IN THE UNITED STATES PATENT TRIAL AND APPEAL BOARD

In re Post-Grant Review of:	)
	)
U.S. Patent No. 8,904,464	)
	)
Issued: December 2, 2014	)
	)
Inventor: Ingemar J. Cox	)
	)
Application No. 13/800,573	)
	)
Filed: March 13, 2013	)
	) FILED ELECTRONICALLY
For: METHOD FOR TAGGING AN	) PER 37 C.F.R. § 42.6(b)(1)
ELECTRONIC MEDIA WORK	)
TO PERFORM AN ACTION	)
	)

Mail Stop *Patent Board*
Patent Trial and Appeal Board
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PETITION FOR COVERED BUSINESS METHOD REVIEW UNDER 35 U.S.C. § 321 AND § 18 OF THE LEAHY-SMITH AMERICA INVENTS ACT

Pursuant to 35 U.S.C. § 321 and § 18 of the Leahy-Smith America Invents Act

("AIA") and pursuant to 37 C.F.R. § 42.300 *et seq.*, Google Inc. hereby requests

covered business method review of claims 1-34 of U.S. Patent No. 8,904,464 ("the

'464 patent," attached as Exhibit 1001), now purportedly assigned to Network-1

Technologies, Inc. ("Network-1").

An electronic payment in the amount of $43,950.00 for the post-grant review

fee specified by 37 C.F.R. § 42.15—comprising the $12,000 request fee, the respective

excess claim fee of $3,500, the $18,000 post-institution fee, and the respective excess claim fee of $10,450—is being paid at the time of filing this petition. If there are any additional fees due in connection with the filing of this paper, please charge the required fees to Deposit Account No. 06-0916.

Table of Contents

TABLE OF AUTHORITIES

Page(s)

LIST OF EXHIBITS

Petition Exhibit 1001:   U.S. Patent No. 8,904,464

Petition Exhibit 1002:   Prosecution History for U.S. Patent No. 8,904,464

Petition Exhibit 1003:   Declaration of Pierre Moulin

Petition Exhibit 1004:   Joint Claim Construction Chart in *Network-1 Technologies, Inc. v. Google Inc., et al.*, Case No. 1:14-cv-2396 (S.D.N.Y., Feb. 6, 2015)

Petition Exhibit 1005:   Complaint for Patent Infringement in *Network-1 Technologies, Inc. v. Google Inc., et al.*, Case No. 1:14-cv-09558 (S.D.N.Y., Dec. 3, 2014)

Petition Exhibit 1006:   International Application Publication Number WO 99/04568 to Ferris et al.

Petition Exhibit 1007:   U.S. Patent No. 4,381,522 to Lambert et al.

Petition Exhibit 1008:   Aristides Gionis et al, *Similarity Search in High Dimensions via Hashing*, Proceedings of the 25th International Conference on Very Large Data Bases, pages 518-29

Petition Exhibit 1009:   International Application Publication Number WO 00/16205 to Philyaw et al.

Petition Exhibit 1010:   U.S. Patent No. 5,410,326 to Goldstein

Petition Exhibit 1011:   CLASS 705 DATA PROCESSING: FINANCIAL, BUSINESS PRACTICE, MANAGEMENT, OR

Covered Business Method Review of U.S. Patent No. 8,904,464

U.S.C. § 313 Pursuant to 37 C.F.R. § 42.107, Case No.

IPR2015-00348 (Mar. 27, 2015)

Petition Exhibit 1021:   U.S. Patent No. 8,010,988 to Cox

I.   Preliminary Statement

The '464 patent relates to "media works," which are, for example, advertisements or articles published in print, on TV, or on the radio. The patent explains that the invention "concerns identifying a work (e.g., *content or an advertisement* delivered via print media, or via a radio or television broadcast) without the need to modify the work." Ex. 1001, 1:43-46 (emphasis added). The identification of the media work is based on "links" that "can then be used to invoke a work-related action." *Id.* at 4:20-21. While the '464 patent specification provides several examples of how to link a media work to an action, Ex. 1001, 4:30-41, its claims simply recite this abstract idea: linking a media work to a business action, for example, through an advertisement. Ex. 1001, 1:40-46, 60-65.

