

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HOME DEPOT U.S.A., INC.,
Petitioner,

v.

SECURITY TECHNOLOGY, LLC,
Patent Owner

Inter Partes Review No.: IPR2024-01420

**PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 11,562,402
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.1-100, ET SEQ**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. STATEMENT OF PRECISE RELIEF REQUESTED	1
III. THE '402 PATENT	1
A. '402 Patent Overview	1
B. '402 Patent Prosecution History	4
C. Person of Ordinary Skill in the Art	5
IV. PRIOR ART REFERENCES	5
A. U.S. Patent Application Publication 2007/0244750 (“Grannan”) (EX1007)	5
B. U.S. Patent No. 7,809,740 (“Chung”) (EX1005)	7
C. Segmenting Customer Transactions Using a Pattern-Based Clustering Approach, Yinghui Yang and Balaji Padmanabhan (“Yang”) (EX1006)	7
D. U.S. Patent Application Publication 2012/0109956 (“Ramaiyer”) (EX1009)	8
V. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(B)(3)	9
VI. PATENT OWNER LICENSEE’S INFRINGEMENT CONTENTIONS	10
VII. GROUND I: GRANNAN, CHUNG, AND YANG	11
A. Claim 1	11
1. [1pre] A method, comprising:	11
2. [1a] determining a first quality level associated with a user profile,	11
3. [1b] wherein the first quality level is based at least in part on an estimate of a likelihood of an event, wherein the first quality level is determined based at least in part on at least one of: (1) a first search associated with the user profile or (2) a first purchase associated with the user profile,	14

4. [1c] and wherein the determining of the first quality level is based at least in part on a unique identifier and clustering19
5. [1d] determining, for a user associated with the user profile, an indication of interest in a first category, wherein the indication of interest in the first category is determined based at least in part on at least one of: (1) a second search associated with the user profile or (2) a second purchase associated with the user profile24
6. [1e] storing, in a record associated with the user, the indication of interest in the first category28
7. [1f] subsequent to determining the indication of interest in the first category, determining, for the user, that a need relative to the first category has been met based at least in part on at least one of: (1) a third search associated with the user profile or (2) a third purchase associated with the user profile;30
8. [1g] based at least in part on the determination that the need relative to the first category has been met, determining an indication of interest in a second category, wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest;32
9. [1h] in response to determining that the need relative to the first category has been met, determining a second quality level associated with the user, wherein the second quality level is determined with respect to the first category;34
10. [1i] wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion assessment is based at least in part on historical click behavior.....35
11. [1j] displaying an advertisement to the user based at least in part on at least one of the first quality level or the second quality level.....39

B.	Claim 2	42
1.	[2] The method of claim 1, wherein the second quality level is determined with respect to the second category.....	42
C.	Claim 3	43
1.	[3] The method of claim 1, wherein at least one of the first quality level or the second quality level is based at least in part on an assessment of a purchase likelihood associated with the user profile.....	43
D.	Claim 4	45
1.	[4] The method of claim 3, wherein the purchase likelihood is determined relative to the advertisement.....	45
E.	Claim 5	49
1.	[5] The method of claim 1, wherein at least one of the first quality level or the second quality level is determined at least in part by using machine learning.	49
F.	Claim 6	51
1.	[6] The method of claim 1, wherein at least one of the first quality level or the second quality level is determined with respect to the advertisement.....	51
G.	Claim 7	52
1.	[7] The method of claim 1, wherein at least one of the first quality level or the second quality level is used to determine at least one of a discount or a surcharge.....	52
H.	Claim 8	53
1.	[8] The method of claim 1, wherein the event comprises a conversion.	53
I.	Claim 9	53
1.	[9] The method of claim 1, wherein the event comprises a purchase.	53
J.	Claim 10.	54
1.	[10pre] A system, comprising:.....	54
2.	[10a] a processor configured to:	54
3.	[10b]	56

4.	[10c]	57
5.	[10d]	57
6.	[10e]	57
7.	[10f]	57
8.	[10g]	57
9.	[10h]	57
10.	[10i]	57
11.	[10j]	57
12.	[10k]	57
13.	[10l] a memory coupled to the processor and configured to provide the processor with instructions.	57
K.	Claim 11	58
1.	[11]	58
L.	Claim 12	59
1.	[12]	59
M.	Claim 13	59
1.	[13]	59
N.	Claim 14	59
1.	[14]	59
O.	Claim 15	59
1.	[15]	59
P.	Claim 16	59
1.	[16]	59
Q.	Claim 17	59
1.	[17]	59
R.	Claim 18	59
1.	[18]	59
S.	Claim 19	60

1.	[19pre] A computer program product embodied in a non-transitory computer readable storage medium and comprising computer instructions for:	60
2.	[19a]	61
3.	[19b]	61
4.	[19c]	62
5.	[19d]	62
6.	[19e]	62
7.	[19f]	62
8.	[19g]	62
9.	[19h]	62
10.	[19i]	62
11.	[19j]	62
VIII.	GROUND 2: GRANNAN, CHUNG, AND RAMAIYER	62
A.	Claims 1-19 in General	62
B.	Limitations 1[c], 10[d], and 19[c].	63
IX.	SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS	65
X.	DISCRETIONARY DENIAL IS NOT WARRANTED.....	66
A.	35 U.S.C. § 314(a) Analysis.....	66
1.	Stay.....	66
2.	Trial Date	67
3.	Parallel Proceeding	67
4.	Issue Overlap.....	68
5.	Same Party	68
6.	Other Considerations	69
B.	35 U.S.C. §§325(d) Analysis	70
XI.	COMPLIANCE WITH FORMAL REQUIREMENTS	71
A.	Mandatory Notices Under 37 C.F.R. §§ 42.8(b)(1)-(4)	71
1.	Real Party-In-Interest.....	71
2.	Related Matters	71

3.	Lead and Backup Counsel	72
4.	Service Information.....	72
B.	Proof of Service on the Patent Owner.....	73
C.	Power of Attorney	73
D.	Standing.....	73
E.	Fees.....	73
XII.	CONCLUSION.....	73

INDEX OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 11,562,402
1002	File History of U.S. Pat. 11,562,402
1003	Declaration of Robert J. Sherwood
1004	CV of Robert J. Sherwood
1005	U.S. Patent No. 7,809,740 (“Chung”)
1006	<i>Segmenting Customer Transactions Using a Pattern-Based Clustering Approach</i> , Yinghui Yang and Balaji Padmanabhan (“Yang”)
1007	U.S. Patent Application Publication 2007/0244750 (“Grannan”)
1008	U.S. District Courts – Combined Civil and Criminal Federal Court Management Statistics (June 30, 2024).
1009	U.S. Patent Application Publication 2012/0109956 (“Ramaiyer”)
1010	<i>The Online Customer: New Data Mining and Marketing Approaches</i> , Yinghui Yang (“Yang Book”)
1011	Declaration of Sylvia D. Hall-Ellis PhD
1012	<i>RavenWhite Licensing LLC v. The Home Depot, Inc.</i> , 2:23-cv-00423, Plaintiff’s P.R. 4-1 Disclosures (EDTX Aug. 8, 2024)
1013	<i>RavenWhite Licensing LLC v. The Home Depot, Inc.</i> , 2:24-cv-00688, Dkt. 1 (EDTX Aug. 21, 2024) (Complaint).
1014	<i>RavenWhite Licensing LLC v. The Home Depot, Inc.</i> , 2:23-cv-00423, ’402 Infringement Contentions (EDTX Dec. 4, 2023).

CLAIMS	
[1pre]	A method, comprising:
[1a]	determining a first quality level associated with a user profile,
[1b]	wherein the first quality level is based at least in part on an estimate of a likelihood of an event, wherein the first quality level is determined based at least in part on at least one of: (1) a first search associated with the user profile or (2) a first purchase associated with the user profile,
[1c]	and wherein the determining of the first quality level is based at least in part on a unique identifier and clustering
[1d]	determining, for a user associated with the user profile, an indication of interest in a first category, wherein the indication of interest in the first category is determined based at least in part on at least one of: (1) a second search associated with the user profile or (2) a second purchase associated with the user profile
[1e]	storing, in a record associated with the user, the indication of interest in the first category
[1f]	subsequent to determining the indication of interest in the first category, determining, for the user, that a need relative to the first category has been met based at least in part on at least one of: (1) a third search associated with the user profile or (2) a third purchase associated with the user profile;
[1g]	based at least in part on the determination that the need relative to the first category has been met, determining an indication of interest in a second category, wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest;
[1h]	in response to determining that the need relative to the first category has been met, determining a second quality level associated with the user, wherein the second quality level is determined with respect to the first category;
[1i]	wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion assessment is based at least in part on historical click behavior; and
[1j]	displaying an advertisement to the user based at least in part on at least one of the first quality level or the second quality level.
[2]	The method of claim 1, wherein the second quality level is determined with respect to the second category.
[3]	The method of claim 1, wherein at least one of the first quality level or the second quality level is based at least in part on an assessment of a purchase likelihood associated with the user profile.

CLAIMS	
[4]	The method of claim 3, wherein the purchase likelihood is determined relative to the advertisement.
[5]	The method of claim 1, wherein at least one of the first quality level or the second quality level is determined at least in part by using machine learning.
[6]	The method of claim 1, wherein at least one of the first quality level or the second quality level is determined with respect to the advertisement.
[7]	The method of claim 1, wherein at least one of the first quality level or the second quality level is used to determine at least one of a discount or a surcharge.
[8]	The method of claim 1, wherein the event comprises a conversion.
[9]	The method of claim 1, wherein the event comprises a purchase.
[10pre]	A system, comprising:
[10a]	a processor configured to:
[10b]	determine a first quality level associated with a user profile,
[10c]	wherein the first quality level is based at least in part on an estimate of a likelihood of an event, wherein the first quality level is determined based at least in part on at least one of: (1) a first search associated with the user profile or (2) a first purchase associated with the user profile,
[10d]	and wherein the determining of the first quality level is based at least in part on a unique identifier and clustering;
[10e]	determine, for a user associated with the user profile, an indication of interest in a first category, wherein the indication of interest in the first category is determined based at least in part on at least one of: (1) a second search associated with the user profile or (2) a second purchase associated with the user profile;
[10f]	store, in a record associated with the user, the indication of interest in the first category;
[10g]	subsequent to determining the indication of interest in the first category, determine, for the user, that a need relative to the first category has been met based at least in part on at least one of: (1) a third search associated with the user profile or (2) a third purchase associated with the user profile;
[10h]	based at least in part on the determination that the need relative to the first category has been met, determine an indication of interest in a second category, wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest;
[10i]	in response to determining that the need relative to the first category has been met, determine a second quality level associated with the user, wherein the second quality level is determined with respect to the first category;

CLAIMS
[10j] wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion assessment is based at least in part on historical click behavior; and
[10k] display an advertisement to the user based at least in part on at least one of the first quality level or the second quality level; and
[10l] a memory coupled to the processor and configured to provide the processor with instructions.
[11] The system recited in claim 10, wherein the second quality level is determined with respect to the second category.
[12] The system recited in claim 10, wherein at least one of the first quality level or the second quality level is based at least in part on an assessment of a purchase likelihood associated with the user profile.
[13] The system recited in claim 12, wherein the purchase likelihood is determined relative to the advertisement.
[14] The system recited in claim 10, wherein at least one of the first quality level or the second quality level is determined at least in part by using machine learning.
[15] The system recited in claim 10, wherein at least one of the first quality level or the second quality level is determined with respect to the advertisement.
[16] The system recited in claim 10, wherein at least one of the first quality level or the second quality level is used to determine at least one of a discount or a surcharge.
[17] The system recited in claim 10, wherein the event comprises a conversion.
[18] The system recited in claim 10, wherein the event comprises a purchase.
[19pre] A computer program product embodied in a non-transitory computer readable storage medium and comprising computer instructions for:
[19a] determining a first quality level associated with a user profile,
[19b] wherein the first quality level is based at least in part on an estimate of a likelihood of an event, wherein the first quality level is determined based at least in part on at least one of: (1) a first search associated with the user profile or (2) a first purchase associated with the user profile,
[19c] and wherein the determining of the first quality level is based at least in part on a unique identifier and clustering;
[19d] determining, for a user associated with the user profile, an indication of interest in a first category, wherein the indication of interest in the first category is determined based at least in part on at least one of: (1) a second search

CLAIMS
associated with the user profile or (2) a second purchase associated with the user profile;
[19e] storing, in a record associated with the user, the indication of interest in the first category;
[19f] subsequent to determining the indication of interest in the first category, determining, for the user, that a need relative to the first category has been met based at least in part on at least one of: (1) a third search associated with the user profile or (2) a third purchase associated with the user profile;
[19g] based at least in part on the determination that the need relative to the first category has been met, determining an indication of interest in a second category wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest;
[19h] in response to determining that the need relative to the first category has been met, determining a second quality level associated with the user, wherein the second quality level is determined with respect to the first category;
[19i] wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion assessment is based at least in part on historical click behavior; and
[19j] displaying an advertisement to the user based at least in part on at least one of the first quality level or the second quality level.

I. INTRODUCTION

Home Depot U.S.A., Inc. (“Petitioner”) requests *inter partes* review of claims 1-19 (“the Challenged Claims”) of U.S. Patent No. 11,562,402 (“the ’402 patent,” EX1001), purportedly owned by Security Technology, LLC (“PO”), pursuant to 35 U.S.C. §§311-19 and 37 C.F.R. §42.100.

II. STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner requests cancelation of claims 1-19 of the ’402 patent in view of the following grounds:

Ground	Claims	Stat. Basis	Prior Art
I	1-19	35 U.S.C. § 103 ¹	Grannan, Chung, Yang
II	1-19	35 U.S.C. § 103	Grannan, Chung, Ramaiyer

III. THE ’402 PATENT

A. ’402 Patent Overview

The ’402 patent claims priority to a number of U.S. applications and lists 11/21/2011 as its earliest possible priority date. EX1001, (60). EX1003, ¶40.

The subject matter of the ’402 patent is directed toward a targeted advertising method in which “quality level[s]” are calculated for users to whom advertisements are to be shown. Advertisers bid for the right to display ads to users

¹ This Petition applies pre-AIA 35 U.S.C. §102 due to the ’402 patent’s 11/21/2011 claimed priority date.

based on quality level. EX1001, Abstract, 1:21-29, 3:1-14, cls. 1, 10, 19. The '402 patent suggests that “quality levels” are related to the quality of a user for purposes of advertising, *i.e.*, how likely a user is to make a purchase, referred to in the '402 patent as a “conversion assessment.” *Id.*, 3:56-61, 6:1-51, 8:7-9-2, 10:10-13, 14:61-16:19, cls. 1, 10, 19. EX1003, ¶41.

