address ("device identifier"). Ex. 1015, ¶25; Ex. 1002, ¶159; Ex. 1041, 32. In Baig-Banga507-Banga690-McFarland, the devices would have had equivalent device identifiers as taught by Banga507 (e.g., MAC addresses). Ex. 1002, ¶160.

Baig-Banga507-Banga690-McFarland's CR server would have recorded each time a device accessed the network thus creating a history of that device's network access. Ex. 1015, ¶¶23, 28-29, 37, 47, 54, FIGS. 1-2; Ex. 1002, ¶¶161-164. That CR server would have included a profile engine like Banga507's that generates user profiles using stored network access records, device identifiers, and related network access information plus storage for storing the profiles. Ex. 1015, ¶¶28-30, 36-37, 40-41, 47-48, 54, FIGS. 3-4; Ex. 1002, ¶165. The profile engine would have used the network access information to identify users' preferences and habits (e.g., Internet access from coffee shop). Ex. 1015, ¶¶42, 47, 54; Ex. 1002, ¶¶166-169.

Banga507 explains that, by identifying relationships between user groups (e.g., using network access records), advertisements are directed to user groups likely possessing desired demographics. Ex. 1015, ¶¶28, 38, 41, 43-45, 49 54; Ex. 1002, ¶¶169-170, 172. User profiles in Baig-Banga507-Banga690-McFarland thus would have associated devices (using their device identifiers) based on users' common preferences and access patterns. These profiles would have associated device identifiers with one another by including them in a profile for a user group. Ex. 1002, ¶170. Any of these associations between device identifiers disclose the claimed "multitude of associations ... between device identifiers of two or more Internet-accessing electronic devices." *Id.*, ¶¶170, 173. The CR server's storage would have stored the profiles ("electronic database containing a multitude of associations"). Ex. 1015, ¶¶40, 47-48, FIG. 3; Ex. 1002, ¶174.

Adding a CR server like Banga507's and the network access reporting functionality to Baig's system would have been obvious. Ex. 1002, ¶¶175-182; §V.A. A POSA would have been motivated to add a CR server to Baig's system because doing so would have allowed Baig's system to advantageously track historical network access by Baig's devices and create profiles for user groups as taught by Banga507. Ex. 1015, ¶¶23, 28-29, 37, 40-41, 47; Ex. 1002, ¶175. With a CR server, Baig's modified system would have created profiles indicating relationships between Baig's devices based on historical network access information

and access patterns. Ex. 1015, ¶¶28; Ex. 1002, ¶175. It also would have targeted advertisements to devices identified in those profiles. Ex. 1015, ¶¶45, 49; Ex. 1002, ¶175.

Adding a CR server to Baig's system would have been the simple combination of known elements (Baig's system and Banga507's CR server) according to known methods (configuring an AP to provide device identifiers and network access information to a CR server that creates profiles associating device identifiers per Banga507) to yield predictable results (a system using device identifiers and network access information, from an AP, to create historical network access records and profiles associating device identifiers). Ex. 1007, FIGS. 1-2; Ex. 1015, ¶¶28-29, 36-37, 47-48, FIGS. 1-2; Ex. 1002, ¶176.

Baig-Banga507-Banga690-McFarland simply uses known techniques (Banga507's creating historical network access records based on device identifiers and generating user profiles) to improve a similar system (Baig's system providing Internet to mobile devices via APs) in the same way (tracking network access and creating user group profiles with associated device identifiers). Ex. 1007, FIGS. 1-2; Ex. 1015, ¶¶28-29, 36-37, 47-48, 54, FIGS. 1-2; Ex. 1002, ¶177.

Combining Baig and Banga507 would have simply applied a known technique (Banga507's configuring an AP to report device identifiers and network access information) to a known system ready for improvement (Baig's system

lacking ability to track network access with the same granularity). Ex. 1002, ¶178; Ex. 1015, ¶¶36-37, 47, 54; Ex. 1007, ¶¶42-47, 49-52.

A POSA would have reasonably expected success in combining Baig and Banga507 because, like Baig, Banga507's CR server communicates with its AP over the Internet. *Compare* Ex. 1015, FIG. 2 *with* Ex. 1007, FIG. 1 (Ex. 1008, FIG. 1); Ex. 1002, ¶¶179-182. Baig and Banga507 also share similar components and features further indicating their compatibility (e.g., sources providing content to computing devices connected to APs). Ex. 1007, FIG. 1; Ex. 1015, FIG. 2; Ex. 1002, ¶182.

c. [1C]

Baig-Banga507-Banga690-McFarland discloses [1C]. Ex. 1002, ¶¶184-187.

As shown, Baig-Banga507-Banga690-McFarland's CR server receives, from the AP, device identifiers for devices 102 and network access information. Ex. 1015, ¶¶29, 36-37, 54, 74, FIGS. 1-2; Ex. 1002, ¶185. The CR server would have stored the received network access information ("stored data relating to Internet access by various of the multitude of devices"), including device identifiers ("a device identifier of one of the Internet-accessing devices"), the AP's IP address used for Internet access ("an IP address through which the one of the devices accessed the Internet"), and date and time of Internet access ("a timestamp identifying when the one of the devices accessed the Internet"). Ex. 1015, ¶¶29, 36, 47, 52, 54, 74, FIG. 3;

Ex. 1002, ¶185. As discussed, the CR server would have used the stored device identifiers and network access information to create user group profiles that associate device identifiers (“each of the associations is determined using stored data relating to Internet access by various of the multitude of devices”) per Banga507. Ex. 1015, ¶¶36, 54, 74; Ex. 1002, ¶185; §V.A.1.b.

d. [1D]

Baig-Banga507-Banga690-McFarland discloses [1D]. Ex. 1002, ¶¶188-197.

It would have been obvious for Baig’s modified system to associate users having a pattern of accessing the same AP at the same day and time. *Id.*, ¶189. As discussed, the CR server in Baig’s modified system would have created profiles using device identifiers and historical access information per Banga507. Ex. 1015, ¶¶41, 43, 45; Ex. 1002, ¶189; §V.A.1.b. The CR server would have used historical network access information to identify network access patterns (e.g., regular Internet access from a particular coffee shop) and to associate devices by, e.g., including them in a profile for devices exhibiting that pattern. Ex. 1015, ¶¶44, 47, 54, FIGS. 3-4 (history module); Ex. 1002, ¶189. These associations “indicate association between at least two devices of the two or more Internet-accessing electronic devices” as claimed. *Id.*, ¶190.

Banga507 does not explicitly disclose that its profiles include an IP address associated with device identifiers, but Banga690 (which uses Banga507’s coffee

shop example) adds that the profile includes multiple device identifiers and the “current IP address associated with device identifiers” (“common IP address”). Ex. 1016, ¶46; Ex. 1002, ¶191. Banga690 teaches grouping users that repeatedly access the Internet from a common location. Ex. 1016, ¶39.³

Given Banga507 and Banga690, a POSA would have been motivated and would have found it obvious to configure the CR server in Baig’s modified system to assign a group identifier to users having a pattern of accessing the network from the same coffee shop AP and include that group identifier in a profile indicating the devices’ identifiers and the AP’s IP address (“common IP address”) because doing so would have advantageously provided Baig’s system a single reference with which to identify a group of users having a common network access pattern. Ex. 1015, ¶¶36, 41, 54; Ex. 1016, ¶¶39, 46; Ex. 1002, ¶¶192-193. Given Baig’s recognition of users connecting to a coffee shop AP, a POSA would have recognized that applying Banga507’s and Banga690’s teachings to Baig’s modified system would have advantageously enabled that system to determine specific user groups based on

³ Banga507’s profiles, which associate ADs’ device identifiers, are the same profiles in Banga690. Ex. 1016, ¶46; *compare* Ex. 1015, ¶¶40-42, FIG. 3 *with* Ex. 1016, ¶¶41, 46-47, FIG. 3.

network access patterns and reference a group with a single group identifier. Ex. 1015, ¶¶36, 41, 54; Ex. 1016, ¶¶39, 46; Ex. 1007, ¶¶39, 46; Ex. 1002, ¶193.

The associations between device identifiers indicated in the profile, therefore, would have been determined using the network access information received from the common AP, per Banga507 and Banga690. Ex. 1015, ¶¶29, 36-37, 54, 74; Ex. 1016, ¶46; Ex. 1002, ¶194. Therefore, a determination that users accessed the network from the same AP would have been made using the stored access information indicating the AP's IP address ("which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address"). Ex. 1015, ¶¶36, 54, 74; Ex. 1002, ¶194. A determination that the users accessed the network at the same day and time would have been made using the stored access information indicating the date and time of network access and using predetermined criteria specifying conditions for matching days and/or times ("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"). Ex. 1015, ¶¶36, 54, 74; Ex. 1002, ¶¶195-196.

e. [1E]

Baig-Banga507-Banga690-McFarland discloses [1E]. Ex. 1002, ¶¶198-203.

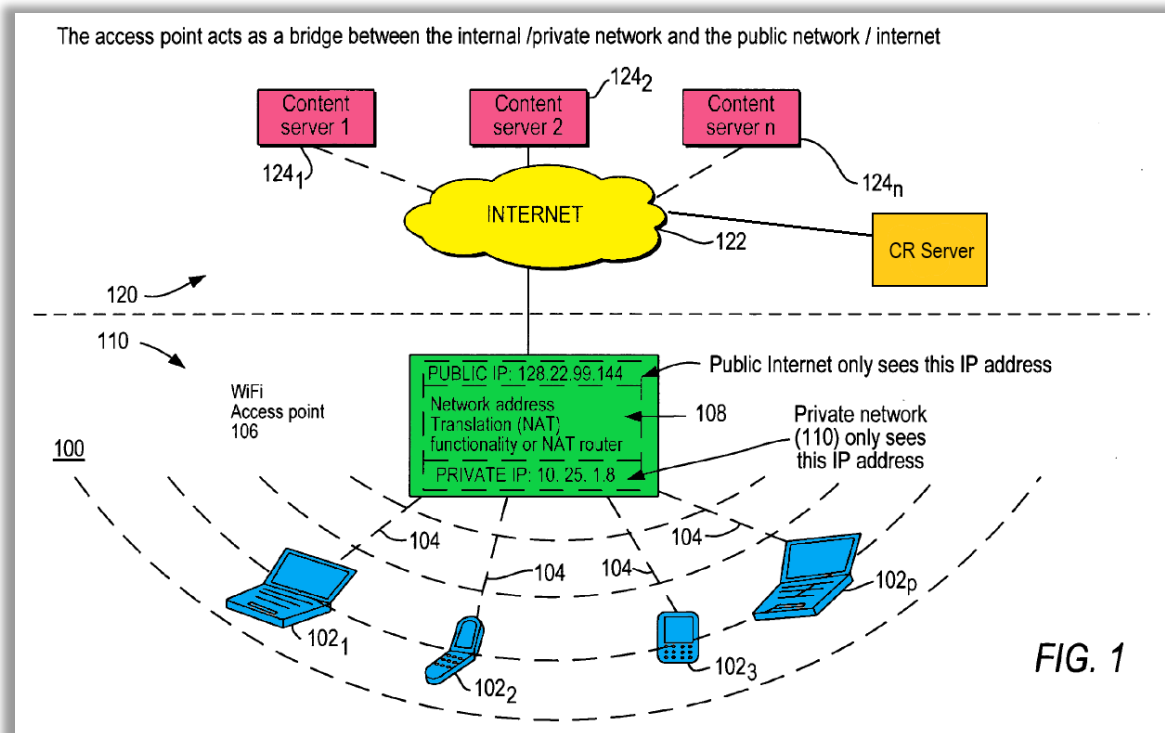
Banga507 contemplates storing an “anonymous device identifier” and, more specifically, a MAC address, which the ’015 Patent excludes from “personally identifiable information.” Ex. 1015, ¶25; Ex. 1001, 15:30-37; Ex. 1002, ¶¶199-200. Both Baig and Banga507 contemplate preserving users’ anonymity. Ex. 1007, ¶68; Ex. 1015, ¶46. It thus would have been obvious to use, in Baig-Banga507-Banga690-McFarland, anonymous device identifiers (e.g., MAC addresses) in the profile for devices exhibiting a pattern of connecting to the same AP. Ex. 1002, ¶¶201-202.

As discussed, the CR server in Baig’s modified system would have determined associations between device identifiers using the network access information reported by the common AP (the AP’s IP address, the mobile devices’ device identifiers, and the date and time of network access). Ex. 1015, ¶¶36, 54, 74; Ex. 1002, ¶202; §§V.A.1.b-d. The associations between device identifiers in Baig’s modified system thus would have been determined without using personally identifiable information (“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”). Ex. 1002, ¶202.

f. [1F]

Baig-Banga507-Banga690-McFarland discloses [1F]. Ex. 1002, ¶¶204-206.

As shown for [1A], in Baig’s modified system (“the computer system determining the associations”), the CR server would not have connected to the Internet via the AP and thus would have used a different IP address than the AP that provides devices 102 with Internet access (“accesses the Internet without using any of the common IP addresses of the associations identified in part (ii)”). Ex. 1007, ¶43 FIG. 1; Ex. 1015, FIG. 2; Ex. 1002, ¶205; §V.A.1.a.