Linking ads to related actions is a longstanding business practice which predates the earliest alleged date of invention, July 1, 2000. *See* Ex. 1019 at 30. For example, magazine publishers have linked media works to business actions since at least 1934, by attaching "tags" to advertisements in the form of numbers. Magazine readers interested in advertised products or services could request more information by circling the corresponding numbers on a postcard in the magazine and mailing the postcard to the magazine publisher. The publisher would provide the reader's contact information to the advertiser, who could send further information to the reader.

To the extent the claims of the '464 patent recite anything beyond the longstanding practice of linking a media work like an advertisement to a business

action, they recite nothing more than conventional computer technology or data. As such, all of the claims of the '464 patent are unpatentable under 35 U.S.C. § 101.

That there is nothing patentable about the claims is confirmed by multiple prior art references that teach or suggest all of the features of the claims of the '464 patent, rendering them unpatentable under 35 U.S.C. § 103. The claims are also indefinite and lack support in the '464 patent's specification, failings that independently render every claim of the '464 patent unpatentable under 35 U.S.C. § 112.

II.   The '464 Patent Is a Covered Business Method Patent

A CBM patent is any patent with claims directed to "performing data processing or other operations used in the practice, administration, or management of a financial product or service . . . ." AIA § 18(d)(1); *see also* 37 C.F.R. § 42.301. The Office has stated that "financial product or service" should be "interpreted broadly," encompassing patents "claiming activities that are financial in nature, incidental to a financial activity or complementary to a financial activity." Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention; Final Rule, 77 Fed. Reg. 48,734, 48,735 (Aug. 14, 2012). This Board has explained that the term "financial" is an "adjective that simply means relating to monetary matters." *SAP Am., Inc. v. Versata Dev. Grp., Inc.*, CBM2012-00001, Paper 36 at 23 (P.T.A.B. Jan. 9, 2013). But the term "financial" is not limited to products or services in the financial services industry. *LinkedIn Corp. v. AvMarkets Inc.*, CBM2013-00025, Paper 13 at 9 (Nov. 12, 2013) (citing 77 Fed. Reg. at 48,736).

In fact, this Board has explained that even a *single claim* related to an aspect of commerce—like advertisements, *see Hulu, LLC v. Intertainer, Inc.*, CBM2014-00052, Paper 10 at 10 (P.T.A.B. Jun. 23, 2014), marketing, *LinkedIn Corp.*, CBM2013-00025, Paper 13 at 10-11, or financial subsidies, *Groupon, Inc. v. Blue Calypso, LLC*, CBM2013-00034, Paper 9 at 13-14 (P.T.A.B. Dec. 19, 2013)—is enough to constitute a "financial product or service." Under the statute and this guidance, the '464 patent qualifies as a CBM patent.

A.   The '464 Patent Claims Relate to a Financial Product or Service

The '464 patent covers advertising and marketing methods. The claims are drawn to methods for receiving a media work such as an advertisement, providing the media work and other information to a user, and receiving a request related to the other information. For example, independent claim 1 involves sending instructions to a user device to perform an action based on information that claim 10 explains is "related to an advertisement." Providing advertisements is a fundamental business practice. *See, e.g., Linkedin*, CBM2013-00025, Paper 13 at 9-11 (finding a claim for "increasing sales leads by making items available on Web pages" directed to a financial product or service). At least claims 1 and 10 are therefore Covered Business Methods; thus, review should be instituted. To institute a CBM post-grant review, a patent need only have one claim directed to a CBM, and not a technological invention. Transitional Program for Covered Business Method Patents—Definitions of Covered

Business Method Patent and Technological Invention; Final Rule, 77 Fed. Reg. at 48,736.