The claims of the '402 patent require determining first and second quality levels and displaying ads to a user based at least in part on at least one of the first and second quality levels. The claims also recite a hodgepodge of additional concepts, some of which are used in determining the first or second quality levels and others of which are determined, calculated and/or stored but not used for any purpose in the claims. EX1003, ¶42.

One of the concepts discussed in the '402 patent is determining for a user, “indications of interest” in a first and second category based at least in part on user searches or purchases. *Id.*, cls. 1, 10, 19, 5:31-40, 16:48-17:51, FIG. 7. An indication of interest is stored in a record associated with the user. *Id.* The patent also claims that the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest. *Id.* The '402 patent suggests indications of interest can be based on searches, *id.*, 5:31-40, as well as on clicks or purchases. *Id.*, 16:48-17:51. EX1003, ¶43.

The '402 patent claims that quality levels are determined based on several factors, including determining whether a need associated with a user profile has been met for an interest category, an estimate of a likelihood of an event such as a conversion or a purchase, and a conversion assessment. *Id.*, cls. 1, 8, 9. The '402 patent suggests that a determination that a need has been met can be made based on user searches or purchases. *Id.*, 5:31-50. EX1003, ¶44.

The '402 patent also claims, “determining of the first quality level is based at least in part on a unique identifier and clustering,” *i.e.*, the quality level is determined based on a unique user ID, which is itself determined by a clustering technique. *Id.*, 3:26-44, 11:40-55, 12:46-13:9, FIG. 6, cl. 19. The '402 patent describes clustering generally as a technique to ascertain a unique user of a device that has multiple users, based on the users' characteristics. *Id.*, 12:63-13:9. By clustering aspects of a user's behavior, on an X and Y-axis for example (FIG. 6), according to dimensions such as “time, distance, and session click-through rate ... and average time spent per page,” the '402 patent states “a clustering of behavior can be performed for each device, where a device may correspond to multiple users.” *Id.*, 12:46-13:9; EX1003, ¶45.

The '402 patent claims also that “at least one of the first quality level or the second quality level is determined with respect to the advertisement.” *Id.*, cl. 6. The '402 patent suggests the quality level is determined with respect to the product

category of the advertisement eventually served to the user. *Id.*, 5:51-6:17.

EX1003, ¶46.

B. '402 Patent Prosecution History

The application that issued as the '402 patent was filed on 3/15/2021, as one of a series of applications that claim priority to provisional application 61/562,235 filed on 11/21/2011. EX1001. The application that issued as the '402 patent was filed with one claim. EX1002, 1003 (03/15/2021 Claims). Thereafter, claims 2 through 16 were added, and claim 1 was cancelled. EX1002 at 946 (06/25/2021 Amended Claims). The patent examiner made several amendments in an Examiner's Amendment, all of which were accepted by the applicant before allowing the application, resulting in the patent's 19 issued claims. EX1002, 12 (10/03/2022 Interview Summary). EX1003, ¶¶49-50.

One such Examiner Amendment to issued claim 1 was the addition of "the determining of the first quality level is based at least in part on a unique identifier and clustering." EX1002, 15 (10/03/2022 Interview Summary). EX1003, ¶51.

The Examiner's Amendment also added language specifying the determinations of a first indication of interest, second indication of interest, and second quality level. One such amendment added that "wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion

assessment is based at least in part on historical click behavior.” EX1002 at 16 (10/03/2022 Interview Summary). EX1003, ¶52.

C. Person of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention of the ’402 patent (11/21/2011) would have had a bachelor’s degree in computer science, electrical engineering, computer engineering, or the equivalent technical training. Additionally, they would have at least three years of experience in designing or programming internet-related processes, such as user profile management and/or web-based targeted advertising. A person may also be considered a POSITA with a combination of higher formal education and less technical experience, or with more technical experience and less formal education. EX1002, ¶¶53-55.

IV. PRIOR ART REFERENCES

The challenges in this Petition are based on the knowledge of a POSITA at the time of the ’402 patent’s alleged invention, and the prior art described below.

A. U.S. Patent Application Publication 2007/0244750 (“Grannan”) (EX1007)

Grannan was filed on Apr. 18, 2006, and published on Oct. 18, 2007. EX1007. Grannan is prior art to the ’402 patent at least under pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e). EX1003, ¶59.

Grannan discloses a targeted advertising system and method that tracks user “product interest categories” or “product categories” and determines a “product interest correlation score” in those categories based on user behavior. EX1007, Abstract, [0057]-[0059], [0104], FIG. 3, FIG. 5. The product interest correlation (“PIC”) score is reduced, zeroed out, or blocked according to a user’s online searches or purchases, such as when a user makes a purchase in a specific category. *Id.*, [0057]-[0059], [0105]; EX1003, ¶60.

PIC scores are used by the Grannan system—the Advertisement Knowledge Management System (AKMS)—to send targeted advertisements to users interested in particular categories. EX1007, [0061]-[0065], [0083]-[0090], FIGS. 1-3; EX1003, ¶61.

Grannan discloses, as an example, a user named Susan planning on purchasing children’s books as Christmas gifts who browses through a retailer’s website but holds off on buying. EX1007, [0056]-[0057]. A PIC score is calculated for her based on this interest in the product category. *Id.* Later, when Susan is walking through a local mall finishing her shopping, she purchases a children’s book. *Id.* Her purchase reduces or blocks her PIC score for the book, but increases her PIC score for additional products related to the book. *Id.*; EX1003, ¶62.

Grannan is analogous art to the ’402 patent and was not considered during prosecution of the ’402 patent. EX1003, ¶63.

B. U.S. Patent No. 7,809,740 (“Chung”) (EX1005)

Chung was filed on March 29, 2006, issued on October 5, 2010, and lists Yahoo! Inc. as its assignee. EX1005. Chung is prior art to the ’402 patent under pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e). EX1003, ¶64.

Chung discloses a behavioral targeting system that determines user profiles from online activity. EX1005, Abstract. The behavioral targeting system generates a user profile score for a target objective, such as brand advertising or direct response advertising. *Id.* Chung teaches generating profile scores, by category, to predict user propensity for subject matter in the category for the target objective. For example, the profile score may be used to model the strength of the user’s interest in purchasing a product or service within a category. *Id.*, 4:66-5:4. The scores are then sent to a mapping module, where they are “mapped” in order to estimate the likelihood of user actions, such as “click propensity ... click-through-rate, and conversion propensity.” *Id.*, at 20:44-56; EX1003, ¶¶65-66.

Chung is analogous art to the ’402 patent and was not considered during prosecution of the ’402 patent. EX1003, ¶67.

C. *Segmenting Customer Transactions Using a Pattern-Based Clustering Approach*, Yinghui Yang and Balaji Padmanabhan (“Yang”) (EX1006)

Yang is a paper published no later than November 25, 2003, and again in a book no later than October 25, 2006, and is prior art under pre-AIA 35 U.S.C. §§

102(a) and 102(b). See EX1011 ¶¶42-55. Yang was publicly available including to persons of ordinary skill in the art interested in its subject matter by these same dates. *Id.*, ¶¶19, 21, 42-55. EX1003, ¶¶68-69.

Yang discloses pattern-based clustering was not a new concept as of 2003 and that “there may be natural clusters in data, characterized by a set of typical behavioral patterns.” EX1006, 13, 18. Yang discusses a clustering algorithm and experiments in clustering user-centric web transactions. EX1006, 15-18. Yang teaches that by using the features of an online session, the transactions of a single user can be clustered. *Id.*, 16-18. Yang is in the field of targeted advertising and discusses clustering in the context of “customer level data” and “online recommendations.” EX1006, 12; EX1003, ¶70.

Yang is analogous art to the ’402 patent and was not considered during prosecution of the ’402 patent. ¶71.

D. U.S. Patent Application Publication 2012/0109956 (“Ramaiyer”) (EX1009)

Ramaiyer was filed on 10/29/2010 and published on 05/03/2012. EX1009, front cover. Ramaiyer is prior art under pre-AIA 35 U.S.C. § 102(e); EX1003, ¶72.

Ramaiyer teaches a profile prediction system that uses a clustering algorithm to identify one of multiple user profiles for a single device such as a home computer, based on user behavior such as “clicking” and “browsing. EX1009, Abstract, [0031]-[0037], FIGS. 5, 6; [0029]-[0030], FIG. 4. EX1003, ¶73.

Ramaiyer is analogous art to the '402 patent. Though it was cited by the examiner during prosecution, it was not considered in combination with Grannan and Chung. EX1003, ¶74.

V. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(B)(3)

The Challenged Claims are interpreted using the same claim construction standard that is used to construe the claim in a civil action in federal district court. 37 C.F.R. § 42.100(b). EX1003, ¶56.

For the purposes of this Petition, and in accordance with plaintiff's position from litigation, each of the terms of the Challenged Claims should be accorded their plain meaning. *See* EX1012. The patent plaintiff (PO's purported exclusive licensee) asserted such a position in *RavenWhite Licensing LLC v. The Home Depot, Inc., et al.*, 2:23-cv-00423 (E.D. Tex.). *Id.* Because the prior art asserted herein discloses the preferred embodiment within the indisputable scope of the claims, the Board need not construe the outer bounds of the claims as part of these proceedings. EX1003, ¶57.

The Board and Federal Circuit have approved of this procedure in several matters. *See, e.g., Abbott Diabetes Care Inc. v. Dexcom, Inc.*, IPR2022-00913, Paper 14 (P.T.A.B. November 3, 2022) (refusing to deny institution where petitioner applied patent owner's "plain meaning" position from related district court case but proposed a different claim construction in a district court

proceeding) (“we follow the fundamental principle of party presentation which rests upon ‘the premise that [parties represented by competent counsel] know what is best for them, and are responsible for advancing facts and argument entitling them to relief’”); *Spherix Inc. v. Matal*, 703 F. App’x 982, 983 (Fed. Cir. 2017) (approving petitioner’s proposal of patent owner’s claim interpretations).

Petitioner relies herein on the patent plaintiff’s positions in the district court on claim construction. Specifically, Petitioner does not waive its right to later argue that some of the claim terms should be construed, for example in a litigation where additional claim construction issues may need to be resolved to determine infringement issues. Petitioner also does not waive its right to later argue that the Challenged Claims are invalid for reasons not raised in this Petition, including for reasons based on statutory grounds that are unavailable in *inter partes* review such as indefiniteness and ineligibility arguments under 35 U.S.C §112 and §101, respectively.

VI. PATENT OWNER LICENSEE’S INFRINGEMENT CONTENTIONS

PO’s purported exclusive licensee’s infringement allegations in the EDTX Litigation are probative of whether PO is taking inconsistent positions in this proceeding compared to its licensee’s positions in the district court litigation. Accordingly, Petitioner includes the pending complaint and infringement contentions from the prior litigation. EX1013, ¶¶47-74; EX1014.

VII. GROUND I: GRANNAN, CHUNG, AND YANG

A. Claim 1

1. [1pre] A method, comprising:

To the extent the preamble is limiting, Grannan and Chung each disclose it. Grannan discloses “a method for selecting targeted advertising.” EX1007, Title, Abstract, FIG. 1. Chung discloses “[a] method for determining user profiles from online activity.” EX1005, cls. 1-6, 1:35-63; EX1003, ¶76.

2. [1a] determining a first quality level associated with a user profile,

Grannan discloses *determining a first quality level* (product interest correlation (“PIC”) score) that is *associated with a user profile* (subscriber’s profile). For example, Grannan discloses that, “[a] total [PIC] score is calculated by factoring in demonstrated levels of interest in a particular product category via a variety of usage patterns for a subscriber.” EX1007, [0090]. “[I]f a subscriber has a product interest correlation score higher than a product interest correlation score threshold set by an advertiser for a product category, the illustrative embodiment AKMS system and method can select and send an advertisement in the product category” *Id.*, [0062]. “[A] [PIC] score may range from 1 to 100. An advertiser may set a [PIC] score threshold of 20 for sending a text advertisement to a subscriber’s cell phone, a [PIC] score threshold of 50 for sending a video advertisement to the subscriber’s cell phone and set a [PIC] score threshold of 90

for sending a video advertisement to the subscriber's IPTV receiver." EX1007, [0063]-[0066]; EX1003, ¶77.

Grannan also teaches that PIC scores are *associated with a user profile* as they are kept in a "[PIC] scoring matrix" for each subscriber that contains PIC scores for various product categories and is "updated dynamically for each subscriber in real time" by Grannan's Intelligent Correlation and Scoring System (ICSS) 212. EX1007, Abstract, [0083]-[0084], FIG. 2:

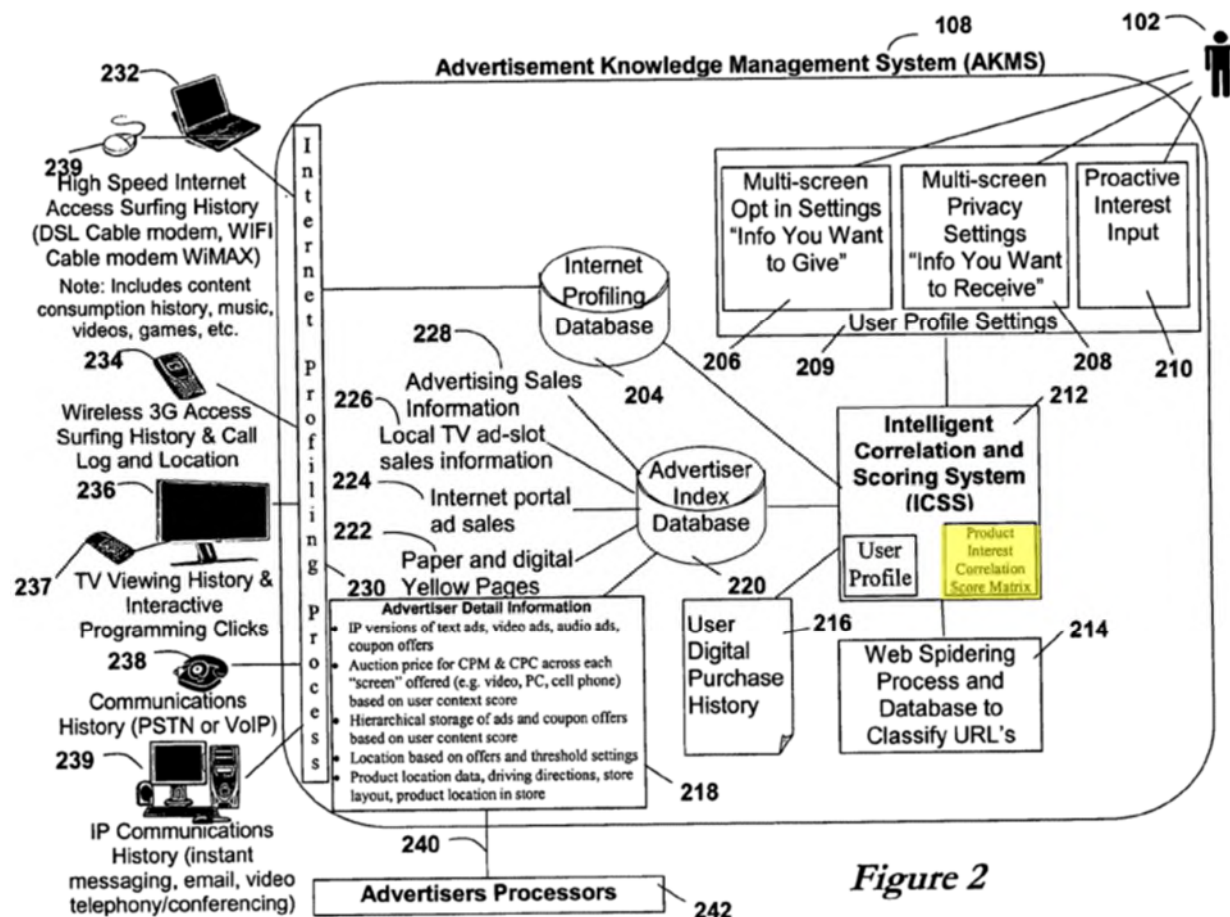


Figure 2

Id., [0073]-[0077], [0083]-[0090], [0105], [0112], FIG. 7. EX1003, ¶78.