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

g. [1G]

Baig-Banga507-Banga690-McFarland discloses [1G]. Ex. 1002, ¶¶207-230.

In Baig-Banga507-Banga690-McFarland, the claimed “automatic action” is automatically providing a targeted advertisement to a device 102 based on that

device's association with another device via a profile with their device identifiers, and using the profile information for that other device as discussed for [1B]-[1D]. *Id.*, ¶208; §§V.A.1.b-d. Baig describes automatically providing targeted advertisements to devices connected to Baig's AP based on users' profiles, time of day, and network traffic patterns. Ex. 1007, ¶¶58, 61-62, 93, 103, 114-117; Ex. 1002, ¶¶209-210. Baig also automatically provides targeted advertisements based on user profile information (e.g., age, gender), and Banga507 teaches automatically providing targeted advertisements based on users' preferences, network access histories, or network access patterns. Ex. 1007, ¶93; Ex. 1015, Abstract, ¶¶11-13, 21-22, 30, 38, 42, 47, 49, 59, 61, 67-72, 74, 76-79, FIG. 3; Ex. 1002, ¶¶211-213. Banga507 also directs advertisements to user groups. Ex. 1015, ¶¶45, 49.

It would have been obvious to enhance Baig's profile-based targeted advertising by including, in Baig's modified system, automatic targeted advertisements based on users' preferences, historic network access, and network access patterns per Banga507. Ex. 1002, ¶214. This would have simply used known techniques (Banga507's automatically providing targeted advertisements based on users' preferences, network access patterns) to improve a known/similar method (Baig's targeted advertisements that are based on profile information) in the same way to yield predictable results (automatically providing more relevant targeted

advertisements in webpages). *KSR*, 550 U.S. at 401; Ex. 1015, Abstract, ¶¶11-12, 59, 67, 74, 76-78; Ex. 1007, ¶¶61-62, 93; Ex. 1002, ¶214. A POSA would have reasonably expected success in combining Baig and Banga⁵⁰⁷ at least because both teach systems configured to store user profiles/preferences and automatically include advertisements in webpages sent to users' devices. Ex. 1007, ¶¶53, 59, 61, 93, 96, 99; Ex. 1015, ¶¶11, 21, 38-39, 41-42, 70-71, 79, 81, FIG. 3; Ex. 1002, ¶215.

Baig and Banga⁵⁰⁷ also contemplate automatically providing targeted advertisements to user groups. Ex. 1007, ¶¶61, 93; Ex. 1015, ¶45 (group identifiers for directed advertisements); Ex. 1002, ¶¶216-217. A POSA, employing ordinary creativity, would have found it obvious to automatically target advertisements to devices in Baig's modified system that are identified in a profile associating those devices with each other, via their device identifiers, based on network access patterns (e.g., accessing the same coffee shop AP at the same time and day each week). *Id.*; §§V.A.1.b-d.

McFarland also discloses providing recommendations to group members based on preferences of other group members. Ex. 1018, Abstract, 3:53-64, 4:15-19. McFarland improves recommendations provided to individual group members based on group preferences determined from other group members' preferences. *Id.*; see also *id.*, 1:50-65, 2:13-17, 2:38-41; Ex. 1002, ¶¶218-222.

A POSA would have been motivated and would have found it obvious to apply McFarland's teachings to the targeted advertisements in Baig's modified system because doing so would have allowed Baig's modified system to advantageously expand the scope of potentially relevant advertisements for a user by considering preferences of other users with similar network access habits. Ex. 1002, ¶223. Specifically, it would have been obvious to provide a recommendation—a targeted advertisement—based on preferences linked to another associated device having the same network access pattern. *Id.*

Applying McFarland's teachings simply uses a known technique (McFarland's providing recommendations to group members based on another member's preferences) to improve similar methods (providing targeted advertisements based on user preferences in Baig's modified system) in the same way to yield predictable results (providing more relevant advertisements to users by accounting for known preferences of other group members exhibiting the same network access habits). Ex. 1018, Abstract, 3:53-64, 4:15-19, FIGS. 3, 16; Ex. 1007, ¶¶61-62, 93; Ex. 1015, Abstract, ¶¶12, 59, 74, 76-78; Ex. 1002, ¶224. A POSA would have reasonably expected success at least because Baig's modified system would have included profiles having preferences of its users, and a POSA would have had the skills and knowledge to configure Baig's modified system to select targeted advertisements based on various preferences. Ex. 1007, ¶¶53, 93; Ex. 1015,

¶¶21, 38, 40, 48, 52; Ex. 1018, 14:38-55; Ex. 1002, ¶¶225-228. Furthermore, McFarland’s recommendations are for many types of items. Ex. 1018, 4:15-19; Ex. 1002, ¶225.

In Baig’s modified system, a targeted advertisement would have been automatically provided to a first device (“cause an automatic action to be taken with respect to the first device”) connected to the AP (“when the computer system and a first device ... are in communication with one another”). Ex. 1002, ¶228. The targeted advertisement would have been based on preferences of a user of a second device associated with the first device, via their device identifiers, in a profile for devices exhibiting the same network access pattern (“with the computer system using ... user profile information associated with a device identifier of a second device identified in the first association”). *Id.*, ¶228. A POSA would have understood that Baig’s modified system would use the first device’s identifier (“with the computer system using a device identifier of the first device”) to retrieve profiles including that device identifier and determine associated device identifiers. *Id.*, ¶229.

h. [1H]

Baig-Banga507-Banga690-McFarland discloses [1H]. Ex. 1002, ¶¶231-233.

The association between device identifiers in Baig’s modified system would have been one of the associations indicated in the profile created for those devices

based on observing that they connect to the AP according to the same network access pattern (“the first association is one of the associations identified in part (a)(ii)”). §§V.A.1.b-d, V.A.1.g; Ex. 1002, ¶232.

i. [1I]

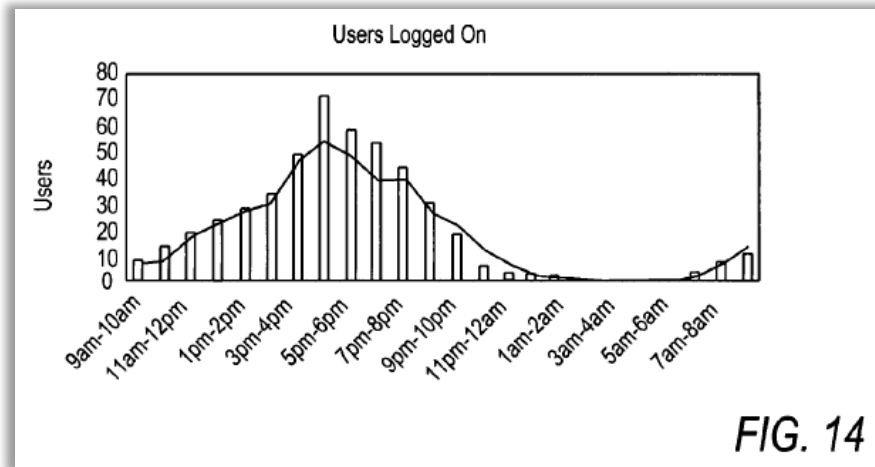
Baig-Banga507-Banga690-McFarland discloses [1I]. Ex. 1002, ¶¶234-237.

In Baig’s modified system, the association between device identifiers would have been stored before one of the devices connected to the AP and received a targeted advertisement. §§V.A.1.b-d, V.A.1.g; Ex. 1002, ¶235. The profile associating the identifiers of devices exhibiting the same network access pattern (e.g., every Sunday at 10am) would have been created and stored before a subsequent iteration of that pattern (e.g., on a subsequent Sunday) when one of the devices next connected to Baig’s system and received the targeted advertisement (“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)”). Ex. 1016, ¶¶46, 58 (predetermined profiles associating device identifiers with each other); Ex. 1002, ¶236.

2. Claim 2

Baig-Banga507-Banga690-McFarland discloses claim 2, which depends from claim 1. Ex. 1002, ¶¶238-244; §V.A.1.

Baig’s modified system would have created a profile that associates identifiers of devices exhibiting the same network access pattern, e.g., the same day and time each week, based on predetermined criteria specifying conditions for matching days and times (“the predetermined time-relation criterion”). §§V.A.1.b-d; Ex. 1002, ¶239. Baig also discloses monitoring the quantity of users connected to its AP at hourly increments. Ex. 1007, ¶¶26, 114, FIG. 14.



Ex. 1007, FIG. 14.

Given Baig’s teachings of monitoring connected users at hourly increments, it would have been obvious to create a profile associating the device identifiers of Baig’s mobile devices that connect to Baig’s AP around the same time each day (e.g., in the morning)—not just during a specific hour of the day (e.g., the 10am hour). Ex. 1002, ¶¶240-241.

A POSA would have configured Baig’s modified system to create a profile with identifiers of devices that connect to its hotspot during any of Baig’s morning

hourly increments (e.g., “9am-10am” or “11am-12pm”) (“the predetermined time-relation criterion”)—including multiple mobile devices that respectively connect during the “9am-10am” and “11-12pm” morning hours. Ex. 1007, FIG. 14; Ex. 1002, ¶242. One of these devices (“one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)”) would have accessed the Internet within the same specified morning hours (e.g., “9am-10am” and/or “11am-12pm”) after another of these devices 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”). Ex. 1002, ¶243.

3. Claim 3

Baig-Banga507-Banga690-McFarland discloses claim 3, which depends from claim 1. §V.A.1; Ex. 1002, ¶¶245-250.

Baig’s modified system would have created a profile that associates identifiers of devices exhibiting the same network access pattern (e.g., same day and time each week) based on predetermined criteria specifying conditions for matching days and times (“the predetermined time-relation criterion”). §§V.A.1.b-d; Ex. 1002, ¶246. A POSA, exercising ordinary creativity, would have recognized benefits in using a more flexible criterion for identifying network access patterns (e.g., 10am every Saturday and 10am every Sunday). Ex. 1002, ¶247. Banga507 teaches using

network access patterns to assign group identifiers and that a profile includes multiple group identifiers. Ex. 1015, ¶¶43, 54.

As explained above, Baig with Banga507 would have motivated a POSA to create a profile indicating respective group identifiers for devices that connect to Baig's AP during weekend morning hours (e.g., multiple devices that regularly connect every Sunday and Saturday at 10am, respectively). Ex. 1002, ¶248; §V.A.1.d, *supra*. One of these devices ("one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)") would have accessed the Internet on a Saturday morning between another device's consecutive Sunday morning network accesses ("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"). *Id.*

To the extent it is argued that the "between two times" language in claim 3 simply requires that a device accesses the Internet within a time window of when another device accessed the Internet, Baig-Banga507-Banga690-McFarland still discloses claim 3. Ex. 1002, ¶249. For example, when creating a profile for devices that accessed the Internet from a common AP during the 10am Sunday morning hour, Baig's modified system would have associated devices that accessed the Internet from the same AP between the two times of 10am and 11am. *Id.* Such criteria thus would have resulted in a profile that associates, for example, the device

identifiers of a first device that accessed the Internet from an AP at 10:15am on Sunday and a second device that accessed the Internet from that AP at 10:30am on Sunday. *Id.* In both cases, those devices would have accessed the Internet from a common AP between two times (e.g., 10am and 11am) when another device accessed the Internet (“predetermined time-relation criterion ... that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet”). *Id.*

4. Claim 4

Baig-Banga507-Banga690-McFarland discloses claim 4, which depends from claim 1, for the same reason as [1E]. §V.A.1; Ex. 1002, ¶¶251-253.

Baig’s modified system associates device identifiers of devices exhibiting a network access pattern. §§V.A.1.b-d; Ex. 1002, ¶252. Therefore, it would have determined the associations between those device identifiers without using PII. §V.A.1.e; Ex. 1002, ¶252.

5. Claim 5

Baig-Banga507-Banga690-McFarland discloses claim 5, which depends from claim 1. §V.A.1; Ex. 1002, ¶¶254-258.

Baig’s devices 102 connect to its system via multiple APs. Ex. 1007, ¶¶39, 47, 56-60, 65, FIGS. 1-3. Users connected to Baig’s APs can edit their respective

user profiles created during a registration process. *Id.*, ¶¶81, 93, FIGS. 5, 7; Ex. 1002, ¶¶255-256. Baig thus teaches using a device connected to one AP (e.g., coffee shop AP) with a first IP address to create a user profile when registering with Baig’s system (“a mobile device that accessed the Internet both via the common IP address of the first association”) and, once registered, modifying that profile using that device while connected to another AP (e.g., library AP) having a second, different IP address (“a mobile device that accessed the Internet ... 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”). Ex. 1007, ¶¶39, 47, 56-60, 81, 93; Ex. 1002, ¶257. Any of Baig’s devices 102 would have updated their associated profiles in this fashion including the device whose profile information was used to select the targeted advertisement (“second device of part (b)”). Ex. 1002, ¶257; §V.A.1.g.

6. Claim 6

Baig-Banga507-Banga690-McFarland discloses claim 6, which depends from claim 5. §V.A.5; Ex. 1002, ¶¶259-262.