That the '464 patent is a CBM patent is confirmed by the fact that "patents subject to covered business method patent review are anticipated to be *typically classifiable* in Class 705," and may include patents classified in other classes. 77 Fed. Reg. at 48,739 (emphasis added). While classified in class 725, the '464 patent was also *classifiable* in class 705. As noted above, the '464 patent relates in part to providing advertisements to users. Some claims – like claims 12 and 29, *see* Ex. 1001 at 25:35-37, 26:47-49, relate to coupons. There are therefore numerous subclasses in class 705 where the '464 patent would also be classifiable, such as 14.1 ("Discount or incentive (e.g., coupon, rebate, offer, upsale, etc.)"), 14.23 ("During E-commerce (i.e., online transaction)"), 14.49 ("Targeted advertisement"), and 14.73 ("Online advertisement"). *See* Ex. 1011. The '464 patent's classification in class 725, subclasses 110 and 114-116, thus does not bar institution of a CBM proceeding. Moreover, CBM reviews have been instituted on patents classified in class 725. *See, e.g., Hulu*, CBM2014-00052, Paper 10 at 19, concerning U.S. Patent No. 8,479,246 (Ex. 1012) having a primary classification of class 725, subclass 113; *Groupon*, CBM2013-00034, Paper 9 at 30, concerning U.S. Patent No. 8,457,670 (Ex. 1013) having a secondary classification in class 725.

Accordingly, the '464 patent is a Covered Business Method Patent and trial should be instituted.

B.   The Claims Are Not Directed to a "Technological Invention"

The AIA excludes "patents for technological inventions" from the definition

of CBM patents. AIA § 18(d)(1). Determining whether a patent is for a technological

invention requires consideration, on a case-by-case basis, of "whether the claimed

subject matter as a whole recites a technological feature that is novel and unobvious

over the prior art; and solves a technical problem using a technical solution." 37 C.F.R.

§ 42.301. Because the claims of the '464 patent fail to define a novel and unobvious

technological feature *and* fail to recite a technical solution to a technical problem, the

claims are not drawn to a technological invention.

1.   The Claims Do Not Recite a Novel and Unobvious Technical Feature

As a preliminary matter, claims 1-34 of the '464 patent do not recite any *novel*

and unobvious features because they are obvious over prior art. *Infra* Section IV.B. The

claims, moreover, fail to recite any novel and unobvious technological features.

Independent claim 1 recites, in part:

> receiving, by a computer system including at least one
> computer, a first electronic media work;

> correlating, by the computer system using a non-
> exhaustive, near neighbor search, the first electronic media
> work with an electronic media work identifier;

storing, by the computer system, correlation information associating the first electronic media work and the electronic media work identifier;

accessing, by the computer system, associated information related to an action to be performed in association with one or more electronic media works corresponding to the electronic media work identifier;

generating, by the computer system, a tag associated with the first electronic media work;

providing, from the computer system to a user electronic device, the first electronic media work and the associated tag;

obtaining, by the computer system from the user electronic device, a request related to the associated tag;

generating, using the computer system, machine-readable instructions based upon the associated information to be used in performing, at the user electronic device, the action; and

providing, from the computer system to the user electronic device, the machine-readable instructions to perform the action in response to the request.

Independent claim 18 recites, in part:

receiving, by a computer system including at least one computer, associated information related to an action to be performed in association with a first electronic media work identifier;

receiving, by the computer system, a first electronic media work;

correlating, by the computer system using a non-exhaustive, near neighbor search, the first electronic media work with the first electronic media work identifier;

storing, by the computer system, correlation information associating the first electronic media work and the first electronic media work identifier;

generating, by the computer system, a tag associated with the first electronic media work;

providing, from the computer system to a first user electronic device, the first electronic media work and the tag;

receiving, at the computer system, a request generated at the first user electronic device and related to the tag;

generating, using the computer system, machine-readable instructions based upon the associated information to be used in performing, at a user electronic device, the action; and

> providing, from the computer system to the first user
> electronic device, the machine-readable instructions to
> perform the action in response to the request.