To the extent Grannan does not expressly disclose this limitation, Chung discloses it. Chung discloses *determining a first quality level* (mapped score) *associated with a user profile*. Chung teaches that user profile scores are “mapped” to create “mapped scores” in order to estimate the likelihood of the user taking certain actions, such as “click propensity ... click-through-rate, and conversion propensity.” EX1005, 20:44-56. “[T]he behavioral targeting system generates a user profile score for a target objective. For example, the target objective may include brand advertising and direct response advertising.” EX1005, 1:59-62, 20:9-27, cls 1, 7, 13 (generating user profile scores). “[T]he behavioral targeting system ... generates profile scores, by category, to predict user propensity for subject matter in the category for the target objective. For example, the interest score may be used to model the strength of the user’s interest in purchasing a product or service within a category.” *Id.*, 4:66-5:4.² Chung teaches that “the user interest score is input to a mapping module 460” to generate the “mapped score.” *Id.*, 5:49-50, FIGS. 3, 4. Mapped scores are “behavior-oriented scores that reflect user tendencies for a particular action.” *Id.*, 20:49-51. EX1003, ¶79.

As discussed below in [1b], to the extent that Grannan does not disclose a first quality level a POSITA would have found it obvious to modify Grannan by

² Chung uses “interest score” and “profile score” interchangeably. EX1003, ¶79.

substituting Chung's "mapped score" for Grannan's "PIC score," and such a combination would have required a simple software change well within the skillset of a POSTA, and would have yielded predictable results. EX1003, ¶80.

3. **[1b] wherein the first quality level is based at least in part on an estimate of a likelihood of an event, wherein the first quality level is determined based at least in part on at least one of: (1) a first search associated with the user profile or (2) a first purchase associated with the user profile,**

Grannan discloses this limitation. Grannan teaches that the *first quality level* (PIC score) is *based at least in part on an estimate of a likelihood of an event*, for example, the Grannan subscriber's likelihood of purchasing a car. When the Grannan subscriber exhibits behavior of someone more likely to purchase a product, Grannan accounts for that estimated likelihood by increasing the PIC score. EX1003, ¶81.

For example, Grannan uses a "web spidering (spidering) system" that matches "subscriber accessed URIs" with "a subscriber's inferred intent." EX1007, [0073]-[0076]. The spidering system can ascertain not only that a subscriber visited a car manufacturer's website to look at cars, but that the subscriber looked at the product page for a particular model in detail and requested mailing of a product brochure. *Id.* Therefore, the "subscriber's inferred intent (in this case purchasing a Toyota Camry) derived by the web spidering system increases the subscriber's [PIC] score for a product category for Toyota Camry." *Id.* As such,

the PIC score is based on the subscriber's likelihood of purchasing the Toyota Camry. EX1003, ¶82.

Grannan provides examples of how the PIC score is used as an estimate of the likelihood of other purchase events: "Susan is planning to purchase children's books as a Christmas present for her nephews. She goes online to a retailer's web site and browses through a number of titles but decides to hold off on a purchase. ... [T]his URI visitation information regarding the retailer's web site is mined and stored. After the Internet session and visiting the URI, the illustrative system and method performs spidering and categorization of the web pages visited by Susan to **determine her intent** for the URI visit and correlates this intent to an interest in certain product categories. A [PIC] score **is calculated** for her based on this interest the product category."³ EX1007, [0056]; EX1003, ¶83.

Grannan also discloses, or at least renders obvious, that the *first quality level* (PIC score) is *determined based at least in part on a first search associated with the user profile*. Grannan discloses that a subscriber's "browsing to a new web site" is among the events used to update the AKMS which can assist in developing PIC scores for the subscriber. EX1007, [0098], FIG. 5, [0060]. Grannan teaches

³ All emphasis, color, and annotations are added to original citations throughout, unless otherwise indicated.

that “Internet access surfing history” is among the “monitored event data” used to calculate a PIC score. *Id.*, [0065], FIG. 2. Grannan states, “[PIC] scoring aggregates weighting and scoring for web surfing history, behaviors and context across multiple devices including more detailed knowledge of what transactions/interests were actually conveyed by subscriber web surfing behavior.” *Id.*, [0076], [0080], [0083]-[0090]; EX1003, ¶84.

To the extent that web “browsing” and “surfing” are not expressly a *first search*, a POSITA would have found it obvious to calculate the Grannan PIC score based on the user’s web search engine queries, in addition to user browsing information. This is because a POSITA would have been motivated to improve the accuracy of the PIC score by using other information well-known at the time to indicate a user’s purchase likelihood, such as the user’s search engine queries. EX1003, ¶¶85-86.

Grannan also discloses that the *first quality level* (PIC score) is *determined based at least in part on a first purchase associated with the user profile*. Grannan discloses that the final PIC score for each subscriber is tallied by evaluating several factors including “previous purchases.” EX1007, [0090], [0105], FIG. 5. In the Susan example, Grannan discloses that, “[l]ater when Susan is walking through the local mall to finish her other shopping, she receives a targeted text advertisement on her cell phone from the AKMS for the local book store indicating a discount

sale on children's books.” *Id.*, [0057]. “The targeted advertisement Susan received on her cell phone was ***based on her historic ... shopping behavior*** combined with Susan’s presence in a certain location that is close to a ***merchant selling products in which she is interested determined by her ... shopping behavior.***” *Id.* A POSITA would have recognized from this disclosure (or found it obvious) that the “historic ... shopping behavior” is referring to past purchases that Susan made in the children’s books category. Additionally, a POSITA would have recognized or found it obvious that the targeted ad from the AKMS was based on a *quality level* (PIC score) for Susan that was calculated based on her historic shopping behavior, including her past product purchases. One of these historic purchases is the *first purchase* on which her *quality level* (PIC score) is based that was used to send the targeted ad as disclosed. EX1003, ¶87.

Chung also discloses a *first quality level* (mapped score) *based at least in part on an estimate of a likelihood of an event* (likelihood of an action in response to an advertisement). Chung teaches that user profile scores are “mapped” based on an estimate of the likelihood of user actions, such as “click propensity ... click-through-rate, and conversion propensity.” EX1005, 20:44-56. “[M]apped scores are behavior-oriented scores that reflect ***user tendencies for a particular action.*** Mapped scores are useful for target optimization purposes as they provide ***predictive information regarding a user’s action relative to categories of***

interest.” *Id.*, 20:49-53. “In general, the click-through-rate (CTR) of a user for a category reflects the probability that the user will select (“click on”) content (e.g., advertisement, link, etc.) associated with the category. In general, the conversion rate for a user in a category **reflects the probability that the user will buy/purchase a product** or service associated with the category.” *Id.*, 20:57-63, 4:66-5:57; EX1003, ¶88.

Chung discloses that the *first quality level* (mapped score) is determined based in part on a *first search associated with the user profile* (user search query). User events, such as user search queries, are input into Chung’s system and used to determine user scores which are in turn used to produce the mapped score: “[E]vents include advertisement clicks, **search queries**, search clicks, sponsored listing clicks, page views, and advertisement views. ... [E]vents, as used herein, may include ... **search related events**.” EX1005, 6:39-41, 6:62-7:2, Abstract, FIG. 4; EX1003, ¶89.

Chung teaches that events are classified and “input to dimension processing 450 and to model & rules 440.” EX1005, 5:21-22. Then, “dimension processing 450 generates a user score, using the parameters for the category.” *Id.*, 5:37-41, 4:66-5:57; EX1003, ¶90.

Additionally, a POSITA would have found it obvious to modify Grannan by substituting Chung’s mapped score for Grannan’s PIC score. A POSITA would

have recognized that these two scores are both directed to determining the likelihood of the user purchasing a product. See EX1007, [0056], [0073]-[0076], [0083]; EX1005, 20:44-63, 4:66-5:57. A POSITA therefore would have had a reasonable expectation of success in making the substitution. And as Chung’s “mapped score” is based on user search queries, a POSITA would have recognized that using web search queries would improve Grannan’s PIC score as search queries provide an additional data point in gauging the user’s likelihood in making a certain purchase. As such, this would have been nothing more than the use of known technique to improve the Grannan system in the same way that it improves the Chung system; and the modification would have required a simple change to the algorithm that calculates the PIC score, a change that was well within the skillset of a POSITA at the time. See *Intel Corp. v. PACT XXP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (obvious to use a known technique to improve similar devices in the same way). EX1003, ¶91.

4. [1c] and wherein the determining of the first quality level is based at least in part on a unique identifier and clustering

Grannan discloses that *determining of the first quality level* (PIC score) is *based at least in part on a unique identifier* (unique user profile data, demographics and past behavior/settings). Grannan teaches that the [PIC] score associated with each subscriber’s user profile (*unique identifier*) is weighted based on the contents of the user profile i.e., settings/characteristic that are stored in each

user profile. “The [PIC] score for such categories is then weighted appropriately for the subscriber to reflect this interest. The user profile setting includes but is not limited to user profile data and user profile settings User profile data includes but is not limited to ***ages, family size, ethnicity, language spoken, address, subscriber user identifiers for family members, etc.*** ... User profile settings may also include privacy (opt-in) settings defining specifically what categories of advertising may be received ... [and] may also include proactive product interest input 210 provided by a subscriber.” EX1007, [0073], [0044], [0080], FIG. 2; EX1003, ¶92.

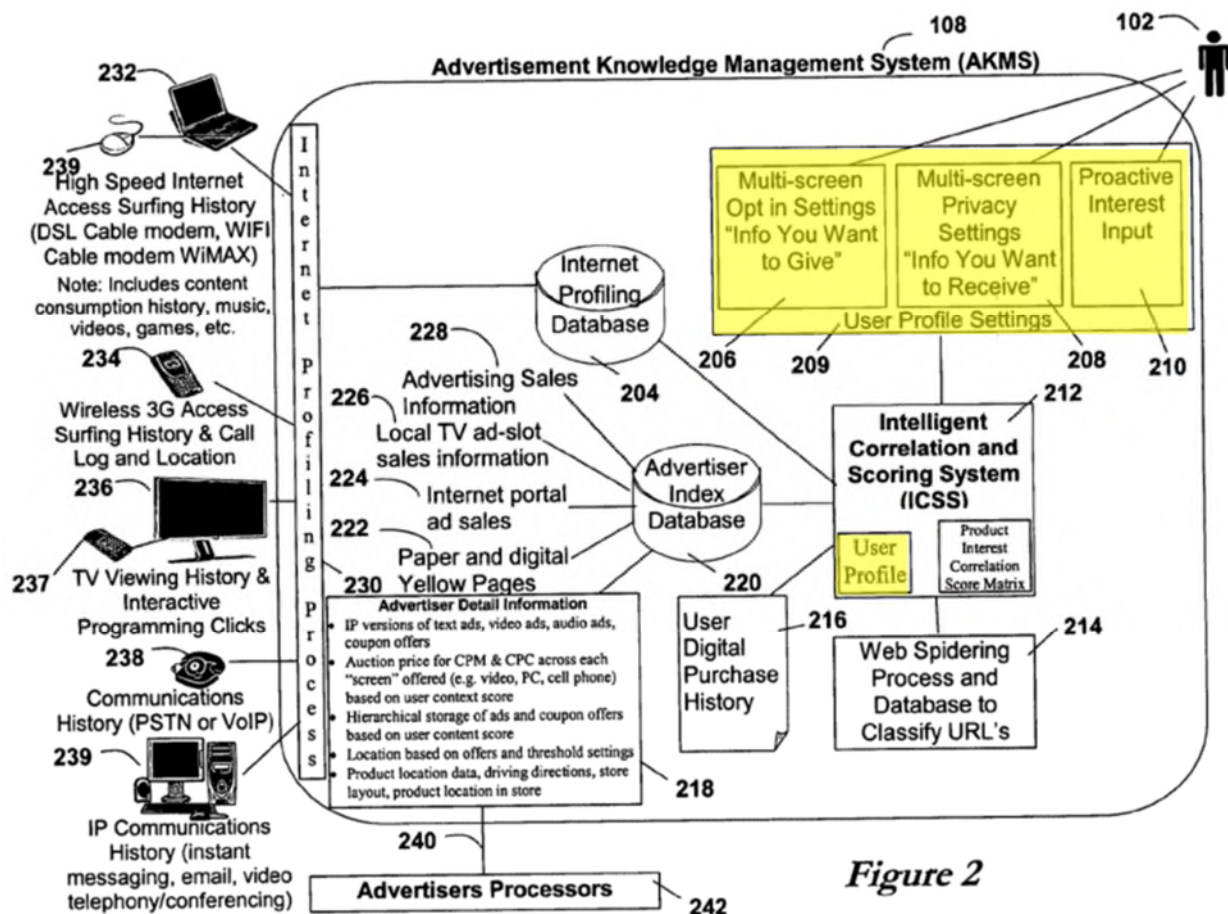


Figure 2

Id., [0107]-[0111], FIG. 7; EX1003, ¶92.