Baig’s users create/update their user profiles from different APs. Ex. 1007, ¶¶39, 47, 56-60, 65, 81, 93, FIGS. 3, 5; Ex. 1002, ¶260. It would have been obvious for users to update their profile at their discretion—including after the system associated devices exhibiting a network access pattern (“wherein the user profile

information of part (b) was collected after the computer system has determined the first association”). §§V.A.1.b-d; Ex. 1002, ¶260. As discussed, that profile would have created associations between device identifiers without using PII (“wherein the first association of part (b) is one of the associations identified in part (a)(iii)”). §V.A.1.e; Ex. 1002, ¶261.

7. Claim 7

Baig-Banga507-Banga690-McFarland discloses claim 7, which depends from claim 5, for the same reasons as claim 3. §§V.A.3, V.A.5; Ex. 1002, ¶¶263-265.

8. Claim 9

Baig-Banga507-Banga690-McFarland discloses claim 9, which depends from claim 1, for the same reasons as claim 6. §§V.A.1, V.A.6; Ex. 1002, ¶¶266-268.

9. Claim 10

Baig-Banga507-Banga690-McFarland discloses claim 10, which depends from claim 1. §V.A.1; Ex. 1002, ¶¶269-275.

Baig’s modified system would have sent targeted advertisements to one of the devices indicated in a profile associating identifiers of devices exhibiting the same network access pattern. §§V.A.1.b-d, V.A.1.g; Ex. 1002, ¶270. Baig’s modified system would have selected the advertisement sent to that device based on profile information associated with the device identifier of another device indicated in the profile per McFarland (“selecting an advertisement ... based at least in part on at least a portion of the user profile information associated with the device identifier of

the second device”). §V.A.1.g; Ex. 1002, ¶271. The targeted advertisement would have been selected from among multiple available advertisements (“the automatic action of part (b) comprises selecting an advertisement, from among a plurality of possible advertisements”). Ex. 1007, ¶¶11-12, 54, 62, 93-95, 99, 102-103; Ex. 1002, ¶272. It would have been obvious to send the selected advertisement to the device whose profile was used to select it (“the automatic action of part (b) comprises ... causing the selected advertisement to be directed to the second device”) given that the advertisement would have also been relevant to that device’s user. Ex. 1002, ¶273.

10. Claim 12

Baig-Banga507-Banga690-McFarland discloses claim 12, which depends from claim 1. §V.A.1; Ex. 1002, ¶¶276-281.

Banga507’s AD “may be identified by a hybrid cookie/device identifier combination.” Ex. 1015, ¶31; Ex. 1002, ¶¶277-278. Although Banga507 recognizes certain drawbacks associated with cookies, Banga507 explains that this “cookie/device identifier combination” provides benefits to advertisers that rely on cookies for Internet advertising. Ex. 1015, ¶¶7, 31. Banga507 teaches that cookies stored on users’ ADs had identifiers and user preferences. *Id.*, ¶7.

A POSA would have used a cookie including the device identifiers indicated in the profile that associates them with each other (“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”). §§V.A.1.b-d; Ex. 1002, ¶279. That POSA would have been motivated to apply Banga507’s teachings to Baig’s modified system because Banga507 teaches that a “cookie/device identifier combination” benefits advertisers that still rely on cookie-based approaches to provide advertisements in systems that include alternatives to cookie-only approaches. Ex. 1015, ¶31; Ex. 1002, ¶280.

11. Claim 13

Baig-Banga507-Banga690-McFarland discloses claim 13, which depends from claim 1. §V.A.1; Ex. 1002, ¶¶282-284.

As discussed, the profile created for devices exhibiting a network access pattern would have used their device identifiers (e.g., MAC addresses) and thus would not have included any PII. §V.A.1.e; Ex. 1002, ¶283.

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

Claim 14 is substantially the same as claim 1. Baig’s modified system, having a CR server, would have included memory with instructions that, when executed, perform the method above (“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”). §V.A.1. Other

differences between claims are non-substantive. Baig-Banga507-Banga690-McFarland render obvious claims 14-20, 22-23, and 25-26 for the same reasons as claims 1-7, 9-10, and 12-13. §§V.A.1-11; Ex. 1002, ¶¶285-286.

B. Ground B: Baig-Banga507-Banga690-McFarland-Costa Render Claims 8 and 21 Obvious

Claims 8 and 21 depend from claims 7 and 20, which Baig-Banga507-Banga690-McFarland teach. §§V.A.1, V.A.7, V.A.12; Ex. 1002, ¶¶287-308.

1. [8A], [21A]

Baig-Banga507-Banga690-McFarland-Costa discloses [8A] and [21A]. Ex. 1002, ¶¶288-299.

Neither Baig nor Banga507 explicitly discloses set-top boxes (STBs). Ex. 1007, ¶43; Ex. 1015, ¶24; Ex. 1002, ¶289. Costa shows that it was known to provide an STB in a network environment that includes a public wireless hotspot. Ex. 1011, ¶¶36-37; Ex. 1002, ¶¶121-123, 290.

It would have been obvious to include an STB per Costa as one of the devices connected to the AP in Baig's modified system ("the first device of part (b) is a television set-top box"). Ex. 1011, ¶¶36-37; Ex. 1007, ¶¶42-47, FIG. 1; Ex. 1002, ¶291. A POSA would have been motivated to include an STB because doing so would have enabled Baig's modified system to advantageously display, at a TV, targeted advertisements to the collective audience. Ex. 1002, ¶292; *see also* Ex. 1007, ¶¶61-62, 93, 103. The STB would have received, via this AP-STB

connection, the targeted advertisements. Ex. 1007, ¶¶42-43, FIG. 1; Ex. 1011, ¶¶36-37; Ex. 1002, ¶¶292-294; Ex. 1015, ¶¶76-79.

It would have been obvious to include the STB's device identifier in the profile created for Baig's devices (e.g., by default). Ex. 1002, ¶295. Baig contemplates advertising to an "audience" of users present at an AP. Ex. 1007, ¶¶61-62, 93, 103. A POSA thus would have configured Baig's modified system to include the STB's device identifier in the profile, so it would send targeted advertisements (e.g., in video form per Banga507) to the STB for display to that audience at a time the users of devices associated with the profile were likely to be present. Ex. 1002, ¶295; Ex. 1015, ¶70.

Adding an STB to Baig's modified system would have been the simple combination of known elements (Costa's STB and Baig's communications network and AP) according to known methods (connecting the STB to the AP) to yield predictable results (STB connected to the Internet via a public AP and receiving targeted advertisements). Ex. 1011, ¶¶36-37; Ex. 1007, ¶¶42-43, FIG. 1; Ex. 1002, ¶¶296-297. A POSA would have had a reasonable expectation of success given that Costa teaches connecting its STB to a local network via an AP. Ex. 1011, ¶¶36-37; Ex. 1002, ¶298.

2. [8B], [21B]

Baig-Banga507-Banga690-McFarland-Costa discloses [8B] and [21B]. Ex. 1002, ¶¶300-302.

Baig's devices 102 include cellular telephones ("online user interface device"). Ex. 1007, ¶¶5, 42-43, FIG. 1; Ex. 1001, 2:52-56; Ex. 1002, ¶301.

3. [8C]-[8D], [21C]-[21D]

Baig-Banga507-Banga690-McFarland-Costa discloses [8C]-[8D] and [21C]-[21D] for the same reasons as claim 6. §V.A.6; Ex. 1002, ¶¶303-308.

C. Ground C: Baig-Banga507-Banga690-McFarland-Ashbaugh Render Claims 11 and 24 Obvious

Baig-Banga507-Banga690-McFarland-Ashbaugh disclose claims 11 and 24, which respectively depend from claims 10 and 23 taught by Baig-Banga507-Banga690-McFarland. §§V.A.9, V.A.12; Ex. 1002, ¶¶309-318.

None of Baig, Banga507, Banga690, or McFarland explicitly discloses receiving delivery of an advertisement through redirection. Ex. 1002, ¶311. Ashbaugh teaches using HTTP's redirect feature to request advertisements displayed in a webpage advertising frame. Ex. 1019, 9:36-38, 10:1-9, 11:43-66, FIG. 1; Ex. 1050, 14-15, 17; Ex. 1002, ¶¶124-126, 312-314. A POSA would have been motivated to apply Ashbaugh's teachings to Baig's modified system to present advertisements on its vicinity-based website for users connected to the AP because, by doing so, Baig's modified system would have advantageously exhibited better

resistance to known ad-blocking techniques due to using native HTML and HTTP features (*i.e.*, advertising frames and redirection) that were not easily circumvented without detriment to the web-browsing experience as taught by Ashbaugh. Ex. 1019, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17; Ex. 1007, ¶¶59, 99; Ex. 1002, ¶315. A POSA thus would have found it obvious to include an advertising frame, per Ashbaugh, in the webpages of Baig's website and use HTTP's redirect feature to receive targeted advertisements presented to Baig's hotspot users as described for [1G]. §V.A.1.g; Ex. 1002, ¶315. Baig's modified system thus would have included advertising frames in the webpages sent to devices 102 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"). Ex. 1019, 9:36-38, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17; Ex. 1002, ¶317.

This would have been the simple application of a known technique (Ashbaugh's redirection to an advertisement server for advertisements in a webpage frame) to improve a known and similar system (Baig's modified system) in the same way to yield predictable results (better resistance by Baig's vicinity-based website 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). Ex. 1019, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17; Ex. 1007, ¶¶59, 99; Ex. 1002, ¶316.

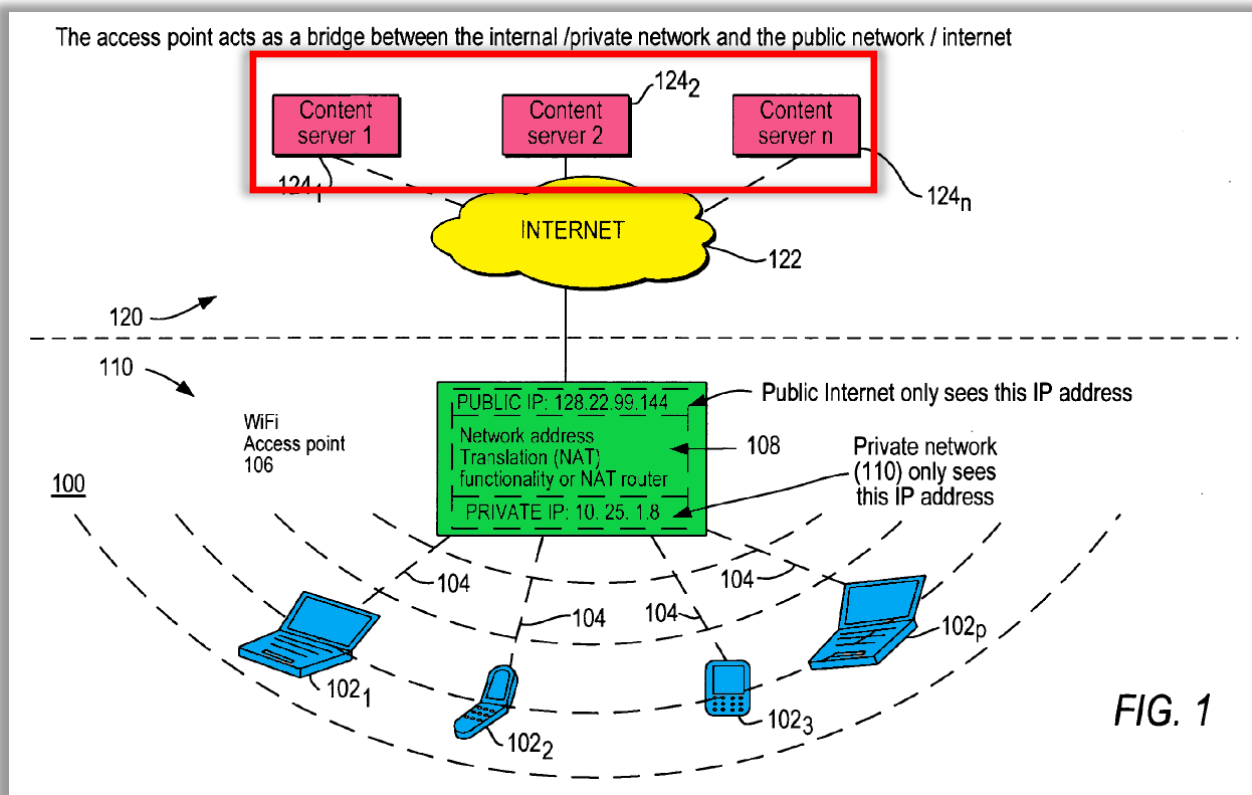
D. Grounds D and E: Baig-Satapati-Damick and Baig-Zwicky-Damick Render Claims 1-7, 9-10, 13-20, 22-23, and 26 Obvious

1. Claim 1

a. [1A]

If limiting, Baig-Satapati/Zwicky-Damick disclose [1A]. Ex. 1002, ¶¶319-328.