The only technology arguably claimed, therefore, is a "computer system" and a "user electronic device," Ex. 1003 at ¶¶ 20, 22, and 23, which the Board has confirmed is insufficient to render a patent "technological." *See, e.g.*, Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,764 (Aug. 14, 2012); *Groupon, Inc. v. Blue Calypso, LLC*, CBM2013-00033, Paper 10 at 22 (P.T.A.B. Dec. 19, 2013). "Mere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or databases, or specialized machines, such as an ATM or point of sale device," or "[r]eciting the use of known prior art technology to accomplish a process or method, even if that process or method is novel and non-obvious" will "not typically render a patent a technological invention." *See, e.g.*, Office Patent Trial Practice Guide, 77 Fed. Reg. at 48,764; *see also Hulu*, CBM2014-00052, Paper 10 at 11-12, *Apple Inc. v. SightSound Techs., LLC*, CBM2013-00019, Paper 17 at 14-16 (P.T.A.B. Oct. 8, 2013); *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00002, Paper 10 at 7-8 (P.T.A.B. Jan. 25, 2013).

Moreover, each step in independent claims 1 and 18, for example, relates to receiving an electronic media work, linking the media work to some unspecified action, and sending instructions to perform the action. Merely receiving and sending

8

data, without more, is a known process that has been practiced on computers for ages. Ex. 1003 at ¶ 23; *see also Groupon*, CBM2013-00033, Paper 10 at 20-22; *Dealersocket, Inc. v. Autoalert, LLC*, CBM2014-00201, Paper 11 at 17 (Feb, 17, 2015).

Some dependent claims, such as claims 2-6 and 19-23, only limit the claims to types of "information" associated with the media work, such as the name of a product or a product category. Ex. 1001 at 25:4-17 and 26:14-27; *see also* Ex. 1003 at ¶ 22. Dependent claims 7 and 24 specify that the electronic media is drawn to a generic audio, video, or image. Ex. 1001 at 25:18-19 and 26:28-30. Dependent claims 8, 9, 25, and 26 describe the generic user electronic device as being separate from other electronic devices. Ex. 1001 at 25:20-28 and 26:31-40; *see also* Ex. 1003 at ¶ 22. Other dependent claims, such as 10-17 and 27-34, explain that the information associated with an action can be advertisements or other related data. Ex. 1001 at 25:29-50 and 26:41-62; *see also* Ex. 1003 at ¶ 22. These limitations are not enough to make the claims "technological" in nature. *See, e.g., LinkedIn Corp.*, CBM2013-00025, Paper 13 at 11-12; *Hulu*, CBM2014-00052, Paper 10 at 10-12.

Even the most technical sounding claim element – "correlating … using a *non-exhaustive, near neighbor search*" – is not a technological feature. Indeed, the Board has ruled that known searching methods are not technical features. *See, e.g., American Express Company, et al. v. Metasearch Systems, LLC*, CBM2014-00001, Paper 29 at 7-8 (Mar. 20, 2014). The type of search that Patent Owner claims is recited in the '464 patent is nothing more than what a human does in looking up a word in the

dictionary. Ex. 1003 at ¶ 28. The Patent Owner has argued that "non-exhaustive search" is defined as "search using an algorithm designed to locate a match without requiring the query to be compared to every record in the reference data set being searched until a match is identified," and that "near neighbor" is defined as "close, but not necessarily exact or the closest, match of a feature vector, compact electronic representation, or set of extracted features to another, that has a distance or difference that falls within a defined threshold of a query." *See* Ex. 1004 at 3. Even if the Patent Owner's proposed definitions are correct, this search method is not a technical feature. For example, if a reader wanted to look up "**chese**," a misspelling of the word "cheese," the reader would perform a "*non-exhaustive*" search by looking only in the "C" section – not by comparing the word "chese" to every word in the dictionary. Ex. 1003 at ¶ 28. Moreover, the user would perform a "*near neighbor*" search to locate the closest word to "chese," ending up at "cheese" because the two words are a close but not exact match that has a difference of only one letter. Ex. 1003 at ¶ 28.

The '464 patent admits that the components in the challenged claims, including computer systems and user electronic devices, are *not* drawn to *novel* technological features. For example, in distinguishing over the prior art, the '464 patent alleges that its advantages lie in *not* having to modify conventional and routine equipment. The patent criticizes prior art techniques:

> All of the foregoing techniques of inserting code into a
> work can be categorized as active techniques in that they

> must alter the existing signal . . . . modifications must also
> be made to the equipment in a user's home. Again, using
> the example of watermarking of print media, a PC must be
> fitted with a camera and watermark detection software
> must be installed. In the case of television, the detection of
> the identification signal is likely to occur at the set-top-
> box . . . [and] may require modifications to the hardware,
> which is likely to be prohibitively expensive. For example,
> the audible tone used by Digital Convergence to recognize
> television content, must be fed directly into a sound card in
> a PC. This requires a physical connection between the
> television and the PC, which may be expensive or at least
> inconvenient, and a sound card may have to be purchased.