Grannan further discloses, “assessing real time contextual information about the subscriber and weighting the [PIC] score based on real time contextual information” and “weighting the [PIC] scores based on previous event data for the subscriber in the product categories.” *Id.*, [0025]. “[PIC] scoring aggregates weighting and scoring for ... behaviors and context [for subscribers].” *Id.*, [0076]. For example, the subscriber’s unique location and Internet connectivity may be used in weighting PIC scores. *Id.*, [0079]; EX1003, ¶93.

As the quality score must be weighed and scored based on the user profile (*unique identifier*), a POSITA would have understood that it is necessarily the case that the *first quality level is based at least in part on the unique identifier*. EX1003, ¶94.

It would also have been obvious to a POSITA to *determin[e] ... the first quality level ... based at least in part on a unique identifier and clustering*. EX1003, ¶95.

The technique of differentiating between multiple users of the same computer, based on identifying clusters of user behavior (*i.e.*, clustering) was a known technique at the time of the ’402 patent’s purported invention. For example, Yang teaches “[t]he idea of pattern-based clustering is not new,” and “there may be natural clusters in data, characterized by a set of typical behavioral patterns.”

EX1006, 13, 18. Yang discloses differentiating an individual user from a set of users utilizing clustering: “[I]n order to test the efficacy of pattern-based clustering it is natural to combine transactions with a known category – ***Web transactions from different users (without maintaining the user ID)*** - and examine how the method does in separating transactions that ***belong to the individual users*** as compared to traditional clustering techniques.” EX1006, 16. EX1003, ¶97.

Yang teaches that by using the features of an online session, such as time-related features (*e.g.*, average time per page, average time per category of site, most visited site category), quantity-related features (*e.g.*, number of pages, number of sites, number of categories), and/or other features, the features can be clustered so as “around 70% of the clusters we get are more than 95% pure (a cluster is considered ‘95% pure’ if ***at least 95% of transactions in the cluster belong entirely to a single user***).” *Id.*, 16-18. EX1003, ¶98.

At the time of the ’402 patent, many households used desktop computers and TVs that were shared between multiple members of the same family where all members of the household shared the same user ID or subscriber ID for online services. EX1007, [0091], FIG. 4 (disclosing need to ascertain the subscriber identity among a family of subscribers using an IPTV set top box); EX1009, Abstract, [0001], [0009], [0027], [0031], FIG. 5 (disclosing need to identify a specific user of a home computer). EX1003, ¶95.

As both Grannan and Chung are centered on determining a PIC score or mapped user profile score associated with unique users in order to best target such users in a personalized way, a POSITA at the time encountering the problem of identifying unique individuals in shared computer/subscriber ID situations would have found it obvious to modify the Grannan/Chung combination to improve it with a known clustering technique, such as that disclosed in Yang, to identify individual users for targeted advertising. EX1003, ¶96.

Therefore, it would have been obvious to a POSITA to use Yang's clustering of user behavior in Grannan (or the Grannan-Chung combination) to differentiate between unique users on a shared device, so as to determine which user profile information to use for calculating the *first quality level* (PIC score). Such modification would have required a mere software change well within the skillset of a POSITA—adding Yang's clustering algorithm to Grannan to further determine a unique user profile from user behavior on a device that was tied to a whole household—and it would have been readily programmed into the Grannan system by a POSITA using the Yang disclosure. Additionally, because Chung, Grannan, and Yang are directed toward improving targeted advertising systems, and are also squarely in the targeted advertising field, a POSITA would have been motivated to combine these prior art disclosures to arrive at this limitation, and

there would have been a reasonable expectation of success. EX1006, 12. EX1003, ¶¶99-101.

5. **[1d] determining, for a user associated with the user profile, an indication of interest in a first category, wherein the indication of interest in the first category is determined based at least in part on at least one of: (1) a second search associated with the user profile or (2) a second purchase associated with the user profile**

Grannan discloses or renders obvious *determining, for a user associated with the user profile, an indication of interest in a first category* (contribution score). As discussed in 1[b], a user's *first quality level* (PIC score) is updated in the AKMS using "contribution score[s]" that reflect the user's interest in certain products and product categories. EX1007, [0083]. Contribution scores are calculated based on URI links that a user may browse (*id.*), "[h]istoric information regarding frequency and timing of previous accesses in [a URI] category," (*id.*, [0100]) or based on "products known to be complementary to [a] purchase ..." *Id.*, [0105]. EX1003, ¶102.

For each subscriber, the Grannan system includes a "PIC scoring matrix" with "product categories and [PIC] scores for the product categories." EX1007, [0083]. The "[PIC] scoring matrix is updated dynamically for each subscriber in real time," and "contains data indicating a [PIC] score for a number of products and categories." *Id.*, [0083], [0084]. These updates can be by way of calculating a PIC *contribution score* based on user patterns and "*the 'contribution' score* can be

added to the subscriber's current PIC score," for a particular category ***to update the PIC score***. *Id.*, [0083]. The disclosed "contribution score" is an *indication of interest* that is calculated based on the subscriber's purchases, since Grannan also discloses that the "final [PIC] score is tallied by evaluating ... ***previous purchases***." *Id.*, [0090]. EX1003, ¶103.

In the Susan example discussed in [1b], a POSITA would have understood from the Grannan disclosure that Susan is sent a targeted ad based on a PIC score calculated from her previous purchases. EX1007, [0057] ("when Susan is walking through the local mall to finish her other shopping, she receives a targeted text advertisement on her cell phone from the AKMS for the local book store indicating a discount sale on children's books."). A POSITA would have recognized from this disclosure that Susan's "historic surfing/shopping behavior" discussed above in [1b] refers to multiple purchases and web surfing that Susan had made in the children's books category. Additionally, a POSITA would have recognized that the targeted ad from the AKMS was based on a PIC score for Susan that was calculated based on multiple ***contribution scores calculated from multiple purchases and web surfing in Susan's historic behavior***. As such, the *indication of interest* (contribution score) that led to the targeted ad, was based on *a second search associated with [Susan's] user profile* (second historic surfing/search, different than the first search discussed in [1b] above) and *a second purchase*

associated with [Susan's] user profile (a second historic purchase, different than the first one discussed in [1b] above). EX1003, ¶104.

As discussed in [1b], to the extent that the “second search” is not expressly disclosed by Susan’s historic web “surfing” behavior, a POSITA would have found it obvious to calculate the contribution score based on Susan’s search queries, as it would have required nothing more than the use of a known technique to improve the Grannan contribution score in the same way. EX1003, ¶105.

Furthermore, to the extent Grannan does not expressly disclose this limitation, Chung discloses it. Chung discloses an *indication of interest in a first category* (“user interest score” / “interest score” / “user profile score”). The Chung system, “generates profile scores, by category, to predict user propensity for subject matter in the category of the target objective. For example, the ***interest score may be used to model the strength of the user’s interest in purchasing a product or service within a category.***” EX1005, 4:66-5:4. EX1003, ¶106.

Chung teaches that the “interest score” (also referred to in Chung as a “user profile score,” see, e.g., EX1005, 4:66-5:4) is *determined based at least in part on ... a second search associated with the user profile* because Chung updates interest scores / user profile scores based on multiple user events, including search events. See [1b], *id.*, 2:48-49 (“user input comprises one or more ‘events’”); 6:38-

41 (“events include advertisement clicks, *search queries, search clicks*”). EX1003, ¶107.

Additionally, a POSITA would have found it obvious to calculate the “interest score” based in part on *a second purchase associated with the user profile*, because a POSITA would have known that past purchases, like search queries, indicate user interest in certain categories of items. As such, past purchase data would have improved the “interest score” and so this would simply have been the use of a known technique to improve on the Chung interest score. EX1003, ¶108.

To the extent that Grannan does not expressly disclose this claim limitation, a POSITA would have had good reason to modify Grannan with Chung’s disclosure. Grannan expressly teaches calculating an *indication of interest* (contribution score) for a user using information gathered from the user’s browsing history. A POSITA would have recognized that information from other user events such as search queries and search results would also be important in calculating a “contribution score” because when a user searches for product information, they are more often than not interested in that product, sometimes for purchasing. A POSITA therefore would have had a reasonable expectation of success in making the combination. For example, a POSITA would have been motivated to combine these search techniques to make the resulting targeted advertising system more

efficient and cost-effective. For this reason, a POSITA would have found it obvious to modify Grannan with Chung's disclosure of an "interest score" that is calculated using search queries as an input. EX1003, ¶109.

Such a modification would have required software to change the algorithm by which the Grannan contribution score is calculated to account for user searches, and this would have been nothing more than the use of a known technique to improve a similar system in the same way, and well within the skillset of a POSITA. EX1003, ¶110.

6. [1e] storing, in a record associated with the user, the indication of interest in the first category

Grannan discloses or renders obvious this limitation. As discussed above, Grannan teaches *an indication of interest* (contribution score) that is calculated at least based on a spidering process and the user's browsing activity. EX1007, [0083]. Grannan at least inherently discloses storing this contribution score "in a record associated with the user" or renders it obvious because a POSITA would have recognized that the contribution score would have to be stored in a record so that it can be added to the PIC score as disclosed. *See id.* This record necessarily is associated with the user as it reflects the user's contribution score from the browsing activity. Grannan suggests as much in that it expressly discloses that similar data associated with the user/subscriber is stored in memory, including PIC

score data, product category data, subscriber identifier data, subscriber profile data, and product category interest. EX1007, FIG. 8, [0113]. EX1003, ¶111.

Chung also discloses this limitation because Chung discloses that its “interest score” is stored in a memory record associated with the user: “the **user data store** comprises both the long-term and short-term **user interest scores**.” EX1005, 20:3-5; FIG. 12. EX1003, ¶112.

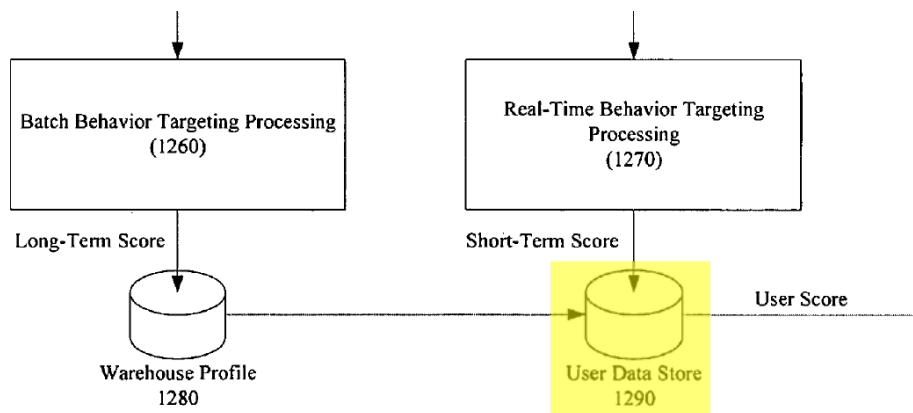


FIG. 12

It would have been obvious to modify Grannan’s “contribution score” to store it in a record associated with the user, as disclosed by Chung, because a POSITA would have recognized that the system needs to keep a record of the user’s “indication of interest” so as to use it in calculations such as modifying the PIC score, and in determining additional user interests as discussed below in element [1g]. Such a modification would have been within the skillset of the

POSITA and a POSITA would have had a reasonable expectation of success in making the modification. EX1003, ¶113.

7. **[1f] subsequent to determining the indication of interest in the first category, determining, for the user, that a need relative to the first category has been met based at least in part on at least one of: (1) a third search associated with the user profile or (2) a third purchase associated with the user profile;**

Grannan discloses or renders obvious this limitation. Grannan discloses its system being used to *determine[], for the user, that a need relative to the first category has been met* in the example of Susan. Grannan discloses that *subsequent to determining the indication of interest in the first category* (after the “contribution score” based on Susan’s historical surfing/purchase behavior was calculated, as discussed in 1[d]), Susan is walking by a “local book store [with] a discount sale on children’s books ... Susan impulsively walks into the store and makes a purchase.” EX1007, [0057]. EX1003, ¶114.

Through the merchant reporting the purchase or through a digital wallet transaction, the Grannan system “will reflect this in [Susan’s] [PIC] score in this product category.” *Id.* Moreover, “the purchase of the product and recording of that purchase transaction within the [Grannan system] now reduces or blocks her [PIC] score for that book ...” *Id.* As such, Grannan discloses that its system determines that Susan’s *need relative to the first category* (or need for children’s books) *has been met* by the purchase, therefore reducing or blocking her PIC score for that

book. *See also id.*, [0105] (“For example, if the [digitally purchased] item ... may impact future purchase opportunity in a specific category (e.g. customer finally buys the Toyota® Camry®) the product interest correlation score for that category within the [user]’s matrix is reduced, if not zeroed out or blocked in its entirety for a period.”) (determining if digital purchases are “deal-killer events”). EX1003, ¶115.

A POSITA would have known, or found it obvious, that Susan’s purchase on which this determination was made is a *third purchase associated with [her] user profile*. Grannan discloses that the AKMS has tracked Susan’s “historic ... shopping behavior” and that embodiments of the AKMS mine the user’s “purchase history” to target ads. EX1007, [0057], [0060]. Grannan also discloses, “[s]ubscriber digital purchase history information keeps track of on-line purchases and purchases at retail outlets ...” EX1007, [0078]. The disclosed AKMS contemplates tracking many purchases made by the same user. *Id.*, [0105]. As such, it would have been obvious that Susan (and similar situated users in the AKMS) would have purchased many other items in the past (comprising Susan’s “historic ... shopping” purchases), and that the book purchase discussed in this

section would have been at least a *third purchase associated with [her] user profile*.⁴ EX1003, ¶116.

8. **[1g] based at least in part on the determination that the need relative to the first category has been met, determining an indication of interest in a second category, wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest;**

Grannan discloses *based at least in part on the determination that the need relative to the first category has been met* (see [1f], i.e., the determination that zeroes out or blocks the user's PIC score in its entirety), *determining an indication of interest in a second category* (pre-defined contribution scores indicating interest in a second related category of products). EX1003, ¶117.

Continuing along with the disclosed example from Susan, Grannan teaches: “the purchase of the product and recording of that purchase transaction ... now reduces or blocks her product interest correlation score for that book—***but it likely increases Susan's product interest correlation score for additional products***”

⁴ As the *at least one of*: (1) a third search ... or (2) a third purchase claim language is disjunctive, this limitation [1f] is met by showing only the *third purchase*. See *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001) (plain meaning of “at least one of two-digit, three-digit, **or** four-digit” is “only two-digit, only-three-digit, only four-digit, **or** any combination” of the set).

related to the same book. The AKMS is able to interpret such new product interests in order to provide future targeted advertising opportunities to Susan for related products in related product categories.” EX1007, [0057]. Grannan teaches that following the zeroing out or blocking of the score, the system “assesses whether there are complementary products ... related to the digital purchase.