As shown below, Baig's system includes **content servers** 124 coupled to **Internet** 122, to which **AP** 106 is coupled. Ex. 1007, ¶¶42-43, 49-52. Baig's WiFi hotspot 110 enables **mobile devices** 102 to communicate with each other and servers 124 over Internet 122 via AP 106. *Id.*, ¶¶42-43, 49-51; Ex. 1002, ¶323.



Ex. 1007, FIG. 1 (annotated).

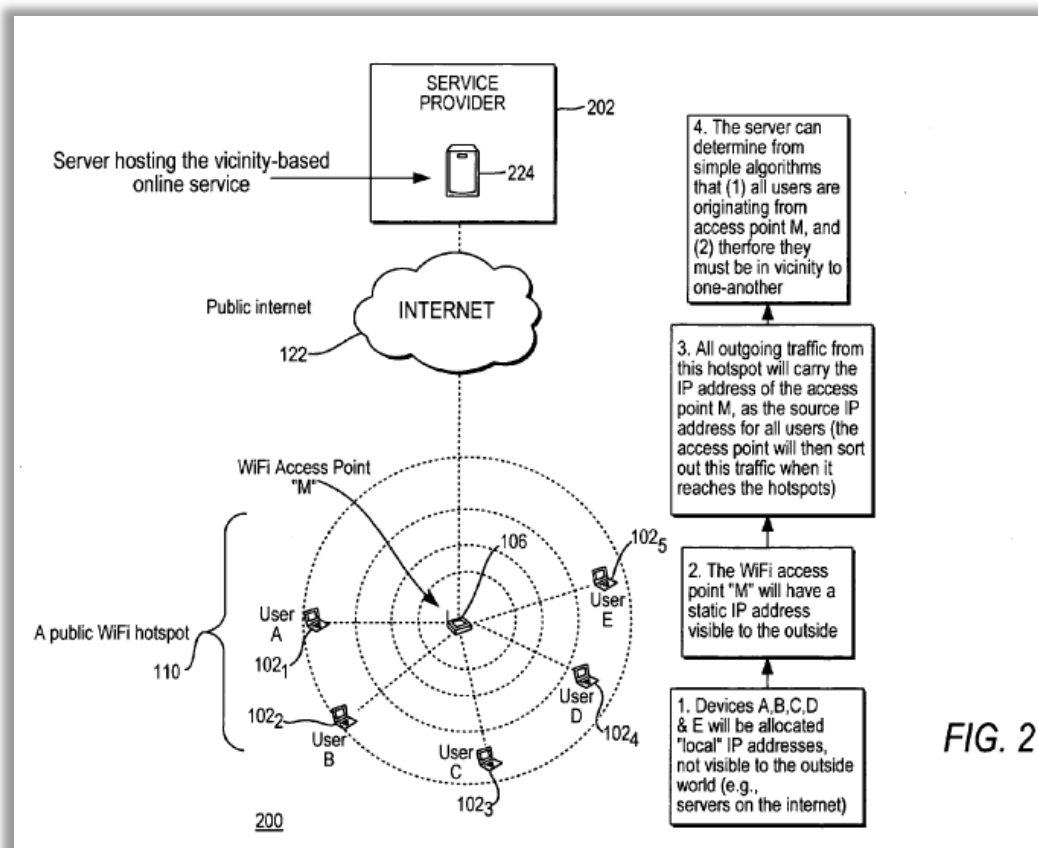
In the proposed Baig-Satapati/Zwicky-Damick combinations, the resulting **system** (claimed “computer system”) includes multiple **content servers** 124 (“at least one hardware server computer”). Ex. 1002, ¶323. As explained below, the Baig-Satapati/Zwicky-Damick systems are “programmed and connected to perform a method of using common IP addresses to identify associations among multiple electronic devices and using an identified association to cause cross-device action” that renders obvious the steps of claim 1. Ex. 1002, ¶324; §§V.D.1.b-i. Given the Baig-Satapati/Zwicky-Damick systems’ components reside in a computing network, their functionalities would have been implemented using programmed instructions,

including using a common IP address to group multiple user devices. Ex. 1002, ¶¶324-327; Ex. 1007, ¶¶2, 38, 52-54, 59, 63, FIGS. 1-2.

b. [1B]

Baig-Satapati/Zwicky-Damick disclose [1B]. Ex. 1002, ¶¶329-367.

As shown below, multiple mobile devices (e.g., 102₁-102₅) connect to Baig's server(s) through AP 106 via the Internet ("two or more Internet-accessing electronic devices of a multitude of Internet-accessing electronic devices"). Ex. 1007, ¶¶42-44, 49, FIG. 2; Ex. 1002, ¶330.



Ex. 1007, FIG. 2.

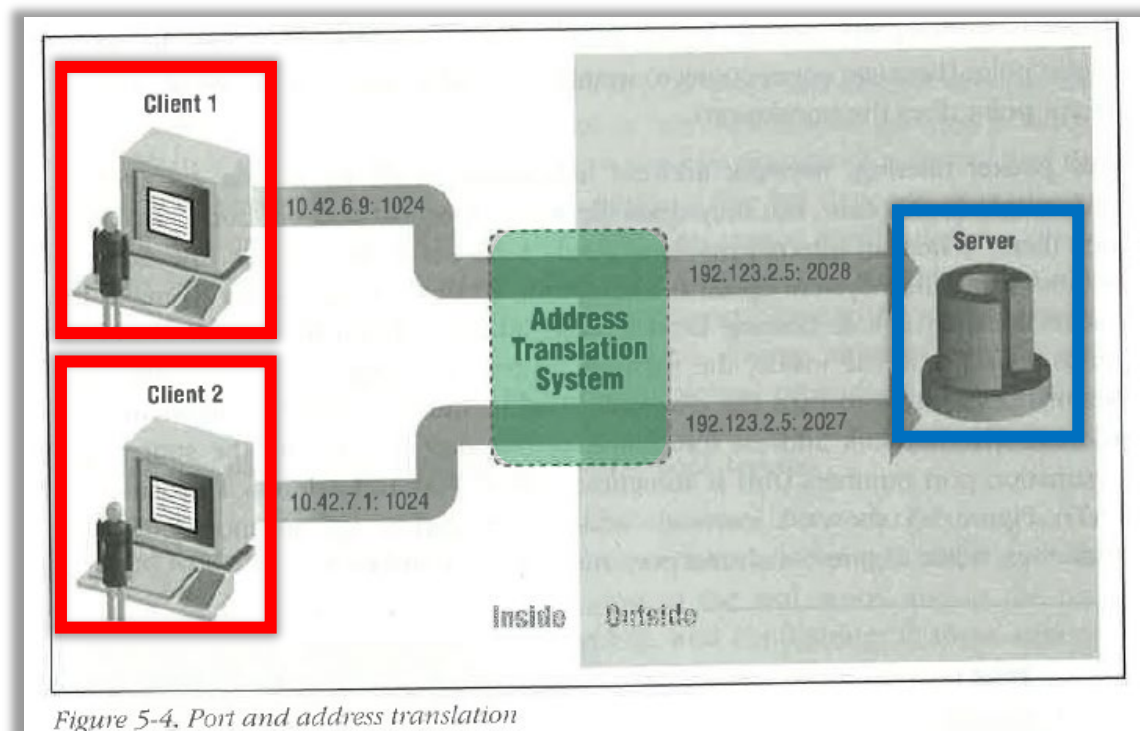
Each device 102 has an identifier including the IP address transmitted by AP 106 to Baig's server. Ex. 1002, ¶331. Outgoing traffic from the AP carries its IP address as the source IP address for all devices. Ex. 1007, ¶¶49-51, FIG. 2 (box "3"); Ex. 1002, ¶332.

As explained below, under the Baig-Satapati/Zwicky-Damick combinations, the "device identifier[]" for claim 1 is the combination of: (i) the AP's IP address, and (ii) a TCP/IP port number associated with device 102 connected to the AP, which is used to associate two or more devices. Ex. 1002, ¶333. Baig has multiple devices 102, so the Baig-Satapati/Zwicky-Damick combinations have "device identifiers of two or more Internet-accessing electronic devices." *Id.*

Regarding the AP's IP address, Baig discusses well-known "network address translation" (NAT) techniques, provided by AP 106, permitting multiple devices Internet access using a single "public" IP address. Ex. 1007, ¶¶43-46, 49-51; Ex. 1002, ¶334; Ex. 1012, 33-35. Both Zwicky and Satapati teach NAT—including port address translation (PAT)—techniques in further detail. Ex. 1012, 33-35; Ex. 1006, ¶¶4-19; Ex. 1002, ¶¶95-102, 335, 341-346. NAT enables an intermediary device (e.g., AP) to receive communications between local and remote devices connected to the Internet, and then translate their IP addresses. Ex. 1002, ¶¶335-336; Ex. 1006, ¶¶4-19. For example, when any of Baig's mobile devices wish to send packets, AP 106 replaces the "local IP address" (individual device identifier) in those

outgoing packets with AP 106's "public IP address." Ex. 1007, ¶¶45-46, 50; Ex. 1002, ¶¶336-337.

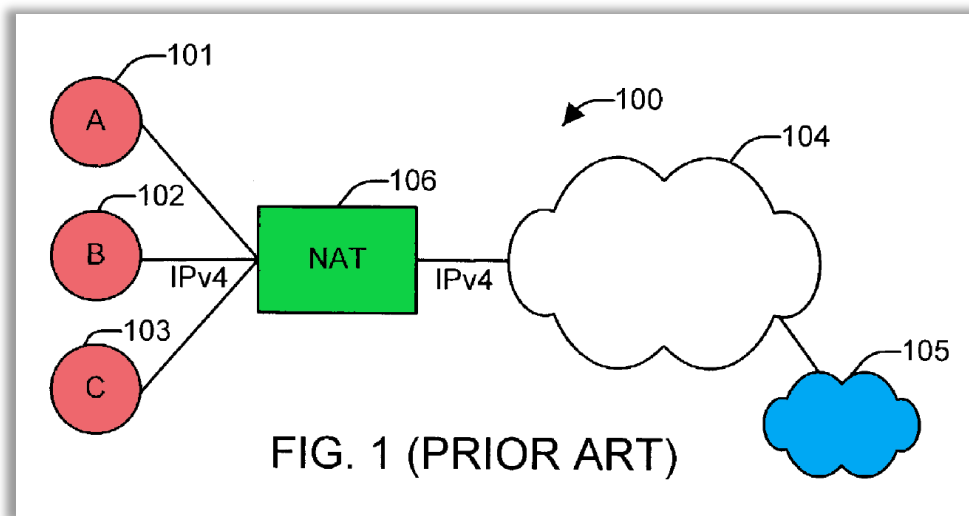
As was well-known, Internet packets include IP addresses of source and destination devices, and source and destination port numbers to identify endpoints associated with the source and destination IP addresses. Ex. 1002, ¶¶332, 338, 342. TCP/IP port numbers are standard fields, represented as a number after an IP address (e.g., "192.123.2.5:2026" represents an IP address of "192.123.2.5" and port number of "2026"). NAT includes "port address translation" permitting multiple devices to share a common IP address:



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

Ex. 1012, 33-35; Ex. 1006, ¶2; Ex. 1039, 21 (§3.1); Ex. 1002, ¶343. Like Baig’s AP, Zwicky’s **ATS** (e.g., NAT) replaces the local IP addresses for **Clients 1 and 2** with the same IP address (*i.e.*, 192.123.2.5) and assigns distinct port numbers to each client (e.g., 2028, 2027). Ex. 1002, ¶¶343-344.

Similarly, Satapati shows a **NAT 106** between **users 101-103** and **remote servers 105**:



Ex. 1006, FIG. 1 (annotated).

Ex. 1006, ¶¶4-10. Like Baig’s AP, NAT 106 replaces local IP addresses for users 101-103 with the same IP address and assigns them distinct port numbers. *Id.*; Ex. 1002, ¶¶344-346.

In proposed Baig-Satapati/Zwicky-Damick combinations, the IP address of the AP together with a port number associated with a device 102 connected thereto is a “device identifier[.]” because, together, they uniquely identify a device 102

connected to server 124. Ex. 1007, ¶¶38-39, 43-47, 49-56, FIG. 2; Ex. 1012, 33-35; Ex. 1006, ¶11; Ex. 1002, ¶¶339-340, 347. This comports with the '015 Patent, in which the device identifier may include any temporary/permanent “identifying code or data element”, including an IP address. Ex. 1001, 15:32-47; Ex. 1002, ¶348.

It would have been obvious to implement port translation techniques (per Satapati or Zwicky) as part of NAT performed by Baig’s AP 106, thereby allowing multiple devices to use a single IP address and yet be uniquely identified by port number. Ex. 1002, ¶349; Ex. 1007, ¶131. Using port translation techniques to uniquely identify different devices is consistent with Baig, which already provides NAT, enabling devices connected to the same AP to communicate with Baig’s server. Ex. 1007, ¶¶43-51; Ex. 1002, ¶351. The routine prior use of PAT would have provided motivation to employ such techniques with Baig. Ex. 1002, ¶351. Baig already teaches multiple devices 102 connected to the Internet via AP 106, so a POSA would have been motivated to incorporate PAT to route communications to the appropriate device 102. Ex. 1007, ¶50; Ex. 1002, ¶351. A POSA would have also been motivated to use PAT because it would protect the privacy of devices 102. Ex. 1002, ¶351. Additionally, implementing port translation techniques in Baig would have advantageously conserved IP addresses by allowing devices to communicate over the Internet while sharing a common IP address. *Id.*; Ex. 1006, ¶4; Ex. 1012, 38.