Ex. 1001 at 3:46-4:14. The inventor also admits that various functions implemented

on these known devices are old and well-known. For example, the '464 patent admits

that feature vectors, comparing feature vectors, and near/nearest neighbor searches

are well-known.

> The purpose of the feature extraction operation is to derive
> a compact representation of the work that can subsequently
> be used for the purpose of recognition . . . . For television
> and audio signals, recognition might also rely on a temporal
> sequence of feature vectors. The recognition literature
> contains many different representations. For block-based
> methods, blocks may be accessed at pseudo-random
> locations in each frame or might have a specific structure.

> For audio, common feature vectors are based on Fourier frequency decompositions, but other representations are possible. See, e.g., R. O. Duda and P. E. Hart, Pattern Classification and Scene Analysis (Wiley-Interscience, New York, 1973). See also K. Fukunaga, Introduction to Statistical Pattern Recognition, 2nd Ed. (Academic Press, New York, 1990).

Ex. 1001 at 6:55-7:9.

> The recognition system described can be considered to be a form of nearest neighbor search in a high dimensional feature space. This *problem has been very well studied* and is known to be very difficult as the dimensionality of the vectors increases. A number of possible data structures are applicable including kd-trees and vantage point trees. These data structures and associated search algorithms organize a N-point dataset (N=90,000,000 in out previous example) so that sub-linear time searches can be performed on average. However, worst-case search times can be considerably longer. Recently, Yianilos proposed an excluded middle vantage point forest for nearest neighbor search. See, e.g., the Yianilos reference.

Ex. 1001 at 21:28-40 (emphases added). *See also id.* at 22:26-34: "The database centers 840b *can use traditional database technology* . . . The database centers 840b are continually updated as each new advertisement, television show or portion thereof is recognized. *Standard updating algorithms* can be used." (Emphases added).

In fact, Dr. Moulin, an expert in the field of signal processing, personally used the components recited by the challenged claims long before the application leading to the '464 patent was filed. Ex. 1003 at ¶ 23. Dr. Moulin also notes that any purported technology in the issued claims relates to conventional and routine hardware and that the claims, at best, represent utilizing well-known technology for business purposes. Ex. 1003 at ¶¶ 22-23.

Thus, because the independent claims recite only known prior art technology to accomplish a process, the independent claims are not drawn to technological inventions. And the dependent claims, which limit the independent claims only in types of data or generic technology, are also not drawn to technological inventions.

2. The Claims Do Not Solve a Technical Problem With a Technical Solution

Independent claims 1 and 18 of the '464 patent also do not solve a technical problem using a technical solution. Instead, to the extent they solve any problem at all, it is merely a logistical business problem, *i.e.*, how to provide additional actions with an advertisement.

The '464 patent explains that one of the problems it solves is that advertisers often wish to "ensure that they receive the advertising time that was purchased," and do so by hiring "commercial verification services to verify that the advertisement or commercial did indeed run at the expected time." Ex. 1001 at 9:57-60. An advertiser's need to confirm that it is getting the audience it paid for is not a technological

problem, but a business problem. The solution for this problem – i.e., a method to determine whether intended audiences viewed an advertisement – is also not technological. For example, reader service cards were frequently used to gauge whether advertisements were printed in magazines or the number of readers who responded. *See infra* Section IV.A.1. The patent also describes prior art commercial verification services that employed people to watch TV channels and tabulate which advertisements appear. Ex. 1001 at 15:14-20. These problems and solutions improved the business of advertising, not technology.