Products known to be complementary to the purchase have product interest scores increased by a ***pre-defined ‘contribution’ to the score.***” *Id.*, [0105], FIG. 5. This pre-defined “contribution score” used to increase the PIC scores of complementary products is an *indication of interest in a second category (i.e., category of products complementary to the products in the first category)*. EX1003, ¶¶118-119.

Grannan discloses *wherein the indication of interest in the first category and the indication of interest in the second category comprise a sequence of related indications of interest* because the *first indication of interest* (contribution score signaling interest in children’s books) and the *second indication of interest* (pre-defined contribution score signaling interest in complementary products) are determined sequentially (*i.e., the second being determined after the first*), and they are related in that the second indication of interest is associated with product categories that are complementary to children’s books. EX1007, [0057] (“The AKMS is able to interpret such new product interests in order to provide future

targeted advertising opportunities to Susan ***for related products in related product categories***”). EX1003, ¶120.

9. **[1h] in response to determining that the need relative to the first category has been met, determining a second quality level associated with the user, wherein the second quality level is determined with respect to the first category;**

Grannan discloses *in response to determining that the need relative to the first category has been met (see [1f]), determining a second quality level associated with the user, wherein the second quality level is determined with respect to the first category (i.e., reducing, blocking out, or zeroing out a PIC score for the first category where the need was met)*. EX1003, ¶121.

Grannan discloses for Susan that, “the purchase of the product and recording of that purchase transaction within the AKMS now ***reduces or blocks her [PIC] score for that book***” EX1007, [0057]. As another example, Grannan teaches that the AKMS determines if a purchase “represents a ‘deal-killer event’ **544** for certain product categories. For example, if the item is not perceived to be a quickly perishable item and may impact future purchase opportunity in a specific category (e.g. customer finally buys the Toyota® Camry®) ***the [PIC] score for that category within the subscriber’s matrix is reduced, if not zeroed out or blocked in its entirety for a period.***” *Id.*, [0105], FIG. 5. EX1003, ¶122.

These reduced or zeroed out PIC scores meet the *second quality level associated with the user* limitation as they are new PIC scores, *i.e.*, new quality

levels associated with the subscriber. Furthermore, they are *determined with respect to the first category* as they are based on the first quality level that was determined with respect to the first category, *i.e.*, the original PIC score that was reduced. Also they are determined *in response to the need for the first category being met, i.e.*, children's books in the Susan example, and the purchase of a car in the Toyota Camry example. EX1007, [0056]-[0057], [0105]. EX1003, ¶123.

10. **[1i] wherein at least one of the first quality level or the second quality level is based at least in part on a conversion assessment associated with the user profile, and wherein the conversion assessment is based at least in part on historical click behavior**

Grannan discloses that the *first quality level* (PIC score) is *based at least in part on a conversion assessment associated with the user profile* (a subscriber's "inferred intent," for example, purchasing a car): "[PIC] scoring aggregates weighting and scoring for web surfing history, behaviors and context across multiple devices including more detailed knowledge of what transactions/interests were actually conveyed by subscriber web surfing and behavior ... For example, the spidering system can anonymously ascertain that not only did a subscriber visit a car manufacturer's web site to look at cars; the subscriber actually looked at the product page for a particular model in detail and requested mailing of a product brochure. The subscriber's *inferred intent* (in this case purchasing a Toyota

Camry) derived by the web spidering system increases the subscriber's [PIC] score for a product category for Toyota Camry." EX1007, [0073]-[0076]. EX1003, ¶124.

In this way, when a user exhibits behavior of someone with an "inferred intent" to purchase a product, Grannan increases the PIC score (first quality level) to reflect the inferred intent. A POSITA would have understood that Grannan's "inferred intent" to purchase a product is a *conversion assessment* because the inferred intent is a measure of how likely the subscriber will purchase the particular product, like the Camry. *See* [1b]; EX1007, [0056], [0083], [0024], [0070], FIG. 7. A POSITA would have understood that in the example of Susan, this "inferred intent" (conversion assessment) was used to determine her contribution score and PIC score as described above in limitation [1b], because her web surfing behavior and URI link browsing were tracked and used to determine her original PIC score relating to the children's books, much like the Toyota Camry example discussed above. EX1003, ¶¶125-126.

Grannan discloses *wherein the conversion assessment is based at least in part on historical click behavior*: The subscriber's "inferred intent" is based at least in part on historical click behavior, including Internet sessions and web pages visited by a user (EX1007, [0056]) and a user's "web surfing URIs visited, telephone numbers called, IM and other activities" (*id.*, [0073]). Grannan teaches "[f]or example, the spidering system can anonymously ascertain that not only did a

subscriber visit a car manufacturer's web site to look at cars; ***the subscriber actually looked at the product page for a particular model in detail and requested mailing of a product brochure.*** The subscriber's inferred intent (in this case purchasing a Toyota Camry) derived by the web spidering system increases the subscriber's product interest correlation score for a product category for Toyota Camry." *Id.*, [0076]. A POSITA would have understood that such user behavior (for at least Susan and the Toyota Camry examples) would have been determined from data such as historical mouse click behavior, as Susan and the Toyota Camry subscriber would have needed to click on the aforementioned URI links in order to access them. EX1003, ¶127.

To the extent not expressly disclosed by Grannan, it would have been obvious to a POSITA to modify Grannan's PIC score to base the PIC score (*first quality level*) in part on a *conversion assessment associated with the user profile*, such as taught by Chung. Chung discloses a *first quality level* (mapped user profile score) that is based on a "conversion propensity." EX1005, 20:54-21:2. According to Chung, "the conversion rate for a user in a category reflects the probability that the user will buy/purchase a product or service associated with the category." *Id.*, 20:61-63. Therefore, a "mapped score" can be based at least in part on a *conversion assessment* associated with the user profile of the user as taught by Chung: "Mapped scores are useful for target optimization purposes as they provide

predictive information regarding a user's action relative to categories of interest." *Id.*, 20:44-23:10, [1b]. EX1003, ¶128.

It would have been obvious to a POSITA to modify Grannan's PIC score (*first quality level*) in view of Chung's use of conversion assessment and historical click behavior. In the viewpoint of a POSITA, such a modification would have been the modification of Grannan based on a known technique. Chung discloses tracking historical click behavior: "events include **advertisement clicks**, search queries, **search clicks**, **sponsored listing clicks**," EX1005, 6:38-7:43. Chung also teaches that other examples of mapped scores are "click propensity" and "click-through-rate." *Id.*, 20:54-21:2. It would have been obvious to a POSITA to base the conversion assessment at least in part on such historical click behavior because historical click behavior is a strong indicator of future conversions. A POSITA would have had a reasonable expectation of success in implementing such historical click behavior because doing so was conventional (as were conversion assessments as discussed above) and doing so required only ordinary skill. EX1003, ¶129.

A POSITA would have found modifying Grannan to include Chung's conversion assessment and historical click behavior obvious to try and a predictable variation of the prior art with a reasonable expectation of success. A POSITA would have understood that the generation of PIC scores in Grannan was

already based on a conversion assessment of a user because Grannan teaches the feeding of a wealth of user information into the Intelligent Correlation and Scoring System (ICSS) in order to generate PIC scores that advertisers can use to show advertisements to users that are likely to convert relative to the advertisement. See, e.g., EX1007, [0059] (increase in PIC score in product category “rap music” leads to targeted ad and purchase of ring tone), FIG. 2. Therefore, adding the conversion assessment / historical click behavior disclosure of Chung to Grannan would have been an obvious improvement to Grannan in a predictable way. EX1003, ¶¶130-131.

A POSITA would have had good reason to modify Grannan by adding a conventional conversion assessment in order to improve the targeted advertising function disclosed by the invention. EX1007, Abstract, [0056]-[0062]. For example, in this instance, Grannan addresses a part of the solution, the PIC score, while Chung addresses another part of the solution, a conversion assessment. As a result, a POSITA would have been motivated to combine these references to arrive at this limitation with a reasonable expectation of success. EX1003, ¶132.

11. [1j] displaying an advertisement to the user based at least in part on at least one of the first quality level or the second quality level.

Grannan discloses this limitation. Grannan teaches *displaying an advertisement to the user based at least in part on at least one of the first or second*

quality level (the PIC score, or the zeroed/reduced PIC score). For example, Grannan teaches that advertisers can set PIC score thresholds for sending advertisements: “An advertiser may set a [PIC] score threshold of 20 for sending a text advertisement to a subscriber’s cell phone, a [PIC] score threshold of 50 for sending a video advertisement to the subscriber’s cell phone and set a [PIC] score threshold of 90 for sending a video advertisement to the subscriber’s IPTV receiver.” EX1007, [0063]. EX1003, ¶133.

Grannan teaches “the AKMS accesses the advertisements database **220** to select a targeted advertisement to send to the subscriber. The AKMS **108** automatically calculates a [PIC] score and recommends and/or selects an advertisement, access device and advertisement modality to be used to send a selected advertisement to a selected subscriber access device based on the subscriber’s current usage scenario.” EX1007, [0062], FIG. 2:

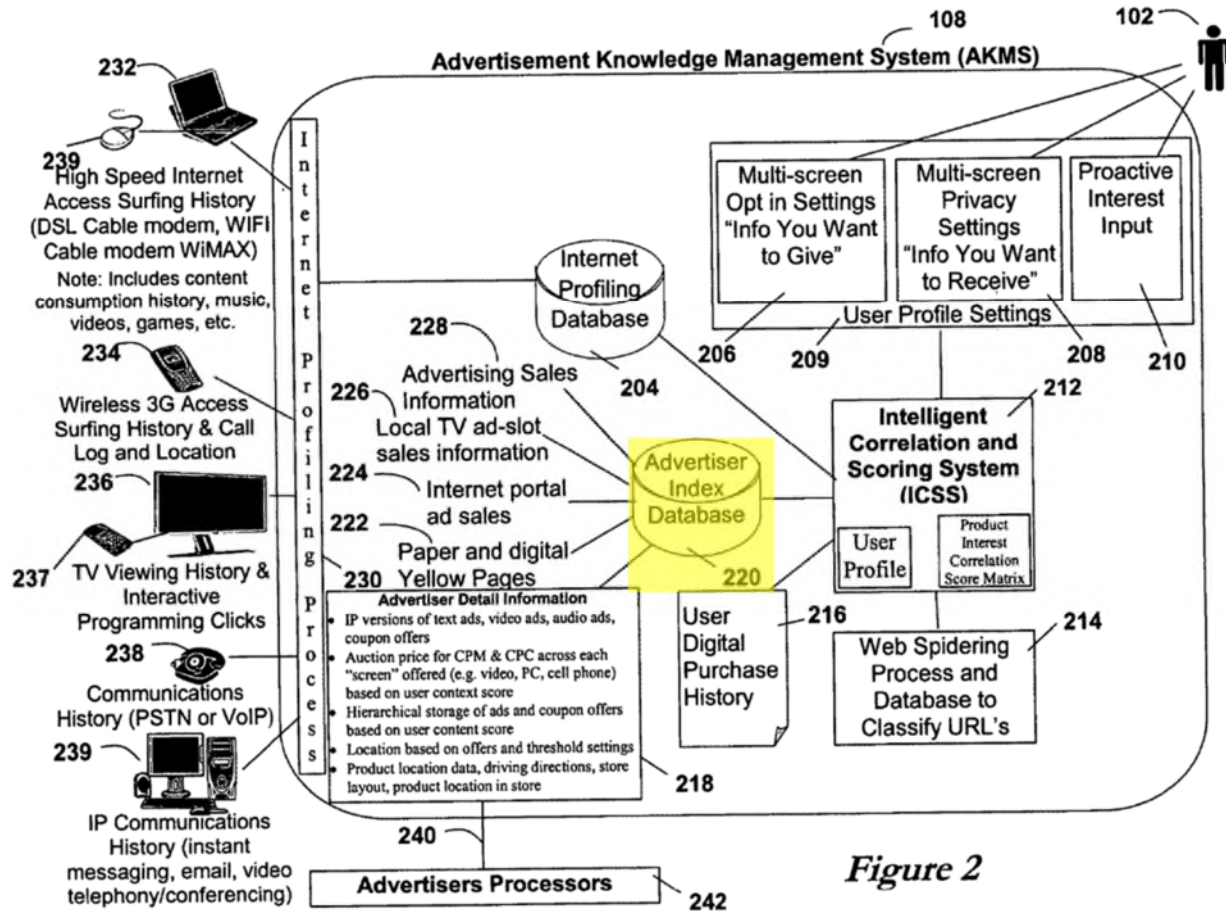


Figure 2

“The criteria for determining advertisement placement or selection and delivery to a subscriber can include but are not limited to ... **[PIC] score data.**” *Id.*, [0074]-[0075], [0059], [0081], FIG. 4, [0095]. Grannan discloses the ads are displayed to the user. *Id.*, [0056]-[0059]. EX1003, ¶134.

Based on these disclosures, a POSITA would recognize (and it would have been obvious to a POSITA) that the AKMS displays targeted ads to users such as Susan based on their PIC scores, and in the case of Susan, based on her reduced PIC score that was calculated after she purchased the children’s book. EX1003, ¶135.

B. Claim 2

- 1. [2] The method of claim 1, wherein the second quality level is determined with respect to the second category.**

Grannan discloses or renders obvious in response to determining that the need relative to the first category has been met (*see* [1f]), determining a *second quality level* (the reduced, blocked out, or zeroed out a PIC score) *with respect to the second category* (a category for a related or complementary product):

“Moreover, the purchase of the product and recording of that purchase transaction within the AKMS now reduces or blocks her [PIC] score for that book—but it likely *increases Susan’s [PIC] score for additional products related to the same book*. The AKMS is able to interpret such new product interests in order to provide future targeted advertising opportunities to Susan for *related products in related product categories*.” EX1007, [0057]. EX1003, ¶136.

As another example, Grannan teaches that following the zeroing out or blocking of the score, the AKMS “assesses whether there are complementary products **546** related to the digital purchase. *Products known to be complementary to the purchase have product interest scores increased by a pre-defined ‘contribution’ to the score.*” EX1007, [0105], FIG. 5; EX1003, ¶137.