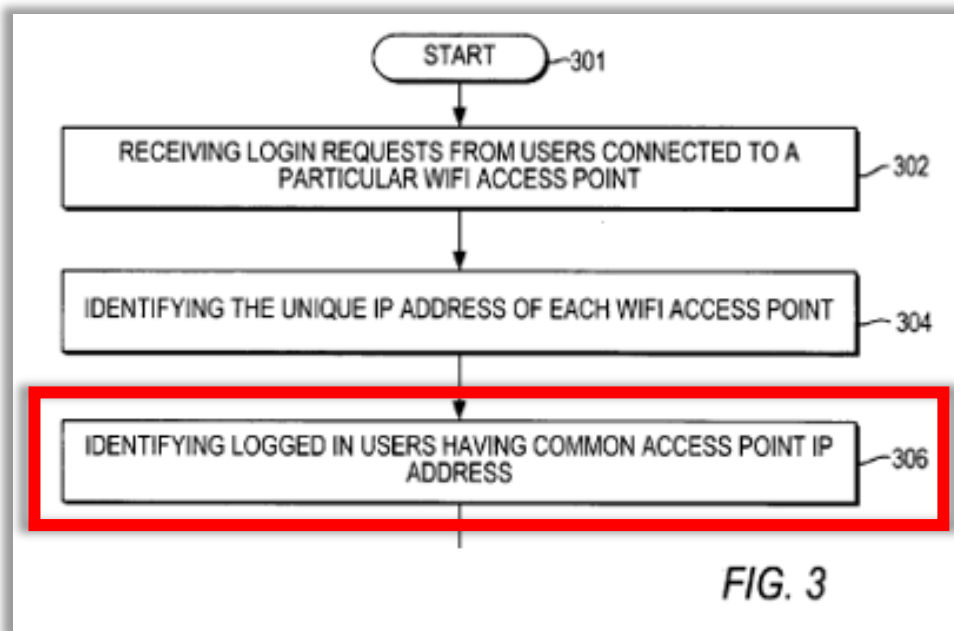
Implementing Satapati's or Zwicky's port translation techniques in Baig's system combines known elements (Baig's AP with NAT router, and Satapati's or Zwicky's port translation techniques) according to known methods (configuring Baig's AP to assign port numbers per Satapati and Zwicky) to yield predictable results (Baig's server uniquely identifies devices sharing an AP's IP address based on port numbers for each device). Ex. 1002, ¶¶350, 356.

A POSA would have expected success in combining Baig with Satapati or Zwicky because Baig, Satapati, and Zwicky are analogous references in the field of providing access to information over local/external networks. *Id.*, ¶352. Satapati and Zwicky both teach a communication system similar to Baig's system—*e.g.*, each describes transmitting packets from local devices sharing a common IP address to a remote server, and NAT techniques. *Id.* Additionally, given the routine and widely-known prior use of NAT and PAT, a POSA would have been accustomed to such techniques. *Id.*, ¶353.

A POSA would have had the skills, knowledge, and motivation to implement port translation techniques, as taught by Zwicky and Satapati, in Baig's system. *Id.*, ¶354. Port translation techniques uniquely identifying devices sharing a common IP address are used in Baig in the same way as in Zwicky and Satapati. *Id.*, ¶355; Ex. 1040, 11-12 (port translation). Further, Baig's repeated references to NAT techniques provide an express motivation to consult Zwicky or Satapati. Ex. 1007,

¶¶43-51. Zwicky also provides express motivations to use NAT and PAT, including “economiz[ing] on address space” and providing “some security advantages.” Ex. 1012, 35-36; Ex. 1002, ¶355.

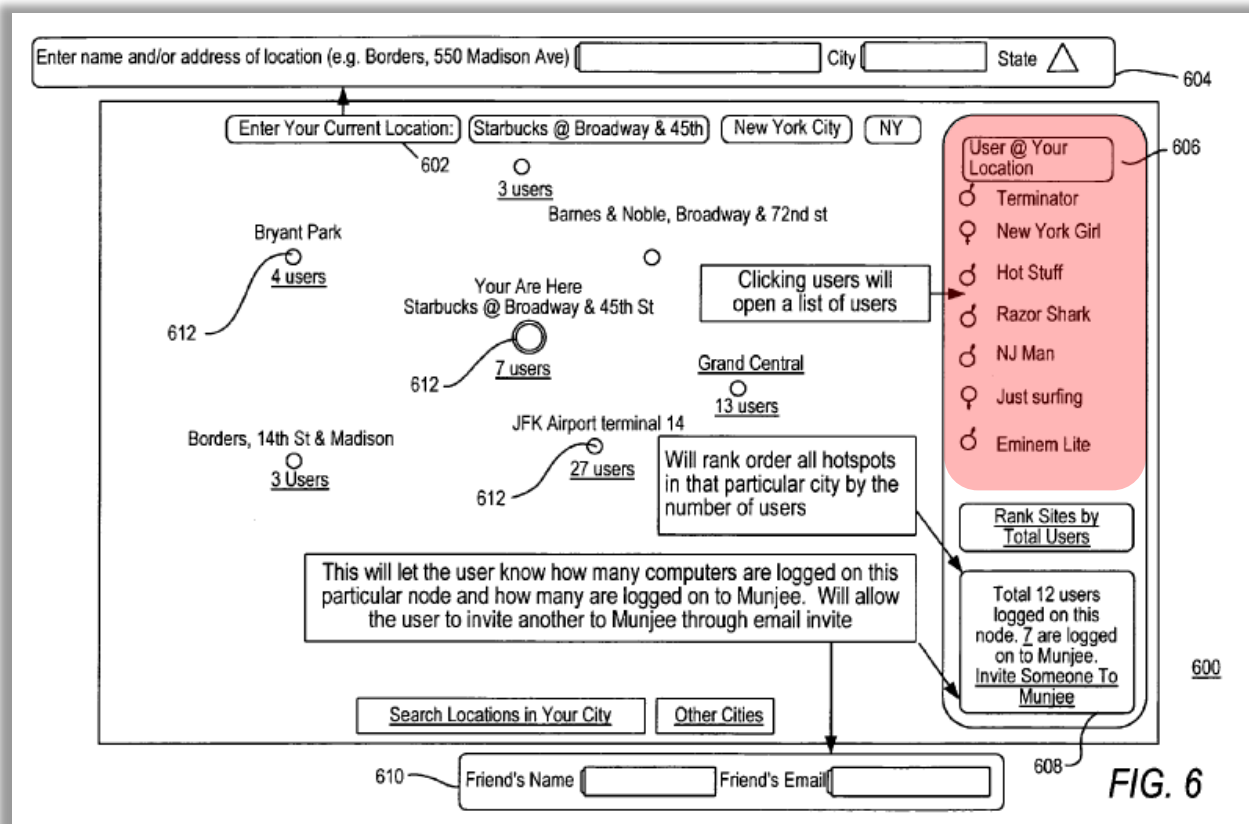
The proposed Baig-Satapati/Zwicky-Damick combinations disclose “an association between device identifiers of two or more Internet-accessing electronic devices” because, after receiving a login request from a device connected to an AP, server(s) 124 determine if multiple devices are connected to that same AP:



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

Therefore, the Baig-Satapati/Zwicky-Damick’s servers determine the claimed “association” between device identifiers when it identifies at least two devices 102 sharing the same AP IP address that are accessing the VCSP. Ex. 1007, ¶¶38, 52, 56, FIG. 3 (Step 306); Ex. 1002, ¶¶357-358, 360, 370-373; §V.D.1.c.

A POSA would have found it obvious that the Baig-Satapati/Zwicky-Damick servers “creat[e] an electronic database” containing a multitude of the claimed associations because Baig maintains a list of users whose devices are connected using the same AP IP address. Ex. 1007, ¶¶39, 52; Ex. 1048, 5 (“database”); Ex. 1002, ¶¶359-361. When Baig’s server(s) determine that a device has connected to the Internet using the same AP IP address as an already-connected device, the server places both devices into a “vicinity-based” user group. Ex. 1007, ¶¶38, 52. This is shown in Figure 6:



Ex. 1007, FIG. 6 (annotated).

Baig's VCSP offers a combination of various services⁴ via its website. Ex. 1007, ¶¶2, 52-54, 67-93, 112-113, FIGS. 6-13. Baig's server(s) generate and transmit, to a mobile device, webpage 600, including a **list 606** identifying users whose devices share the common IP address of a particular AP. Ex. 1007, ¶¶74-76; Ex. 1002, ¶¶359, 363.

Baig's server would have multiple lists for multiple VCSP groups associated with different APs. Ex. 1007, ¶¶38, 55-60, 69, 76; Ex. 1002, ¶364. The user list generated and stored by Baig's server demonstrates that, for each group, it associates the device identifiers of users' devices that are connected via a common IP address. Ex. 1002, ¶¶361-362. Therefore, the Baig-Satapati/Zwicky-Damick servers store, for each group, "an association between device identifiers of two or more Internet-accessing electronic devices." *Id.*, ¶364. A POSA would have found it obvious that the Baig-Satapati/Zwicky-Damick servers store such identifiers in "an electronic

⁴ A POSA would have recognized that the various VCSP services described in Baig are provided as a combination of choices available to a user through the same website. Ex. 1002, ¶359. To the extent it is argued these figures represent separate and distinct embodiments, a POSA would have found it obvious and been motivated to combine these embodiments to beneficially provide a large array of services to users via the VCSP website. *Id.*

database” to track users and respective devices belonging to a VCSP group, to produce a list of current hotspot users (e.g., list 606), and to properly provide VCSP services to user devices (e.g., instant messaging). *Id.*; Ex. 1007, ¶124, FIG. 7. An electronic database would have been employed, with an expectation of success, given Baig’s use of a database to associate AP IP addresses with physical addresses, and Satapati’s discussion of databases containing a listing of NAT and PAT entries. Ex. 1007, ¶¶39, 64; Ex. 1006, ¶¶34-37, 48, 67; Ex. 1002, ¶¶364-366.

c. [1C]

Baig-Satapati/Zwicky-Damick disclose [1C], which requires that data used for determining the previously-discussed “associations” between device identifiers of electronic devices include: (1) a device identifier, (2) an IP address for Internet access, and (3) a timestamp for the Internet access. Ex. 1002, ¶¶368-394.

As discussed (§V.D.1.b), Baig’s modified systems identify devices 102 sharing the same AP IP address to provide VCSP services, and use combined IP addresses and port numbers (“device identifier”) to identify and associate devices 102 connected via a common AP. Ex. 1007, ¶56, FIG. 3 (Step 306); Ex. 1002, ¶¶370-373.

Accordingly, Baig’s modified systems determine each association using stored data relating to Internet access by devices 102, and the stored data includes the AP’s IP address (“each of the associations is determined using stored data

relating to Internet access by various of the multitude of devices, the stored data comprising ... an IP address through which the one of the devices accessed the Internet”) and a port number associated with one of devices 102 (part of the “device identifier”). Ex. 1002, ¶374.

Baig teaches collecting time information identifying when devices 102 access the Internet and use of VCSP services. Ex. 1007, ¶¶114-115, 119-120, FIGS. 14-19. Ex. 1002, ¶¶375-378. To the extent Baig-Satapati/Zwicky does not explicitly disclose the claimed “timestamp identifying when the one of the devices accessed the Internet,” or determining an association using the claimed “timestamp,” the Baig-Satapati/Zwicky-Damick combinations do. Ex. 1002, ¶¶379-393. Damick teaches logging when (e.g., date and time) a user accessed online content via an electronic device and controlling access to the Internet for specified time periods. Ex. 1017, ¶¶39-43, 60-64, 69, 72-73, 75-84, FIGS. 3, 7-8; Ex. 1002, ¶¶103-106. In the Baig-Satapati/Zwicky-Damick combinations, associations between device identifiers of devices 102 are determined based on collected timestamp information that controls whether a user may access the VCSP website and for how long. Ex. 1002, ¶380.