Another problem identified by the '464 patent is enabling the identification of a work without inserting an identification code. Ex. 1001 at 4:16-21. This problem is non-technological because it is a business problem. For example, the patent explains that viewers of an ad or television show may want to identify the designer of clothing worn on a television show. Ex. 1001 at 1:65-2:5. This is a business problem of selling products, not any technological problem. The solution does not arise solely in the technological arts either, because merely providing extra data (e.g., the claimed "tag") does not constitute a technological process – it is just providing data. Moreover, adding a tag to an advertisement or other media work was obvious over the prior art. *See infra*, Section IV.B. Thus, even if the claims involved a technical problem or solution, the challenged claims still would not cover a technological invention because they recite nothing technical that was not already known.

Since claims 1-34 are directed to covered business methods and do not recite any technological invention, this proceeding should be instituted.

III. Claim Construction

Claim terms are given their ordinary and accustomed meaning as understood by one of ordinary skill in the art. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*). One of ordinary skill in the art in September 2000 (i.e., when the provisional application leading to the '464 patent was filed) would have had at least a Master's of Science degree in computer science, electrical engineering, or mathematics; knowledge of video and audio processing techniques; and 1-2 years of experience in audio, video, or image processing. Ex. 1003 at ¶ 12.

A claim in an unexpired patent subject to post-grant review receives the "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.300(b).[1] Under these principles, the following term from the claims of the '464 patent requires construction for this post-grant review proceeding. The broadest reasonable construction should also be applied to any claim

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[1] Because this standard for claim construction differs from that used in district court litigation, *In re Am. Acad. of Sci. Tech Ctr.,* 367 F.3d 1359, 1369 (Fed. Cir. 2004), Google expressly reserves the right to argue that certain terms should be construed differently in district court litigation. For the Board's reference, Google provides a copy of the parties' Joint Claim Construction Chart in the related litigation. Ex. 1004.

terms and phrases not specifically addressed below.

A. "near neighbor"/"neighbor"

Claims 1 and 18 recite "near neighbor." Ex. 1001 at 24:48, 25:59. In a Joint

Claim Construction Chart ("JCC") in a related litigation[2], the Patent Owner proposed

that this term be construed to mean "[a] close, but not necessarily exact or the closest,

match of a feature vector, compact electronic representation, or set of extracted

features to another, that has a distance or difference that falls within a defined

threshold of a query." Ex. 1004 at 3. The Patent Owner also contended that

"neighbor" be construed in the same manner. *Id.* The Patent Owner has also argued

that "neighbor search" means "identifying" a neighbor, *i.e.*, "identifying" a "close, but

not necessarily exact or the closest, match of a feature vector, compact electronic

representation, or set of extracted features to another, that has a distance or difference

that falls within a defined threshold of a query." *See* Ex. 1020 at 14-15.

Reading in the limitation of "that has a distance or difference that falls within a

defined threshold of a query" is not correct under the "broadest reasonable

construction" standard. The doctrine of claim differentiation prohibits reading in this

limitation. For example, claim 1 of related U.S. Patent No. 8,010,988—which shares a

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[2] In this related litigation, captioned *Network-1 Technologies, Inc. v. Google Inc., et al.*, Case

No. 1:14-cv-2396 (S.D.N.Y.), Network-1 asserted other patents related to the '464

patent, namely U.S. Patent Nos. 8,010,988, 8,205,237, 8,640,179, and 8,656,441.

specification with the '464 patent—recites a "non-exhaustive search identifying a neighbor." Ex. 1021 at 25:24-25. In contrast, dependent claim 2 of the '988 patent further recites that the "non-exhaustive search identifying a neighbor" is "within a fixed radius," i.e., a defined threshold. *Id.* at 25:30-32. As another example, the '464 patent explains that *one* type of neighbor search is a "fixed radius search" – one where "if the database contains a vector that is within [τ] of a query, then there is a match." Ex. 1001 at 21:41-45. The '464 patent cites exemplary "neighbors," describing a "nearest neighbor search" as one that "always finds the closest point to the query," *id.* at 9:7-10, and "*approximate* nearest neighbor searches," describing those as searches that "provide any point within some small distance of the closest point." *Id.* at 9:10-14. These passages and claim limitations make clear that while a "neighbor" search *may* operate within a fixed radius (i.e., a "defined threshold") it need not do so.