A POSITA would have understood that that the reduced, blocked out, or zeroed out PIC score also is *determined with respect to the second category* (i.e., a related product category), as the purpose of reducing Susan’s PIC score is to

decrease the amount of ads that are targeted towards her for the product she already bought, and to increase the amount of ads targeted to her in related complementary product categories (the *second category*). If the PIC score was not reduced, then in the practice where there are finite number of advertisers directing ads at any one consumer, the original (non-reduced) PIC score for children's books, would compete against the PIC score calculated for Susan in the complementary related product category, causing less ads to be directed to her in the complementary related product categories. In other words, the reduced PIC score for the children's book category is also determined with respect to the *second category* (products complementary to/related to children's books) because it is intended to allow Susan to see more advertisements relating to the *second category* (products related to children's books). EX1003, ¶138.

C. Claim 3

- 1. [3] The method of claim 1, wherein at least one of the first quality level or the second quality level is based at least in part on an assessment of a purchase likelihood associated with the user profile.**

As discussed in [1i], Grannan discloses that a *conversion assessment* is used in calculating both the first and second *quality level*. While there may be different types of *conversion assessments*, as discussed in [1i], the specific type of *conversion assessment* that Grannan uses in calculating the first and second *quality level* (PIC score and reduced PIC score) is an *assessment of a purchase likelihood*

associated with the user profile. As such, Grannan discloses *wherein at least one of the first quality level or the second quality level (PIC score / reduced PIC score) is based at least in part on an assessment of a purchase likelihood associated with the user profile* (subscriber's "inferred intent" for example, purchasing a Toyota Camry). See [1i]; EX1007, [0073]-[0076]. When a user exhibits behavior of someone more likely to purchase a product, Grannan accounts for that estimated likelihood by increasing the [PIC] score. EX1007, [0056], [0083], [0070], FIG. 7; EX1003, ¶139.

Chung also discloses *wherein at least one of the first quality level or the second quality level (mapped user profile scores) is based at least in part on an assessment of a purchase likelihood associated with the user profile* (based on conversion propensity). Chung teaches "mapped scores are behavior-oriented scores that reflect ***user tendencies for a particular action***. Mapped scores are useful for target optimization purposes as they provide ***predictive information regarding a user's action relative to categories of interest***." EX1005, 20:49-53.

"Some examples of mapped scores are ... ***conversion propensity***, also expressed as a rate." *Id.*, 20:54-56. "In general, the conversion rate for a user in a category reflects ***the probability that the user will buy/purchase a product or service associated with the category***." *Id.*, 20:57-63, 4:66-5:57. As discussed with respect to claim 1 and "conversion assessment," a POSITA would have found it obvious to

modify Grannan with Chung to arrive at this claim. A POSITA would have been motivated to combine them with a reasonable expectation of success to arrive at this claim limitation. EX1003, ¶140.

D. Claim 4

1. [4] The method of claim 3, wherein the purchase likelihood is determined relative to the advertisement.

Grannan discloses *wherein the purchase likelihood* (subscriber’s “inferred intent”) *is determined relative to the advertisement* (relative to the product category of the advertisement). Grannan teaches that the user’s “inferred intent” is determined for a product category. EX1007, FIG. 7, [0024], [0045], [0052], [0056], [0070], [0112]. The “inferred intent” is also used to calculate PIC scores. *Id.*, [0076]; EX1003, ¶141.

At the same time, Grannan teaches that users are served advertisements in product categories: “An advertiser index database 704 is reviewed to ***select an advertisement in the respective product categories.***” EX1007, [0112]. Grannan teaches “[a]uction-based advertising across multiple screens or access devices based on a correlation or comparison of the advertisement product category with the [PIC] score for the product/service for a particular subscriber.” *Id.*, [0077], FIG. 7, [0020], [0059], [0062]. Grannan also discloses, “Advertisements ... are selected with highest correlation scores matching the subscriber’s [PIC] score. The correlation score for the advertisement is based on a comparison of the product

category for the advertisement and the [PIC] score for the subscriber. Finally, the final advertisement to present is selected ... based on correlations cores and/or highest bid price by advertisers.” *Id.*, [0112], FIG. 7; EX1003, ¶142.

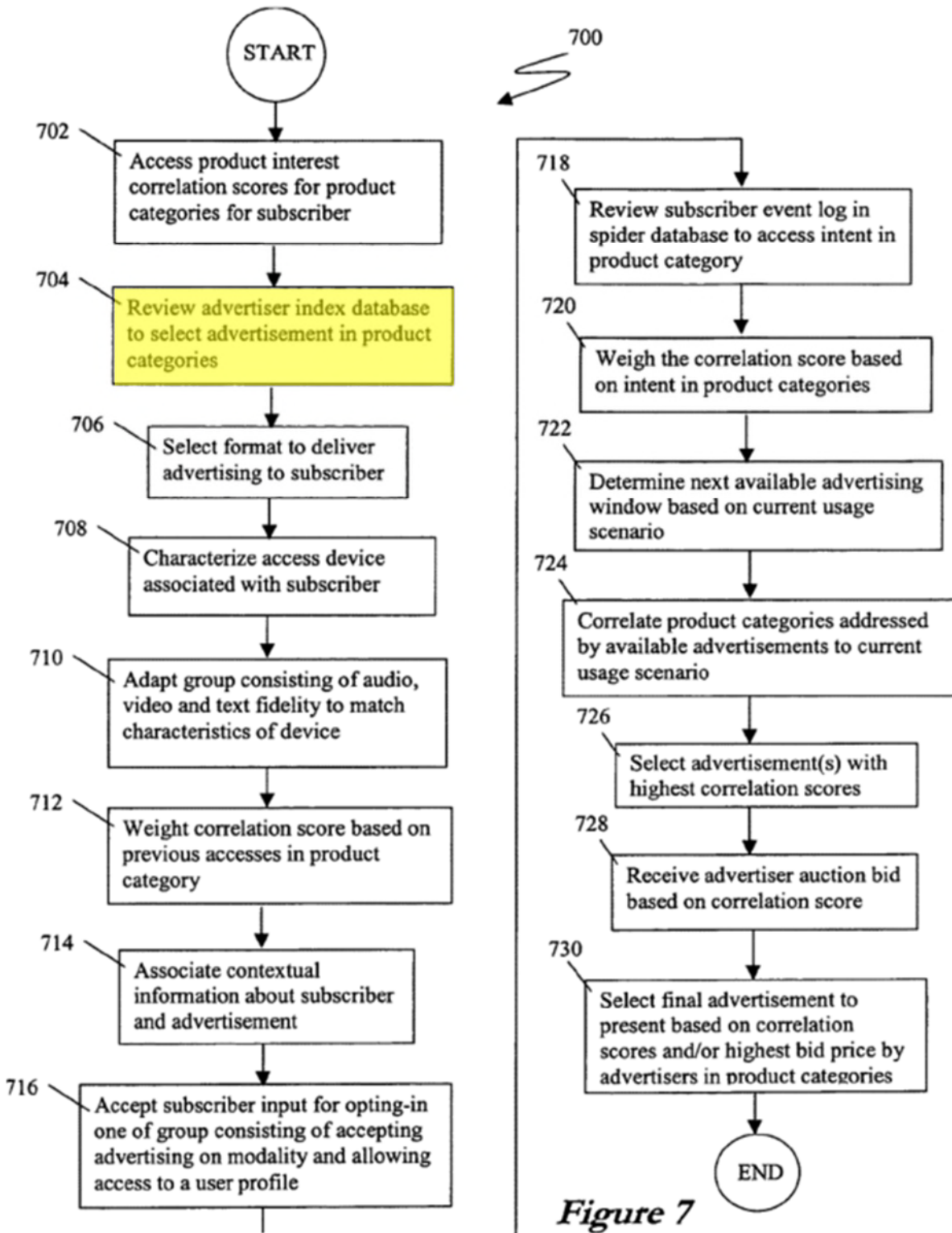


Figure 7

Therefore, Grannan teaches the user's *purchase likelihood* (inferred intent) determined relative to the advertisement eventually served to the user, because the user's inferred intent is used to determine the PIC score, and the advertisement shown to the user is based on a correlation to the PIC score (which includes the *purchase likelihood* as a component). A POSITA in reviewing the system disclosed in Grannan would have understood this to be the case so as to effectively pair the user's *purchase likelihood* (inferred intent) with effective targeted advertising in the right product category. EX1003, ¶143.

Chung also discloses this claim limitation by teaching that the *purchase likelihood* (conversion propensity) is *determined relative to the advertisement* (relative to the category of the advertisement). Chung teaches that its system serves targeted advertisements to users "based on the user's interest in the category or topic of the advertisement." EX1005, 10:23-26, 11:57-67. The *purchase likelihood* (conversion propensity) in Chung is determined for a category: "In general, the conversion rate for a user in a category reflects the probability that the user will buy/purchase a product or service associated with the category." *Id.*, 20:60-63; EX1003, ¶144.

A POSITA would therefore have understood at the time that the *purchase likelihood* (conversion propensity category) would be the same category of the advertisement ultimately served to the user in order to accomplish Chung's goal of

providing user's advertisements in their interest categories. Therefore, Chung discloses the purchase likelihood is determined relative to the advertisement. As discussed in limitation [1i], it would have been obvious to a POSITA to improve Grannan's system using Chung's disclosures. EX1003, ¶145.

E. Claim 5

- 1. [5] The method of claim 1, wherein at least one of the first quality level or the second quality level is determined at least in part by using machine learning.**

The Grannan-Chung combination renders this claim obvious. For example, Chung discloses that a “machine learning algorithm” can be used to “minimize error in predictions” when using models to generate profile scores. EX1005, 18:1-19:45. Chung therefore discloses that use of machine learning algorithms were known in the art to improve targeted advertising systems. EX1003, ¶146.

It would have been obvious to a POSITA to modify Grannan in view of Chung to determine *at least one of the first quality level or the second quality level ... in part by using machine learning*. In the viewpoint of a POSITA, such a modification would have been obvious to try and a predictable variation of the prior art with a reasonable expectation of success. This is because Chung already expressly discloses the use of a machine learning algorithm in its invention to better predict what actions users will take and weigh user profile scores as such, as discussed above. It would have been obvious to a POSITA to determine at least

one of the *first quality level* or the *second quality level* in part by using machine learning because machine learning helped make more accurate predictions based on underlying data, and Grannan and Chung both use predictions of user behavior in determining product interest correlation scores and mapped user profile scores, respectively. See [1b], [1i]. A POSITA would have understood that better predictions would make scores more meaningful and accurate, so the use of machine learning to improve scores would be obvious. EX1003, ¶¶147-148.

To implement such a method, a POSITA would modify Grannan to apply machine learning to determining PIC scores such as incorporating well-known and basic machine learning algorithms to minimize errors in generating mapped scores which predict a user's action relative to categories of interest. A POSITA would have been familiar with simple machine learning algorithms for targeted advertising, and would have been able to readily program such algorithms for advertising at the time. EX1003, ¶149.

Indeed, Chung discloses “[m]apped scores are useful for target optimization purposes as they provide ***predictive information*** regarding a user's action relative to categories of interest.” EX1005, 20:51-53. Minimizing errors in such prediction by using a machine learning algorithm would therefore have been obvious to try for a POSITA. EX1003, ¶150-151.

F. Claim 6

- 1. [6] The method of claim 1, wherein at least one of the first quality level or the second quality level is determined with respect to the advertisement.**

Grannan discloses that the *first quality level* (PIC score) is based at least in part on a conversion assessment associated with the user profile, *i.e.*, a user's (subscriber's) "inferred intent," for example, purchasing a car. *See* [1i] (score increased when user more likely to purchase specific car). "The subscriber's inferred intent (in this case purchasing a Toyota Camry) derived by the web spidering system increases the subscriber's [PIC] score for a product category for Toyota Camry." EX1007, [0073]-[0076], FIG. 3, [0087]-[0089]. Grannan teaches that the PIC scores are applied to an advertisement database to select an advertisement in the product category to send to the user. *See* [1j]; EX1007, [0020], [0029], [0041], [0058], [0082], [0065], [0112], FIG. 7. Therefore, Grannan teaches *wherein at least one of the first quality level or the second quality level is determined with respect to the advertisement. See also claim 4.* EX1003, ¶¶152-153.

G. Claim 7

- 1. [7] The method of claim 1, wherein at least one of the first quality level or the second quality level is used to determine at least one of a discount or a surcharge.**

Grannan discloses using *discounts* and *surcharges* based on first or second *quality level* (reducing or increasing price of advertising based on PIC score). *See* claim 1. EX1003, ¶154.

Grannan discloses advertiser auction bidding where the price of an advertisement is based in part on a [PIC] score (*quality level*). EX1007, FIG. 7, [0028], [0033], [0063], [0066], [0074]-[0075], [0077], [0081]-0082], [0113]. For example, Grannan discloses text advertisements are lower cost than TV advertisements, *id.*, [0077], and that advertisers can set [PIC] score thresholds for when text advertisements versus TV advertisements are sent to users. *Id.*, [0063] (“[A] [PIC] score may range from 1 to 100. An advertiser may set a [PIC] score threshold of 20 for sending a text advertisement to a subscriber’s cell phone, a [PIC] score threshold of 50 for sending a video advertisement to the subscriber’s cell phone and set a [PIC] score threshold of 90 for sending a video advertisement to the subscriber’s IPTV receiver.”). EX1003, ¶155.

In this way, Grannan discloses that the PIC scores (first or second *quality level*) are used to determine whether a higher-priced or lower-priced advertisement

is sent to the user, *i.e.*, a surcharge or discount on the price of the advertisement depending on the PIC score. EX1003, ¶156.

H. Claim 8

1. [8] The method of claim 1, wherein the event comprises a conversion.

Grannan teaches *wherein the event comprises a conversion*. Grannan discloses wherein the *first quality level* (the PIC score) is based at least in part on an estimate of a likelihood of a conversion, *i.e.*, a conversion assessment or the subscriber's "inferred intent," for example, purchasing a car. *See* [1b] discussion on *likelihood of an event*. Moreover, Chung teaches determining the *quality level* based on conversion propensity. *See* 1[b]. A POSITA would have understood conversion propensity to be an estimate of a likelihood of a conversion, and therefore that the Chung mapped user profile score is based at least in part on such estimation. *See* [1b]. EX1003, ¶157.

I. Claim 9

1. [9] The method of claim 1, wherein the event comprises a purchase.

Grannan teaches *wherein the event comprises a purchase*, since a purchase of a target product is one type of conversion. *See* 1[b], claim 8. EX1003, ¶158.

J. Claim 10.

1. [10pre] A system, comprising:

To the extent the preamble is limiting, Grannan discloses it. Grannan discloses “a system and method for selecting targeted advertising.” EX1007, [0007]-[0008], [0044], [0064], [0116]-[0120], FIGS. 1, 2, 10. Chung also discloses the preamble. EX1005, Title, Abstract, 1:36-63, FIGS. 1, 3-5, 12, 15, cls. 7-12. EX1003, ¶159.