Damick discloses a process for providing network access control and logging. Ex. 1017, ¶¶2, 75; Ex. 1002, ¶¶381-382. In Damick, a network interface device 110 (e.g., router) receives instructions from a host computer 114 to grant/deny an access

request sent from a client 104 based on network access rules that determine when and/or how long Internet access is granted to the client. Ex. 1017, ¶¶39-43, 60-64, 76-84, FIGS. 3, 7-8. Damick's network interface device 110 provides a log of requests, from a client to the host, that include information indicating the URL visited by the client and access time (635):

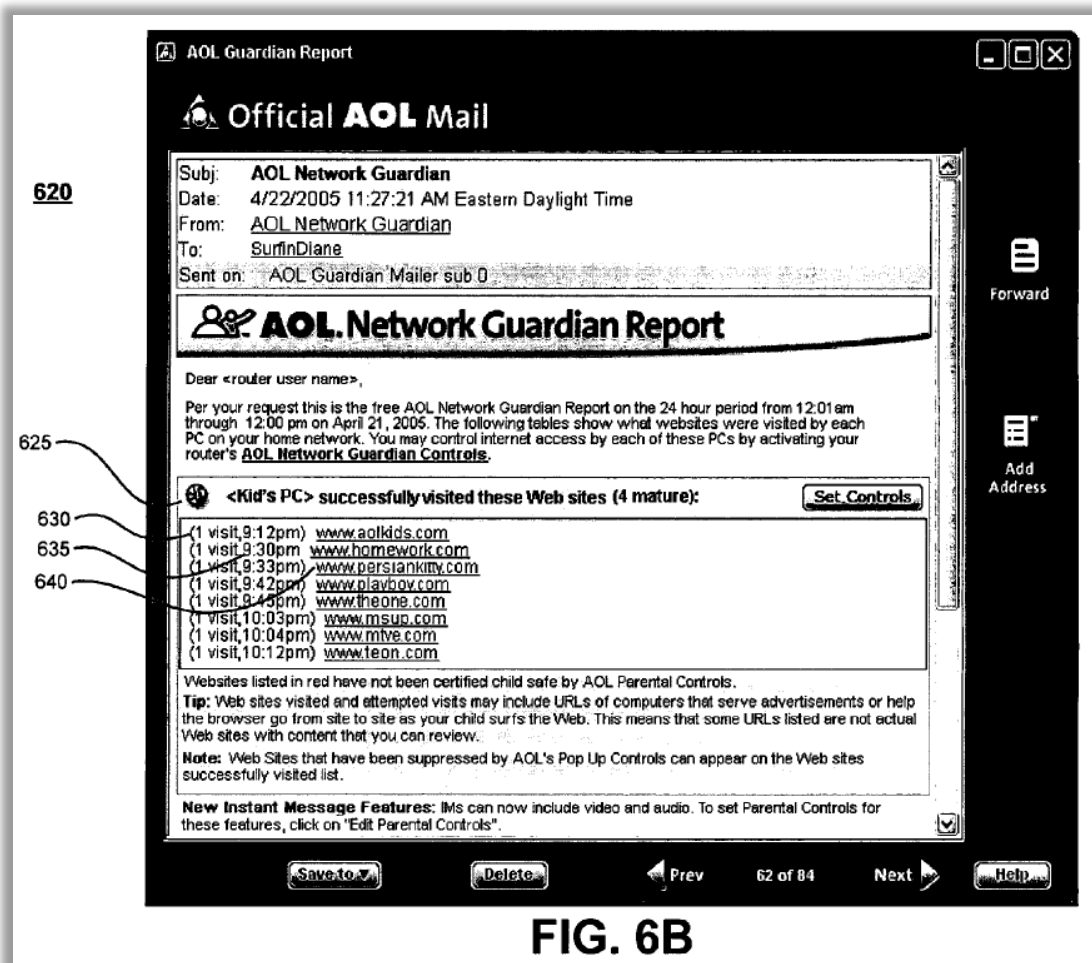


FIG. 6B

Ex. 1017, FIG. 6B.

Ex. 1017, ¶¶62-63, 69, 72-73, 85-87, FIG. 6B. Damick's host computer uses data logs to generate a report of access requests for one or multiple clients, and stores the

information collected in the log, as shown in Figure 6B. *Id.*, ¶¶69-74; Ex. 1002, ¶¶383-384.

Combining Baig-Satapati/Zwicky and Damick simply uses known techniques (Damick’s implementing network access controls and storing of device network access times) to improve a similar system (Baig’s system providing Internet to mobile devices via APs) in the same way (tracking network access times and controlling network access of devices connected to Baig’s AP). Ex. 1007, ¶¶38, 53 59, 79-120, FIGS. 1-2, 6-15, 19; Ex. 1017, ¶¶39-43, 60-64, 69, FIGS. 3, 6B; Ex. 1002, ¶385.

The Baig-Satapati/Zwicky-Damick systems would have used the stored timestamp information to determine the “association” under at least two separate theories. First, the claimed “association” would have been determined when the Baig-Satapati/Zwicky-Damick systems determine whether two devices are *concurrently* accessing the VCSP using the same AP IP address. Ex. 1002, ¶391. Second, and relatedly, the Baig-Satapati/Zwicky-Damick systems would have determined the “association” when they determine whether access times, for devices connecting to the Internet via the AP, satisfy temporal access rules for accessing the VCSP. *Id.*, ¶392.

A POSA would have had the skills, knowledge, and motivation to incorporate network access control and the collecting/storing of Internet access times—per

Damick—into Baig-Satapati/Zwicky. *Id.*, ¶¶386-393; Ex. 1007, ¶131. Baig and Damick are both directed to systems that use device identifiers (e.g., IP address) to monitor and log network communications. Ex. 1002, ¶387; Ex. 1007, ¶¶43-52; Ex. 1017, ¶¶2, 21-24, 30, 39, 76-77, 81-85, FIG. 1. Damick's techniques for network access control and logging of device access times are suitable for and would have been applied to a router and/or host computer, like Baig's AP 106 and/or server 124/224. Ex. 1002, ¶387. Additionally, a POSA would have been motivated to implement this combination because of the benefits provided by Damick's network access control and logging techniques—including enabling an administrator to determine when, and/or how long, to grant Internet access plus the types of accessible content—which would have been desirable to manage the network. Ex. 1017, ¶¶41-44, 55-59, 62-63, 69-73, 85-87; Ex. 1002, ¶388. Based on these similarities between Damick's and Baig's systems, and Damick's additional benefits, a POSA would have been motivated to apply Damick's teachings to Baig-Satapati/Zwicky to provide enhanced control over a user's access to the Internet and VCSP services, e.g., determining when, and/or how long, Internet access is permitted for certain devices and the type of content accessed. Ex. 1002, ¶¶387-390; Ex. 1007, ¶120.

A POSA would have also carried out the combination with a reasonable expectation of success because logging timestamps and using such information for

determinations are routine, straightforward operations, and Baig’s system already monitors device access times, so changes would be minimal (e.g., software modifications well within the POSA’s skill set). Ex. 1002, ¶393.

d. [1D]

Baig-Satapati/Zwicky-Damick disclose [1D]. Ex. 1002, ¶¶395-400.

As discussed (§§V.D.1.b-c), when the Baig-Satapati/Zwicky-Damick servers determine that a first device has connected to the Internet using the same AP IP address as an already-connected second device, the server(s) place both devices into a VCSP group (“at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices, which association is determined by using the stored data to determine that both of the at least two devices have accessed the Internet via a common IP address”). Ex. 1007, ¶38; Ex. 1002, ¶396. Moreover, Baig’s server(s) “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,” when it identifies at least two devices sharing the same AP IP address that are accessing the VCSP website concurrently and/or in accordance with temporal network access rules. Ex. 1007, ¶¶38, 56, FIG. 6; Ex. 1002, ¶396.

The list grouping those users *concurrently* accessing the website in Baig-Satapati/Zwicky-Damick teaches “predetermined time-relation criterion,” (*i.e.*, at

the same time). The Baig-Satapati/Zwicky-Damick servers form a VCSP group including, and thus associating (§§V.D.1.b-c), at least the first device and second device being connected via the same IP address at the same time. *Id.*; Ex. 1002, ¶¶391, 397; §V.D.1.b.

The network access control rules also determine when, or how long, Internet access is granted to device 102 (Ex. 1017, ¶62), which also discloses the “predetermined time-relation criterion.” The Baig-Satapati/Zwicky-Damick servers would form the VCSP group by assessing whether access times of devices connected via the same AP IP address satisfy temporal requirements for current network access rules—e.g., allowing Internet access for a specified time period. *Id.*; Ex. 1002, ¶¶392, 398-399.

In grouping the devices 102, the Baig-Satapati/Zwicky-Damick systems would have used device identifiers (IP addresses and port numbers) and timestamps to determine that both the first and second devices access the Internet via AP 106’s IP address at the same time and/or in accordance with temporal access rules, “which association is determined by using the stored data.” Ex. 1002, ¶¶391-392, 397-399; §§V.D.1.b-c.

e. [1E]

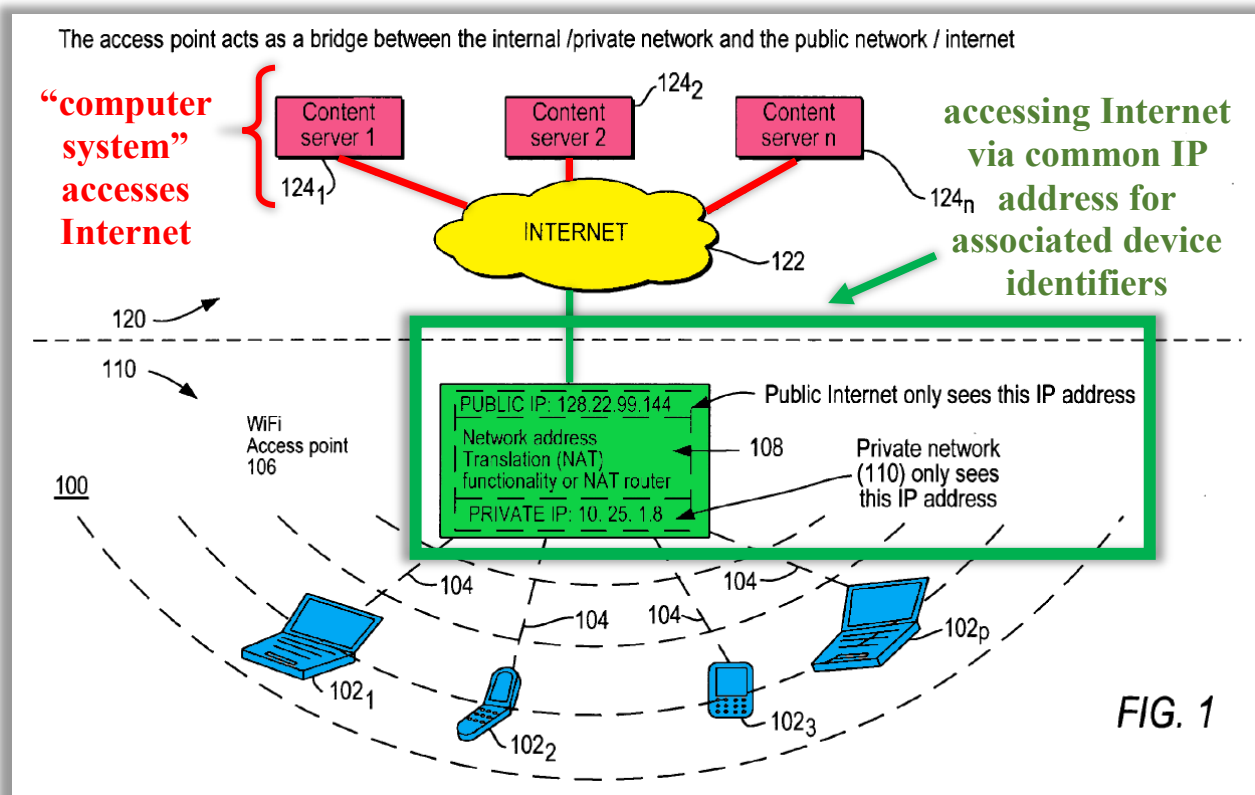
Baig-Satapati/Zwicky-Damick disclose [1E]. Ex. 1002, ¶¶401-406.

As discussed (§V.D.1.d), the Baig-Satapati/Zwicky-Damick servers determine that a first device has connected using the same AP IP address as an already-connected second device, and places both devices into a VCSP group (“at least some of the associations indicate association between at least two devices of the two or more Internet-accessing electronic devices”). Ex. 1007, ¶¶38, 56, FIG. 3; Ex. 1002, ¶402. The association between these two Baig devices was also “determined without use of personally identifiable information” because, as explained (§V.D.1.b), in Baig-Satapati/Zwicky-Damick, the “device identifier” is the combination of: (i) the AP’s IP address, and (ii) a port number associated with a device (“one of the Internet-accessing devices”), neither of which identifies a specific person. Ex 1002, ¶¶403-405; Ex. 1001, 6:25-44 (defining PII and non-PII).

f. [1F]

Baig-Satapati/Zwicky-Damick disclose [1F]. Ex. 1002, ¶¶407-410.

The Baig-Satapati/Zwicky-Damick servers (“the computer system determining the associations”) communicate through Internet 122 to connect with devices 102.