Accordingly, the Patent Owner's construction of the terms "near neighbor," "neighbor," and "neighbor search," is not in accordance with the broadest reasonable construction of those terms. Google submits that, under the broadest reasonable construction applicable in this proceeding, "near neighbor" should be construed to mean "close, but not necessarily exact or the closest, match." Ex. 1003 at ¶ 35.

IV.   Claims 1-34 of the '464 Patent Are Unpatentable

A.   Claims 1-34 Are Unpatentable Under 35 U.S.C. § 101

Laws of nature, abstract ideas, and natural phenomena cannot be patented. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). When a patent

claims an abstract idea, like linking a media work to a business action as in the '464 patent, it must add "significantly more" to be patent-eligible. *Id.* at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012)); *Parker v. Flook*, 437 U.S. 584, 593-94 (1978). It is not sufficient to merely apply the abstract idea with a computer. *Alice*, 134 S. Ct. at 2359-60. Nor is it sufficient to limit the claim to "a particular technological environment" or to add "insignificant post solution activity" or "well-understood, routine, conventional activity." *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010); *Mayo*, 132 S. Ct. at 1294. Instead, a claim involving an unpatentable concept must contain "other elements or a combination of elements, sometimes referred to as an 'inventive concept,'" sufficient to prevent patenting the underlying concept itself. *Mayo*, 132 S. Ct. at 1294; *see also Flook*, 437 U.S. at 594; *SAP Am., Inc. v. Versata Dev. Grp., Inc.*, CBM2012-00001, Paper 70 at 29-30 (P.T.A.B. June 11, 2013). Another way a claim may recite "significantly more" than an abstract idea is to be "tied to a particular machine or apparatus" or "transform[] a particular article into a different state or thing." *Bilski*, 561 U.S. at 602. Under any of these analyses, the challenged claims fail to satisfy 35 U.S.C. § 101.

1. The '464 Patent Claims the Abstract Idea of Linking Media with a Business Action

Independent claim 1 of the '464 patent is directed to the idea of linking a media work such as an advertisement to an unspecified business action. Similar data processing steps have been found unpatentably abstract by the Federal Circuit. *See,*

e.g., *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 714-16 (Fed. Cir. 2014) (finding "receiving" media, "selecting" an advertisement, and "offering" the media and the advertisement insufficient to satisfy § 101)*, Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344, 1350-51 (Fed. Cir. 2014) (finding a process that employs "algorithms to manipulate existing information to generate additional information" ineligible under § 101), *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1331-34 (Fed. Cir. 2012) (finding a "computer aided method" including steps of "receiving" and "forwarding" data insufficient to satisfy § 101); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (finding the "mere collection and organization of data" insufficient to satisfy § 101).

The abstract idea in the claims has been performed manually for decades. For example, "Reader Service Cards" are a well-known manner of linking a media work (e.g., an advertisement in a magazine) to a business action (e.g., the advertiser sending information to a reader of the magazine). *See generally*, *e.g.*, Ex. 1014. Magazine publishers placed "reader service cards" in their magazines containing "an array of numbers, similar to a bingo card, with each number representing an advertisement contained in the periodical." *Id.* at 56. Interested readers could indicate an interest in an advertisement by circling a number associated with the advertisement and mailing the card to the publisher. *Id.* at 57. The publisher could process the card and send the inquiry to the advertiser, who could mail the interested reader information, add the reader to a mailing list, or take some other business-related action. *Id.* at 57-58. These

"reader service cards," also referred to as "bingo cards," have been in use since at least the 1930's. *See* Ex. 1015 at 2-3. Like the known practice of using reader service cards, the '464 patent claims the abstract business process of linking advertisements to business actions to gauge consumer interest.