2. [10a] a processor configured to:

Grannan discloses a single processor that performs all elements of the disclosed AKMS targeted advertising system; as such the combination of Grannan, Chung, and Yang, as discussed in claim 1, performs elements [10b]-[10k] below. The AKMS contains a processor 130. EX1007, [0061] (“The AKMS includes **a processor 130** coupled to memory **132** and database **134** in memory.”), FIG. 1, [0116]-[0120], FIG. 10.

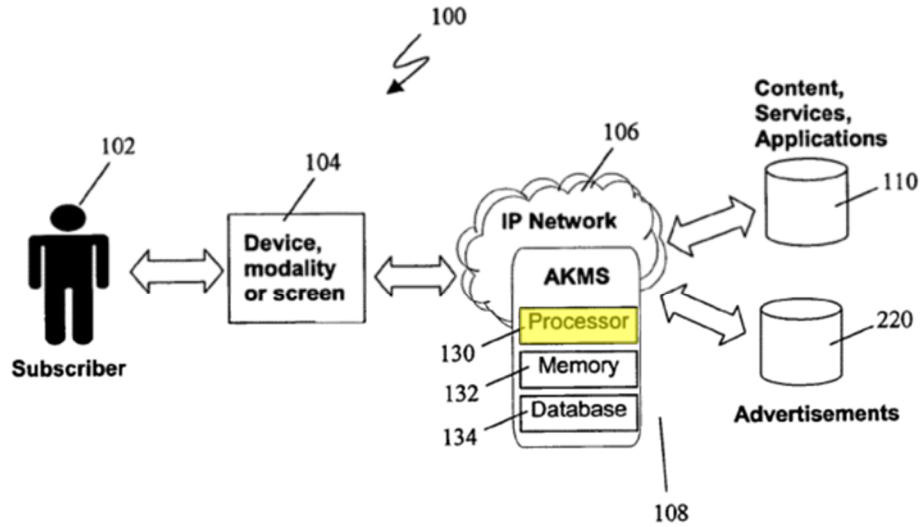


Figure 1

The AKMS performs elements [10b]-[10k], including after modifying the Grannan algorithms using Chung and Yang. *See* claim 1, FIGS. 1, 2. Therefore, the AKMS processor 130 as modified is configured to perform elements [10b]-[10k], as discussed above with respect to claim 1. EX1003, ¶¶160-161.

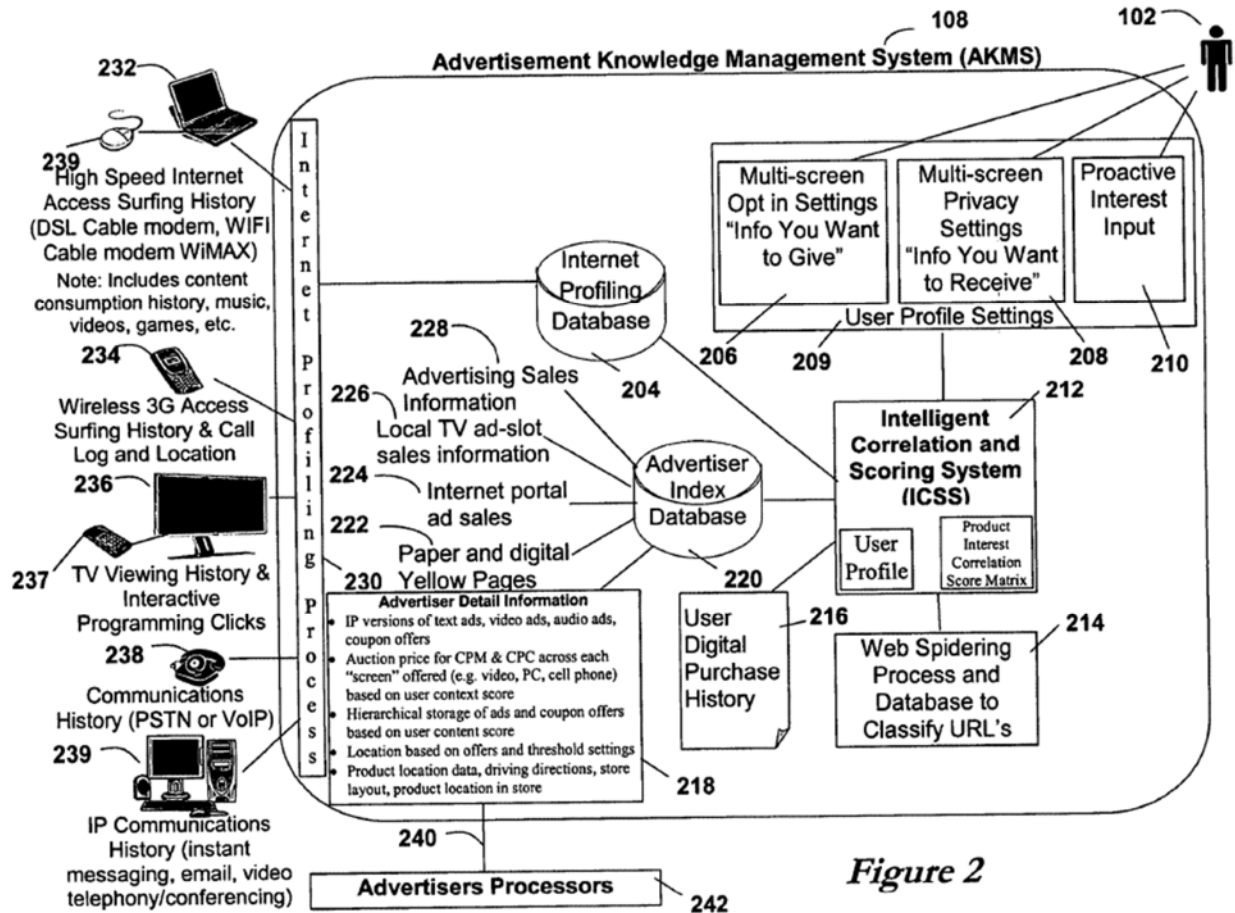


Figure 2

To the extent Grannan does not expressly disclose processor 130 is configured to perform elements [10b]-[10k], including after modifying Grannan with Chung and Yang, it would have been obvious to a POSITA because Grannan teaches a “centralized” invention in the AKMS that performs all of the core elements of the invention, and the modifications from Chung and Yang would be to Grannan’s AKMS. EX1007, [0080]; EX1003, ¶162.

3. [10b]

See [1a]. EX1003, ¶163.

4. [10c]

See [1b]. EX1003, ¶164.

5. [10d]

See [1c]. EX1003, ¶165.

6. [10e]

See [1d]. EX1003, ¶166.

7. [10f]

See [1e]. EX1003, ¶167.

8. [10g]

See [1f]. EX1003, ¶168.

9. [10h]

See [1g]. EX1003, ¶169.

10. [10i]

See [1h]. EX1003, ¶170.

11. [10j]

See [1i]. EX1003, ¶171.

12. [10k]

See [1j]. EX1003, ¶172.

13. [10l] a memory coupled to the processor and configured to provide the processor with instructions.

Grannan discloses that, “[t]he AKMS includes *a processor 130 coupled to memory 132* and database **134** in memory. A computer readable medium

containing instructions that can be executed by the processor is embedded in the memory.” EX1007, [0061], FIG. 1, [0116]-[0120], FIG. 10. A POSITA would have understood that the memory necessarily provides the processor with instructions, as it was well known at the time that the coded instructions would have been stored in the memory, and then provided to the processor from memory (whether directly or indirectly) for execution of the code. *See id.*, [0117] (“[t]he instructions 1024 may also reside, completely or at least partially, within the main memory 1004”); EX1003, ¶173.

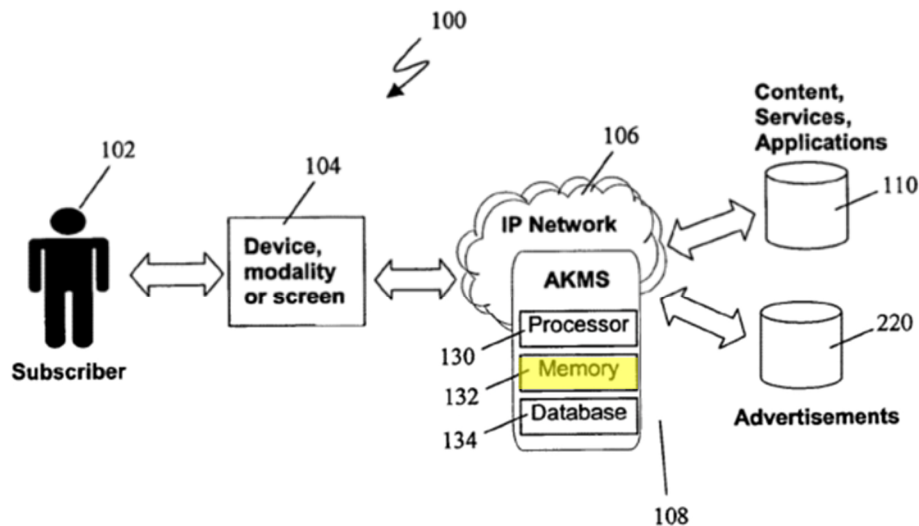


Figure 1

K. Claim 11

1. [11]

See claims 10, 2. EX1003, ¶174.

L. Claim 12

1. [12]

See claims 10, 3. EX1003, ¶175.

M. Claim 13

1. [13]

See claims 12, 4. EX1003, ¶176.

N. Claim 14

1. [14]

See claims 10, 5. EX1003, ¶177.

O. Claim 15

1. [15]

See claims 10, 6. EX1003, ¶178.

P. Claim 16

1. [16]

See claims 10, 7. EX1003, ¶179.

Q. Claim 17

1. [17].

See claims 10, 8. EX1003, ¶180.

R. Claim 18

1. [18]

See claims 10, 9. EX1003, ¶181.

S. Claim 19

- 1. [19pre] A computer program product embodied in a non-transitory computer readable storage medium and comprising computer instructions for:**

To the extent the preamble is limiting, Grannan discloses it: “The AKMS includes a processor 130 coupled to memory 132 and database 134 in memory. A ***computer readable medium containing instructions*** that can be executed by the processor is embedded in the memory.” EX1007, [0114], [0115], [0117], FIG. 9. A POSITA would have recognized that Grannan’s AKMS necessarily is embodied in the form of a computer program (*computer instructions*) that is stored in memory (*non-transitory computer readable storage medium*). EX1003, ¶182.

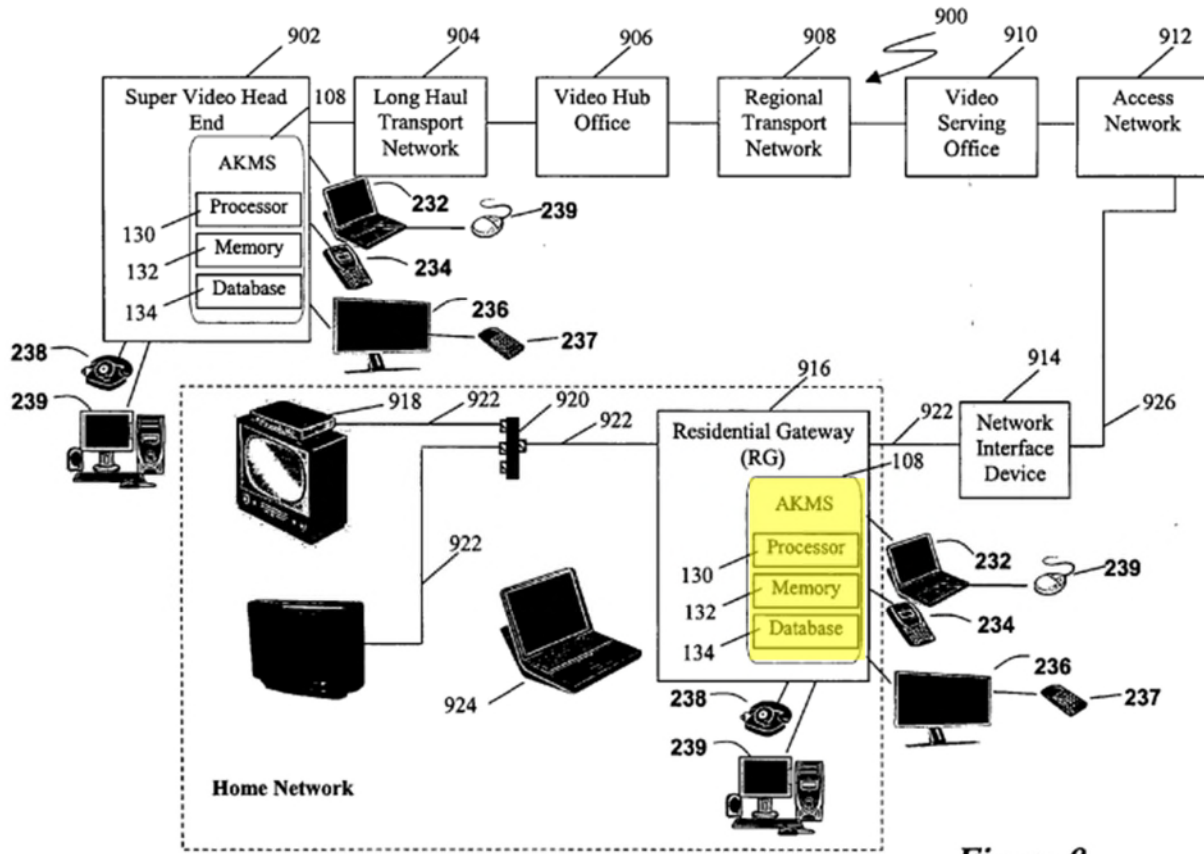


Figure 9

Chung also discloses this claim element: “For the software implementation, the behavioral targeting system is software that includes a plurality of computer executable instructions [The] software may reside as encoded information on a computer readable medium” EX1005, 24:5-14. EX1003, ¶183.

2. [19a]

See [1a]. EX1003, ¶184.

3. [19b]

See [1b]. EX1003, ¶185.

4. [19c]

See [1c]. EX1003, ¶186.

5. [19d]

See [1d]. EX1003, ¶187.

6. [19e]

See [1e]. EX1003, ¶188.

7. [19f]

See [1f]. EX1003, ¶189.

8. [19g]

See [1g]. EX1003, ¶190.

9. [19h]

See [1h]. EX1003, ¶191.

10. [19i]

See [1i]. EX1003, ¶192.

11. [19j]

See [1j]. EX1003, ¶193.