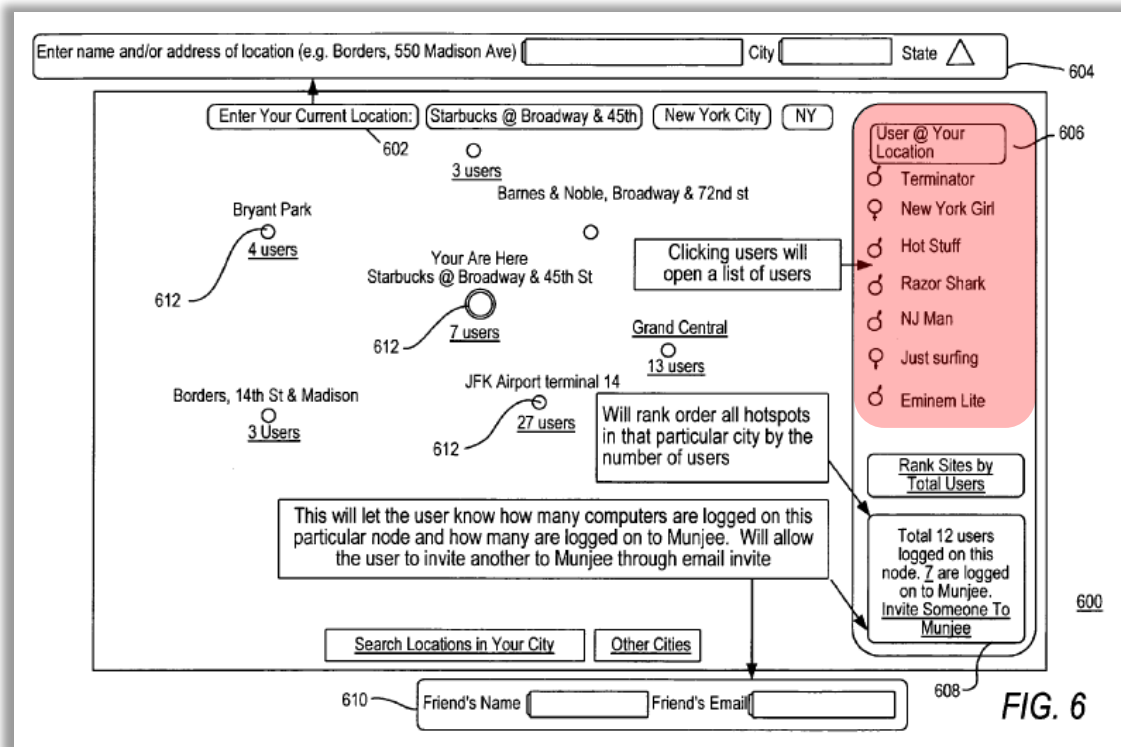
Ex. 1007, FIG. 1 (annotated).

As shown, each **Baig server (124₁-124_n)** is **directly connected to the Internet 122** using access other than AP 106, while **user devices 102₁-102_p connect to the Internet via AP 106 using a common AP IP address**. Ex. 1007, ¶¶43-45, FIGS. 1-2. Baig-Satapati/Zwicky-Damick’s server(s) thus “accesses the Internet without using any of the common IP addresses of the associations identified in part (ii).” Ex. 1002, ¶¶408-409.

g. [1G]

Baig-Satapati/Zwicky-Damick disclose [1G]. Ex. 1002, ¶¶411-425.

As discussed (§V.D.1.b), after a user logs into the VCSP, webpage 600 provides **list 606** of other users (with gender symbols) connected to the same AP.



Ex. 1007, FIG. 6 (annotated).

Ex. 1007, ¶¶38, 52, 74, FIG. 6; Ex. 1002, ¶¶412-413.

The transmission/display of Baig’s list 606 teaches [1G]. For [1G], the claimed “communication” refers to the communication between the “computer system” and “first device” that causes the claimed “automatic action.” This comports with the ’015 Patent, in which a first device (e.g., STB) communicates with the CAS to cause delivery of advertisements. Ex. 1001, 19:55-20:5, 20:46-21:3; Ex. 1002, ¶414. In Baig-Satapati/Zwicky-Damick, while one user

(“Terminator”) accesses VCSP services provided by the Baig-Satapati/Zwicky-Damick systems via the Internet (e.g., step 316 in Figure 3) (“when the computer system and a first device identified in a first association are in communication with one another”), the respective systems take automatic action: displaying, on the user’s device (first device), list 606 generated based on that device’s identifier (IP address and port number) and user profile information (e.g., gender⁵ or visibility preference) associated with the device identifier of another user’s (“Razor Shark’s”) device (second device). Ex. 1002, ¶¶415-418. This teaches “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.” *Id.*

Baig discloses a second way in which user profile information associated with a second device causes cross-device action. *Id.*, ¶¶420-422. Baig discloses another type of user profile information—users’ decisions of whether to be visible on the VCSP website to other users via a displayed list. Ex. 1007, ¶¶81 (link 720), 124; Ex. 1002, ¶¶413, 420. The transmission and display of list 606 also use “user profile information associated with a device identifier of a second device ... to cause an

⁵ The ’015 Patent broadly describes profile data as including “demographic or behavioral information,” such as gender. Ex. 1001, 6:3-16; Ex. 1002, ¶419.

automatic action to be taken with respect to the first device,” because list 606 for the first device only includes “Razor Shark” (connected using AP’s IP address associated with the second device), if “Razor Shark” allowed themselves to be visible to others. Ex. 1002, ¶¶421-422.

Baig discloses a third way in which user profile information associated with a second device causes cross-device action. *Id.*, ¶¶423-425. Baig discloses advertising online through the VCSP website based on users’ profile information (e.g., gender/age). *Id.*; Ex. 1007, ¶¶58-62, 93-106. The transmission and display of advertisements also use “user profile information associated with a device identifier of a second device ... to cause an automatic action to be taken with respect to the first device,” because an advertisement is transmitted to the first device, for example, using the average age (or gender distribution) of users at the hotspot, which would include the age (or gender) of “Razor Shark” (connected using AP’s IP address associated with the second device). Ex. 1002, ¶425; Ex. 1007, ¶¶61, 93-99.

Each cross-device action is “automatic” because it occurs without requiring action by the first user. Ex. 1002, ¶¶415, 420, 424; Ex. 1042, 48-49; Ex. 1054, ¶¶10-16, 44-47, Abstract; Ex. 1055, ¶¶5-6, 11-18, 24-25, 50-60, Abstract.

h. [1H]

Baig-Satapati/Zwicky-Damick disclose [1H]. Ex. 1002, ¶¶426-428.

The “first association” in [1G] is also an association as described for [1B]-[1D] in that the Baig-Satapati/Zwicky-Damick systems use the AP’s IP address, device-specific port numbers, and time-relation information to determine associations between multiple devices (e.g., Baig’s list 606). §§V.D.1.b-d, V.D.1.g; Ex. 1002, ¶427.

i. [1I]

Baig-Satapati/Zwicky-Damick disclose [1I]. Ex. 1002, ¶¶429-435.

As discussed (§V.D.1.b), a POSA would have found it obvious that Baig-Satapati/Zwicky-Damick’s systems “creat[e] an electronic database” containing a multitude of the claimed “associations.” Referring to the example in [1G] (§V.D.1.g), this database would store list 606 of users connected to Baig-Satapati/Zwicky-Damick’s servers and accessing VCSP services using the same AP IP address (“the first association was stored in the electronic database described in part (a)”). *Id.*, ¶430.

Baig-Satapati/Zwicky-Damick teach storing the “first association” in the database “prior to the computer system and the first device being in communication with one another as described in part (b).” *Id.*, ¶431. This is shown in steps 306 and 316 of Figure 3:

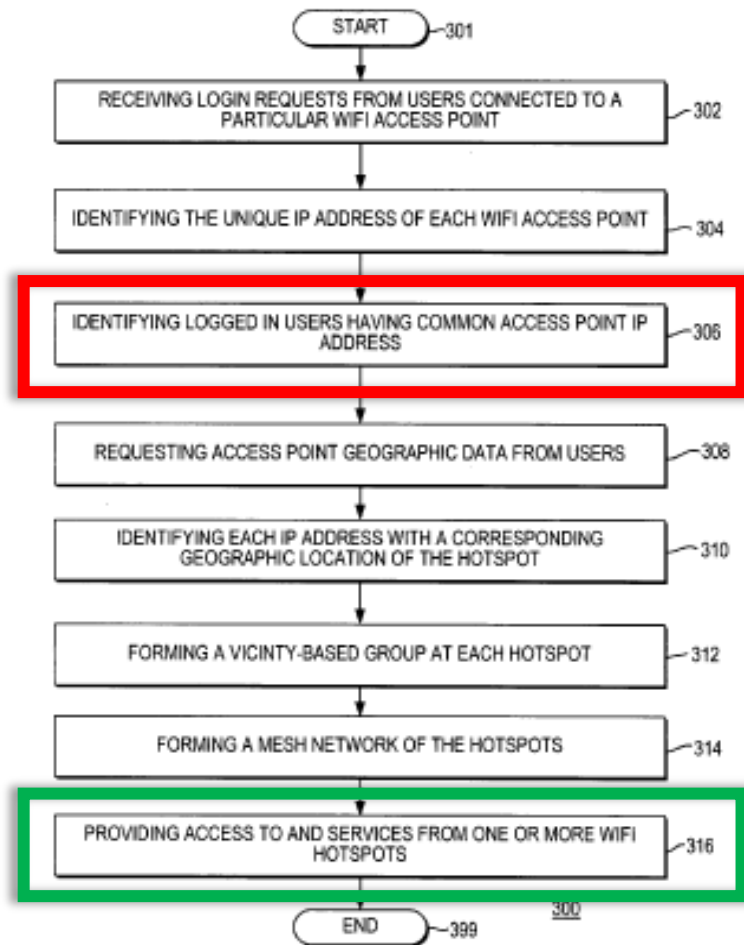


FIG. 3

Ex. 1007, FIG. 3 (annotated).

At **step 306**, the Baig-Satapati/Zwicky-Damick servers determine “the first association” when they identify two devices sharing the same AP IP address concurrently and/or in accordance with network access rules. Ex. 1007, ¶56, FIG. 3; Ex. 1017, ¶62; Ex. 1002, ¶432. Then at **step 316**, the Baig-Satapati/Zwicky-Damick servers enable users to access and receive services via the VCSP website—e.g., as shown in Figures 6 and 7—and is thus “in communication” with the devices to provide the VCSP services (e.g., list 606, advertisement). Ex. 1007, ¶¶53, 60, 76,

FIGS. 3, 6-7; Ex. 1002, ¶433. Accordingly, the association between the two devices is stored in the electronic database “prior to the computer system and the first device being in communication” to provide the VCSP services, including the transmission/display of list 606 on the first device. Ex. 1002, ¶433. Likewise, the first association is stored “prior to” the transmission/display of advertisements or an updated list 606 reflecting a user’s decision of whether to be visible to other users via the VCSP website. Ex. 1007, ¶¶54, 59, 61-62, 80, 99, 124; Ex. 1002, ¶433.

To the extent it is argued that [1I] requires that the “first association” be stored not just before the “communication” that “cause[d] an automatic action” to take place, but prior to any communication between the first device and the computer system for a current VCSP session, Baig-Satapati/Zwicky-Damick still teach [1I]. Ex. 1002, ¶434. Baig contemplates that devices 102 may inadvertently lose connectivity with the Internet, and teaches that information from a previous session can be maintained for a predetermined period of time “to prevent accidental deletion” during a connectivity failure. Ex. 1007, ¶¶55, 76, 125. After losing connectivity to Baig’s AP (or simply logging-off of the VCSP website), the first device would have again accessed the VCSP and been re-added to the same VCSP group by way of reconnecting to the same AP. *Id.*, ¶¶55-59, FIGS. 3, 6; Ex. 1002, ¶434. The initial association between the two devices (i.e., before the first device loses connectivity or logs-off the VCSP website) would be stored in a database prior

to the first device reconnecting to the VCSP and being in communication with Baig's server for the transmission/display of list 606 (or an advertisement) via the first device. Ex. 1002, ¶434.

2. Claim 2

Baig-Satapati/Zwicky-Damick disclose claim 2, which depends from claim 1. §V.D.1; Ex. 1002, ¶¶436-440.

As discussed (§V.D.1.d), Baig-Satapati/Zwicky-Damick's servers determine that a second device has connected to the Internet using the same AP IP address as an already-connected first device and/or has satisfied predetermined network access rules, thereby placing both devices into a VCSP group. Ex. 1007, ¶38; Ex. 1002, ¶437. For example, the first device ("one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)") accessed AP 106 via the Internet 122 within a specified length of time from when the second device accessed the AP, in this case, within whatever the smallest unit of time is used for comparing access times (e.g., if access times are compared down to the second, then the specified length is a second to capture only matching times), because they are grouped if accessing the VCSP concurrently ("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"). Ex. 1002, ¶438. This concurrent use (time-relation criterion) also meets claim 2. *Id.*

Additionally, by establishing network access rules indicating a set amount of time that a device in Baig-Satapati/Zwicky-Damick's systems may access the VCSP website via the Internet (e.g., permitting one hour of access time per device), a first device in the VCSP group would access the Internet "within a specified length of time" after a second device (e.g., within three hours) because each device may access the VCSP website only for that specified amount of time. Therefore, the "association" would only be determined between the devices when the first device accesses the VCSP while the second device is still connected—e.g., within the three-hour window that the second device may access the Internet. *Id.*, ¶439.

3. Claim 3

Baig-Satapati/Zwicky-Damick disclose claim 3, which depends from claim 1. §V.D.1; Ex. 1002, ¶¶441-446.