VIII. GROUND 2: GRANNAN, CHUNG, AND RAMAIYER

A. Claims 1-19 in General

Ground II is based on the exact same grounds as Ground I above, except with respect to limitation 1[c], 10[d], and 19[c], Petitioner relies here on Ramaiyer for the disclosure of “clustering,” instead of Yang. EX1003, ¶194.

As such, Petitioner incorporates into Ground II all of arguments with respect to Ground I, except for arguments with respect to limitations 1[c], 10[d], and 19[c] discussed below. EX1003, ¶195.

B. Limitations 1[c], 10[d], and 19[c].

As discussed in Ground I with respect to limitations 1[c], 10[d], and 19[c], and incorporated herein by reference, Grannan discloses *wherein the determining of the first quality level is based at least in part on a unique identifier*. A POSITA would have found it obvious to combine Grannan with Ramaiyer to disclose *wherein the determining of the first quality level is based at least in part on a unique identifier and clustering*. EX1003, ¶196.

As discussed in Ground I, and as disclosed in Grannan, it was well known at the time that it was common for multiple users in a household to share a single computer, and a need existed to distinguish between such multiple user activity. EX1007, [0091]. Ramaiyer discloses a “profile prediction system [to] identify one of multiple user profiles for a single computer.” EX1009, Abstract. Ramaiyer teaches that, “a home computer may have multiple users that may not be targeted unless the user on the home computer can be identified ... [and] the system’s user identification may be based on a clustering model that considers various browsing characteristic to *identify different clusters that each correspond to a particular user or user profile*.” *Id.* EX1003, ¶197.

Ramaiyer teaches the tracking of sessions of user behavior on a device to predict the user of the device based on clustering of the data. EX1009, Abstract, [0025], [0029]-[0035], FIGS. 2, 4, 5. User behavior includes “clicking” and “browsing.” *Id.*, [0029]-[0030], FIG. 4. Ramaiyer’s clustering algorithm is used to group user sessions into clusters such that each cluster is associated with a different user. *Id.*, [0032]. The cluster data is then used for identifying a user or user profile based on the user’s behavior. *Id.*, [0034], [0036]-[0037], FIGS. 5, 6. EX1003, ¶198.

Additionally, Ramaiyer teaches that its “profile prediction model may be a Bayesian model that provides a probability that a user belongs to a particular cluster” and that the “model provides a probability that the user belongs to a particular cluster based on the monitored behavior.” EX1009, [0036]-[0037]; EX1003, ¶199.

It would have been obvious to a POSITA to use Ramaiyer’s clustering of user behavior in the Grannan-Chung combination to differentiate between multiple users on a single device, so as to ascertain which user profile to associate activity such as browsing and clicking behavior. Grannan already teaches determining a PIC score based in part on a unique identifier, as discussed in Ground I. Such modification would have required a mere software change, adding Ramaiyer’s clustering algorithm to Grannan in order to further determine a unique user from a

user ID that was tied to a whole household, and it would have been readily programmed into the Grannan system using the Ramaiyer disclosure. Additionally, because Chung, Grannan, and Ramaiyer are directed toward improving targeted advertising systems, a POSITA would have been reasonably motivated to combine elements of these inventions to arrive at this limitation. EX1009, Abstract, [0001], [0009], [0011]-[0015], [0030], FIG. 1; EX1003, ¶200.

Because the *first quality level* (PIC score) is based on a unique user profile, and that unique user profile is determined by clustering, the Grannan-Chung combination with Ramaiyer renders obvious *determining of the first quality level is based at least in part on a unique identifier and clustering*. EX1003, ¶201.

Alternatively, based on these disclosures, and Grannan's disclosure that the PIC score is determined using the weighing of many different user profile data (EX1007, [0025], [0073]-[0076], [0079]-[0080], [0083]-[0090]), a POSITA would have found it obvious to weigh the Grannan PIC score against the probability that the user profile determined by Ramaiyer's Bayesian model clustering technique is a target user profile. EX1003, ¶202. In this additional way, the *first quality level* is determined *based ... on a unique identifier and clustering*. *Id.*

IX. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

PO has not identified secondary considerations of non-obviousness with respect to the '402 patent. Moreover, the Applicants did not identify any such

considerations in the prosecution of the '402 Patent. Petitioner intends to address any such evidence, if or when any such evidence is brought forth.

X. DISCRETIONARY DENIAL IS NOT WARRANTED

A. 35 U.S.C. § 314(a) Analysis

The *Fintiv* factors (enumerated below) weigh against discretionary denial. IPR2020-00019, Paper 11, 5-6 (PTAB Mar. 20, 2020) (precedential). The “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation” dated June 21, 2022 (“Interim Guidance”) and recent board decisions applying these factors confirm discretionary denial is not warranted here.

1. Stay

Although no stay has been sought by any party, Petitioner intends to seek promptly a stay of the of the recently initiated 2-24-cv-00688 litigation in the Eastern District of Texas (“EDTX Litigation”), if the Board institutes this proceeding. As of this filing, a scheduling order has not been entered, fact and expert discovery have not yet commenced, a *Markman* hearing date has not been set, and no claim construction briefs have been filed in the EDTX Litigation. Thus, a stay is at least possible and is warranted. At worst, this factor is neutral because the Board “will not attempt to predict” how the district court will proceed if a stay has not been requested by either party. *Sand Revolution II, LLC v. Continental*

Internodal Group – Trucking LLC, IPR2019-01393, Paper 24 at 7 (PTAB Jun. 16, 2020) (informative).

2. Trial Date

Under the Interim Guidance, Factor two favors institution. As set forth in the Interim Guidance, “when considering the proximity of the district court’s trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides. Interim Guidance, 3. Here, the anticipated trial date, as computed in accordance with the Interim Guidance, is June 2026 (21.6 months from August 21, 2024). EX1008, 1. The deadline for a Final Written Decision will be around March 2026. Thus, this factor weighs against a discretionary denial.

3. Parallel Proceeding

In *Sand Revolution*, the parties had already “exchanged infringement and invalidity contentions, and the district court [had] conducted a *Markman* hearing and entered a related Order.” *Sand Revolution* at 10 (informative). Despite these facts, the Board found that the third *Fintiv* factor “weighs only marginally, if at all, in favor of exercising discretion to deny institution.” *Id.* In contrast, here the EDTX litigation was just initiated on August 21, 2024, and there is no schedule yet entered for that matter. Accordingly, this factor weighs in favor of institution.

4. Issue Overlap

The final written decision is anticipated to precede the computed anticipated trial date by around three months. §X(A)(2)(“Trial Date”). The issuance of a final written decision well before trial will ensure that issues decided during *inter partes* review will be different from the issues decided by the district court due to estoppel. Thus, this factor weighs in favor of institution.

5. Same Party

Because Petitioner is a defendant in the EDTX Litigation, and because this Board is likely to reach the merits earlier than the district court, this factor weighs against discretionary denial. *See Samsung Elecs. Co., LTD v. Staton Techiya, LLC*, IPR2022-00324, Paper 13, at 18-19 (PTAB July 11, 2022) (factor weighs against discretionary denial where final written decision deadline falls before the Court’s expected trial date); *NVIDIA Corp. v. Invensas Corp.*, IPR2020-00603, Paper 11, at 23 (PTAB Sept. 3, 2020) (factor weighs against discretionary denial where Petitioner is defendant in district court case, and district court trial and IPR final written decision are expected “around the same time”). Members of the Board have noted that *Fintiv* addresses only the scenario in which the petitioner is unrelated to a defendant in a parallel proceeding, finding this should weigh against denying institution, but that *Fintiv* “says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant.” *Cisco Sys., Inc. v. Ramot*

at *Tel Aviv Univ. Ltd.*, IPR2020-00122, Paper 15, at 11 (PTAB May 15, 2020)

(APJ Crumbley, dissenting) (noting that disfavoring a “defendant in the district court” is “contrary to the goal of providing district court litigants an alternative venue to resolve questions of patentability”).

6. Other Considerations

Other considerations weigh strongly against a discretionary denial. The Challenged Claims are clearly invalid, Petitioner has not previously challenged any related patents based on the references relied upon in this petition, and the ’402 patent has never been challenged in a post-issuance proceeding. Were the Board to deny institution, years of district court litigation would be required just to obtain a finding of invalidity. Thus, this factor weighs against a discretionary denial.

In sum, all of the *Fintiv* factors weigh against a discretionary denial in the instant case. Thus, institution should be granted.

Even assuming, *arguendo*, that the Board determined that the *Fintiv* factors on balance weigh in favor of denial, institution should nonetheless be granted because this Petition satisfies the compelling merits standards as shown above.

Interim Guidance at 4; *Vizio, Inc. v. Maxell, Ltd.*, IPR2022-01458, Paper 8, at 62 (PTAB Apr. 11, 2023).⁵

B. 35 U.S.C. §§325(d) Analysis

Applying the two-part framework discussed in *Advanced Bionics, LLC v. Med-El Elektromedizinische Gerate GMBH*, IPR2019-01469, Paper 6, 7-9 (PTAB Feb. 13, 2020), the Board should not exercise its §325(d) discretion to deny institution.

The challenge in this Petition is not substantially the same as those considered during prosecution. In the extent that the challenge herein is found to be based on prior art that is the same as or cumulative to prior art considered by the examiner during prosecution, the examiner has made a clear error in allowing the claims over such prior art. This is at least because the challenge in this Petition satisfies the compelling merits standard, and allowing the claims over such prior art is therefore clear error.

Although the Ramaiyer reference in Ground II was cited by the examiner during prosecution, the examiner did not have the benefit of reviewing Ramaiyer in

⁵ The Board's *Fintiv* framework should be overturned because it (1) exceeds the Director's authority, (2) is arbitrary and capricious, (3) and was adopted without notice-and-comment rulemaking.

view of Grannan and Chung. As such, the same or substantially the same prior art and arguments were not presented to the examiner during prosecution.

XI. COMPLIANCE WITH FORMAL REQUIREMENTS

A. Mandatory Notices Under 37 C.F.R. §§ 42.8(b)(1)-(4)

1. Real Party-In-Interest

Petitioner Home Depot U.S.A., Inc. is the real party-in-interest. Petitioner identifies The Home Depot, Inc. as a potential real party-in-interest solely because it was a named defendant in the EDTX Litigation.

2. Related Matters

The '402 patent is subject to the following actions:

- *RavenWhite Licensing LLC v. The Home Depot, Inc. et al.*, 2:24-cv-00688 (EDTX)
- *RavenWhite Licensing LLC v. Walmart, Inc. et al.*, 2:24-cv-00689 (EDTX)

The '402 patent was previously subject to the following actions which have been dismissed without prejudice:

- *RavenWhite Licensing LLC v. The Home Depot, Inc. et al.*, 2:23-cv-00423 (EDTX)
- *RavenWhite Licensing LLC v. Walmart, Inc. et al.*, 2:23-cv-00418 (EDTX)

3. Lead and Backup Counsel

Lead Counsel	Backup Counsel
Jennifer Librach Nall Reg. No. 57,053 jennifer.nall@us.dlapiper.com DLA Piper LLP (US) 303 Colorado Street Suite 3000 Austin, TX 78701 Phone: + 1 512 457 7249 Fax: + 1 512 721 2249	Nicholas G. Papastavros (<i>pro hac vice</i> motion forthcoming) nick.papastavros@dlapiper.com DLA Piper LLP (US) 33 Arch Street, 26th Floor Boston, Massachusetts 02110-1447 Phone: +1 617 406 6019 Fax: +1 617 406 6119 Safraz W. Ishmael (<i>pro hac vice</i> motion forthcoming) safraz.ishmael@us.dlapiper.com DLA Piper LLP (US) 33 Arch Street, 26th Floor Boston, Massachusetts 02110-1447 Phone: +1 617 406 6083 Fax: +1 617 406 6181 Benjamin S. Mueller (<i>pro hac vice</i> motion forthcoming) benjamin.mueller@us.dlapiper.com DLA Piper LLP (US) 444 West Lake Street Suite 900 Chicago, IL 60606 Phone: +1 312 368 4008 Fax: + 1 312 630 2763

4. Service Information

Service information for lead and backup counsel is provided in the designation of lead and backup counsel above. Petitioner consents to electronic service to lead and backup counsel and to: DLA-HD-RW@us.dlapiper.com

B. Proof of Service on the Patent Owner

In accordance with 37 C.F.R. §§42.6(e) and 42.105, as identified in the attached Certificate of Service, a copy of this Petition in its entirety is being served electronically to the Patent Owner's attorney of record, as well as on counsel for Patent Owner in the EDTX Litigation.

C. Power of Attorney

Powers of attorney are being filed with designation of counsel in accordance with 37 C.F.R. §§41.10(b).

D. Standing

In accordance with 37 C.F.R. § 42.104(a), Petitioner certifies that the '402 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

E. Fees

The undersigned authorizes the Director to charge the fee specified by 37 C.F.R. §§42.15(a) and any additional fees that might be due in connection with this Petition to Deposit Account No. DA 503266.

XII. CONCLUSION

All Challenged Claims of the '402 patent should be found unpatentable for the reasons discussed above.

Date: September 17, 2024

Respectfully submitted,

/s/ Jennifer Librach Nall

Jennifer Librach Nall

Reg. No. 57,053

DLA Piper LLP (US)

303 Colorado Street

Suite 3000

Austin, TX 78701

Phone: + 1 512 457 7249

Fax: + 1 512 721 2249

jennifer.nall@us.dlapiper.com

Attorney for Petitioner, Home Depot
U.S.A., Inc

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 13,836 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, claim listing, and exhibits.

Date: September 17, 2024	<u>/s/ Jennifer Librach Nall</u> <i>Attorney for Petitioner</i>
--------------------------	--

CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. §§ 42.6(e) and 42.105 that on September 17, 2024, a true and correct copy of the Petition for *Inter Partes* Review of U.S. Patent No. 11,562,402 challenging claims 1-19 was served by emailing a copy of same by agreement to the following attorneys for the Patent Owner:

William James
George Cheng
Van Pelt, Yi & James LLP
1 First St, Suite 12
Los Altos, CA 94022
wjames@ip-patent.com
gcheng@ip-patent.com

A courtesy copy was sent to the below counsel via electronic mail:

Robert F. Kramer
David Alberti
Robert C. Mattson
Russel Steven Tonkovich
Sal Lim
Kramer Alberti Lim & Tonkovich LLP
950 Tower Lane, Suite 1725
Foster City, CA 94404
rkramer@krameralberti.com
dalberti@krameralberti.com
rmattson@krameralberti.com
rtonkovich@krameralberti.com
slim@krameralberti.com

Andrea Fair
Ward, Smith & Hill
andrea@wsfirm.com

Date: September 17, 2024

/s/ Jennifer Librach Nall
Attorney for Petitioner