To the extent it is determined the "predetermined time-relation criterion" of claim 3 requires that one device (first device) accessed the Internet within a time window (e.g., "between two times") when the other device (second device) accessed the Internet, Baig-Satapati/Zwicky-Damick teach claim 3. *Id.*, ¶442. Using a time window associated with the access time of the second device to determine whether the first and second devices are associated would have been an obvious variation of determining whether the first device accessed the Internet within a specified length of time after the second device. *Id.*

As discussed (§V.D.2), the Baig-Satapati/Zwicky-Damick servers determine whether the first device (“one of the two or more Internet-accessing electronic devices referenced in part (a)(ii)”) accessed AP 106 via the Internet within a specified length of time (e.g., the smallest unit of time is used for comparing access times) after the second device accessed the AP. *Id.*, ¶443. A POSA would have looked to expand the window by which Baig’s system compares access times, e.g., so as not to require exact matching of access times, and therefore would have implemented the Baig-Satapati/Zwicky-Damick systems to determine concurrent Internet access using upper and lower time boundaries (“the predetermined time-relation criterion comprises the criterion that one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet between two times when another one of the two or more Internet-accessing electronic devices referenced in part (a)(ii) accessed the Internet”). *Id.* By establishing network access rules indicating a time window that devices may access the VCSP website (predetermined time-relation criterion), determining an association between both devices would require that the first device accessed the Internet “between two times” (e.g., 4pm-8pm) when the second device accessed the Internet. *Id.*; Ex. 1017, ¶62.

To the extent the “predetermined time-relation criterion” is determined to require that the first device accessed the Internet between two separate instances of the second device having accessed the Internet, Baig-Satapati/Zwicky-Damick still

teach claim 3. Ex. 1002, ¶¶444-445. Referring to the example above for [1G] and claim 2, user “Razor Shark” may connect to Baig’s server using his mobile device (the second device; “one of the two or more Internet-accessing electronic devices”) at a time when user “Terminator” has already connected to the server using his device (the first device; “another one of the two or more Internet-accessing electronic devices”) via a common IP address. Ex. 1007, ¶¶38, 43; §§V.D.1.g, V.D.2; Ex. 1002, ¶444. User “Terminator” may temporarily disconnect from the server—e.g., by logging-off the VCSP website or inadvertently disconnecting from the AP. Ex. 1002, ¶¶444-445; Ex. 1007, ¶125. After user “Terminator” reconnects to the VCSP website via the same AP, the Baig-Satapati/Zwicky-Damick servers would identify user “Terminator’s” device and user “Razor Shark’s” device as being connected to the same AP, thereby associating their device identifiers by joining both users in a VCSP group. Ex. 1007, ¶¶52, 56, FIGs. 2-3, 6; Ex. 1002, ¶¶444-445.

4. Claim 4

Baig-Satapati/Zwicky-Damick disclose claim 4, which depends from claim 1. §V.D.1; Ex. 1002, ¶¶447-451. None of the “associations” discussed herein are determined using PII, therefore the “first association” discussed above concerning [1G]-[1I] meets the requirement of [1E] that the association between device identifiers of two devices is determined without using PII. *Id.*; §§V.D.1.e, V.D.1.g-i.

5. Claim 5

Baig-Satapati/Zwicky-Damick disclose claim 5, which depends from claim 1 (§V.D.1), for the same reasons as Baig-Banga507-Banga690-McFarland. §V.A.5; Ex. 1007, ¶¶39, 47, 56-60, 65, 81, 93, FIGS. 3, 5; Ex. 1002, ¶¶452-459.

6. Claim 6

Baig-Satapati/Zwicky-Damick disclose claim 6, which depends from claim 5. §V.D.5; Ex. 1002, ¶¶460-464.

As discussed (§V.D.5), Baig’s users create/update their user profiles from different APs. Ex. 1007, ¶¶39, 47, 56-60, 65, 81, 93, FIGS. 3, 5; Ex. 1002, ¶¶461-462. It would have been obvious for users to update their profile at their discretion—including after the system associated devices that have been added to a same VCSP group by way of accessing the Internet using a common AP (“wherein the user profile information of part (b) was collected after the computer system has determined the first association”). Ex. 1002, ¶462.

As discussed, associations between the device identifiers of the Baig-Satapati/Zwicky-Damick devices would have been determined without using PII (“the first association of part (b) is one of the associations identified in part (a)(iii)”). §V.D.1.e; Ex. 1002, ¶463.

7. Claim 7

Baig-Satapati/Zwicky-Damick disclose claim 7, which depends from claim 5, for the same reasons as claim 3. §§V.D.3, V.D.5; Ex. 1007, ¶¶38, 55-56, 76, 125, FIGS. 3, 6; Ex. 1002, ¶¶465-470.

8. Claim 9

Baig-Satapati/Zwicky-Damick disclose claim 9, which depends from claim 1, for the same reasons as claim 6. §§V.D.1, V.D.6; Ex. 1002, ¶¶468-470.

9. Claim 10

Baig-Satapati/Zwicky-Damick disclose claim 10, which depends from claim 1. §V.D.1; Ex. 1002, ¶¶471-475.

As discussed (§V.D.1.g), Baig's server collects profile information (e.g., gender) from individual users, which is used to provide VCSP services, including "the ability to advertise to an audience at a particular WiFi hotspot" (Ex. 1007, ¶61) by selecting/sending an advertisement, of multiple advertisements, "based upon the profile (e.g., age or gender) of the user (among other profile information)" (*id.*) ("selecting an advertisement, from among a plurality of possible advertisements, based at least in part on at least a portion of the user profile information"). Ex. 1007, ¶¶11-12, 54, 58-62, 93-106, 115, 120, FIG. 22; Ex. 1002, ¶¶472-473.

User profile information for selecting advertisements is "associated with the device identifier of the second device" because Baig-Satapati/Zwicky-Damick's systems selectively target advertising through the VCSP website to devices at a

particular AP (having a unique IP address and device-specific port numbers) based on their profile information and, as discussed, the device identifier includes a combination of the AP's IP address and the device's assigned port number (second device). §§V.D.1.b, V.D.1.e, V.D.1.g; Ex. 1002, ¶¶474. A POSA would have understood that Baig-Satapati/Zwicky-Damick's servers "caus[e] the selected advertisement to be directed to the second device" at least because Baig discloses that entities advertise selected/targeted advertisements via the VCSP website, thereby causing advertisements to be provided to the user's mobile devices. Ex. 1007, ¶¶12, 54, 59-62, 94, 99, 104-105, FIG. 21; Ex. 1002, ¶¶474.

10. Claim 13

Baig-Satapati/Zwicky-Damick disclose claim 13, which depends from claim 1. §V.D.1; Ex. 1002, ¶¶476-478.

As discussed (§§V.D.1.b, V.D.1.e), the "device identifier" is the combination of the AP's IP address, and a device's assigned port number (first/second device). Ex. 1002, ¶¶477. Neither identifies a specific person. *Id.*; §V.D.1.e.

11. Claims 14-20, 22-23, and 26

Claim 14 is the counterpart tangible data storage medium claim to claim 1. Any differences are non-substantive. *See* Claims Appendix.

The "article comprising a tangible data storage medium that is not a transitory propagating signal encoding computer-readable instructions" in Baig-

Satapati/Zwicky-Damick is the computer memory within content servers 124. Ex. 1007, ¶¶42-43, 52, FIG. 1; Ex. 1002, ¶¶479-481. The content servers “perform a method” that renders obvious the claimed steps. §V.D.1. Baig-Satapati/Zwicky-Damick’s software would have been encoded on a “tangible data storage medium that is not a transitory propagating signal,” e.g., memory storing computer programs. Ex. 1007, ¶52; Ex. 1002, ¶480.

Baig-Satapati/Zwicky-Damick thus teach claims 14-20, 22-23, and 26 for the same reasons as claims 1-7, 9-10, and 13. §§V.D.1-7, V.D.9-10, V.D.13; Ex. 1002, ¶481.

E. Grounds F and G: Baig-Satapati-Damick-Costa and Baig-Zwicky-Damick-Costa Render Claims 8 and 21 Obvious

Baig-Satapati/Zwicky-Damick in view of Costa disclose claims 8 and 21, which respectively depend from claims 7 and 20. Ex. 1002, ¶¶482-505; §§V.D.7, 11.

1. [8A], [21A]

Baig-Satapati/Zwicky-Damick in view of Costa disclose [8A] and [21A] for the same reasons as Ground B. §V.B.1; Ex. 1007, ¶¶42-47, 61-62, 93, 103, FIG. 1; Ex. 1011, ¶¶36-37; Ex. 1002, ¶¶483-496.

Based on the similar systems of Costa and Baig-Satapati/Zwicky-Damick, plus Costa’s additional benefits, a POSA would have been motivated to apply Costa’s teachings to Baig-Satapati/Zwicky-Damick’s systems to connect an STB at

an AP to display, on a TV, targeted advertisements and other content to the collective audience. Ex. 1002, ¶¶484-495; Ex. 1007, ¶¶79-93, 107-110, 122-128, FIGS. 7-12, 23. The STB would have received, via this AP-STB connection, targeted advertisements and other VCSP content. Ex. 1007, ¶¶42-43, FIG. 1; Ex. 1002, ¶¶486-487.

As discussed (§V.D.1.g), Baig-Satapati/Zwicky-Damick's systems take automatic action relative to the first device (STB)—e.g., displaying list 606 and/or advertisements—that uses the first device's identifier (IP address and port number) and user profile information associated with a second device (e.g., gender) to generate list 606 and/or to select an advertisement for display. Ex. 1002, ¶¶491, 495.

2. [8B], [21B]

Baig-Satapati/Zwicky-Damick in view of Costa disclose [8B] and [21B]. The devices in Baig's modified systems include cellular telephones ("online user interface device"). Ex. 1007, ¶¶5, 42-43, FIG. 1; Ex. 1002, ¶¶497-499; Ex. 1001, 2:52-56.

3. [8C]-[8D], [21C]-[21D]

Baig-Satapati/Zwicky-Damick disclose [8C]-[8D] and [21C]-[21D] for the same reasons as claim 6. §V.D.6; Ex. 1002, ¶¶500-505.

F. Grounds H and I: Baig-Satapati-Damick-Ashbaugh and Baig-Zwicky-Damick-Ashbaugh Render Claims 11 and 24 Obvious

Baig-Satapati/Zwicky-Damick-Ashbaugh disclose claims 11 and 24, which respectively depend from claims 10 and 23 taught by Baig-Satapati/Zwicky-Damick. §§V.D.9, V.D.11; Ex. 1002, ¶¶506-514. A POSA would have found it obvious to apply Ashbaugh's teachings regarding redirection to Baig-Satapati/Zwicky-Damick-Ashbaugh's systems for the same reasons as Ground C. §V.C; Ex. 1019, 9:36-38, 10:1-9, 11:43-66; Ex. 1050, 14-15, 17; Ex. 1007, ¶¶59, 99; Ex. 1002, ¶¶507-513.

G. Grounds J and K: Baig-Satapati-Damick-Banga507 and Baig-Zwicky-Damick-Banga507 Render Claims 12 and 25 Obvious

Baig-Satapati/Zwicky-Damick-Banga507 disclose claims 12 and 25, which respectively depend from claims 1 and 14 taught by Baig-Satapati/Zwicky-Damick. §§V.D.1, V.D.11; Ex. 1002, ¶¶515-521. A POSA would have found it obvious to apply Banga507's teachings regarding a hybrid cookie/device identifier to Baig-Satapati/Zwicky-Damick's systems for the same reasons as Ground A. §V.A.10; Ex. 1015, ¶¶7, 31; Ex. 1002, ¶¶516-520.

VI. GROUNDS FOR STANDING & FEE PAYMENT

Petitioner certifies that the '015 Patent is available for, and Petitioner is not barred or estopped from requesting, *inter partes* review challenging claims 1-26. Per 37 C.F.R. § 42.103, the undersigned authorizes charging of any required fees to Deposit Account No. 19-0733.

VII. CONCLUSION

The Board should grant this petition and cancel claims 1-26.

Dated: March 1, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for Inter Partes Review totals 13,864, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i). This total includes 13,850 words as counted by the Word Count feature of Microsoft Word and 14 words used in annotations.

Pursuant to 37 C.F.R. § 42.24(a)(1), this count does not include the table of contents, the table of authorities, mandatory notices under § 42.8, the certificate of service, this certification of word count, the claims listing appendix, or appendix of exhibits.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that I caused a true and correct copy of this Petition for *Inter Partes* Review in connection with U.S. Patent No. 11,564,015 and supporting evidence to be served via FedEx Priority Overnight on March 1, 2024, on the following:

LOUIS J. HOFFMAN, P.C.
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Dated: March 1, 2024

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CLAIM LISTING APPENDIX

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
[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,

Designation	Claim Language
	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	
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	

Designation	Claim Language
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.
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	

Designation	Claim Language
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 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-

Designation	Claim Language
	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
[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	

Designation	Claim Language
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 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

Designation	Claim Language
	the device identifier of the second device, and causing the selected advertisement to be directed to the second device.
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.