2. Claims 1, 7-9, 18, and 24-26 Add Only Conventional Computer Technology to the Abstract Idea

To the abstract idea of linking a media work to a business action, independent claims 1 and 18 merely add a computer system comprising at least one computer and a user electronic device. Dependent claims 7 and 24 explain that the media work may be audio, video, or an image. Ex. 1001 at 25:18-19 and 26:28-30. Each of these elements relate solely to conventional technology. Ex. 1003 at ¶¶ 22-23. Dependent claims 8 and 25 add that the electronic devices are "different" from one another. Ex. 1001 at 25:20-24 and 26:31-36; Ex. 1003 at ¶ 22. Dependent claims 9 and 26 add that the user electronic device may be a television, set-top-box, video recorder, computer, cell phone, remote control, or portable device. Ex. 1001 at 25:25-29 and 26:37-40; Ex. 1003 at ¶¶ 23. The remaining claims only describe different things that data represents, such as advertisements. Ex. 1001 at 25:4-17, 20-24, and 31-50, 26:14-27, 31-36, and 41-62; Ex. 1003 at ¶ 22.

The patent is rife with admissions that the inventor *did not* invent any of the computer components recited in the claims. For example, the patent criticizes prior

art techniques, and states that its advantages lie in using generic technology without modification:

> Further, . . . modifications must also be made to the equipment in a user's home. Again, using the example of watermarking of print media, a PC must be fitted with a camera and watermark detection software must be installed. In the case of television, the detection of the identification signal is likely to occur at the set-top-box . . . [and] may require modifications to the hardware, which is likely to be prohibitively expensive. For example, the audible tone used by Digital Convergence to recognize television content, must be fed directly into a sound card in a PC. This requires a physical connection between the television and the PC, which may be expensive or at least inconvenient, and a sound card may have to be purchased.

Ex. 1001 at 3:46-4:14; *see also supra* Section II.B.1. In fact, Dr. Moulin personally used the computer technology recited by the challenged claims long before the application leading to the '464 patent was filed. Ex. 1003 at ¶ 23.

The recitation of such conventional computer technology, even in combination, has long been found insufficient to impart patent-eligibility. *See, e.g.,* *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (invalidating claims that "can be carried out in existing computers long in use, no new machinery being necessary," and that "can also be performed without a computer"); *see also Alice*, 134 S. Ct. at 2359-60

(invalidating claims that do not "purport to improve the functioning of the computer itself," or "effect an improvement in any other technology or technical field"); *SAP Am., Inc. v. Versata Dev. Grp., Inc.*, CBM2012-00001, Paper 70 at 30 (P.T.A.B. June 11, 2013) ("[t]he mere recitation of computer implementation or hardware in combination with an abstract idea . . . is not itself a significant, meaningful limitation on the scope of the claims.").

The '464 patent claims simply apply an abstract idea in a computer environment, which is insufficient to impart patent eligibility. *Alice*, 134 S. Ct. at 2359-60. This is distinguishable from the invention found patent-eligible in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014), which the Federal Circuit found recited an inventive concept that was "necessarily rooted in computer technology," for solving a problem "specifically arising in the realm of computer networks." In *DDR*, the Court considered claims that generate composite web pages combining elements of a host website with content from another website. The Court explained that the claims were patent-eligible under § 101 because they made a computer function differently. When the user clicks on an advertisement for a third party, the user is "no longer transported to the third party's website" as would usually occur with a click upon an advertisement in the prior art, 773 F.3d at 1257, but an "outsource provider" would direct the user to an "automatically-generated hybrid web page that combines visual 'look and feel' elements from the host website and

product information from the third-party merchant's website related to the clicked advertisement." *Id.*

The claims of the '464 patent are distinguishable from those in *DDR*. The claims do not make any computer—generic or otherwise—function any differently than it otherwise would. *Contra id.* Moreover, because the '464 patent claims a solution that was already known, *see infra* Section IV.B, there is no inventive concept in the claims. *Contra id.* Moreover, even if the '464 claims recite an inventive concept, they address a business problem, not one arising in the field of computing. The '464 patent explains that it provides a solution for advertisers who wish to "ensure that they receive the advertising time that was purchased." Ex. 1001 at 9:57-58; *see also* Section II.B.2. The purported solution is also not rooted in computer technology because it has been performed manually using, for example, reader service cards that enable a reader to receive information from an advertiser. *See generally* Ex. 1014.

None of the challenged claims adds anything significant to the underlying abstract idea of linking a media work to a business action, so they are unpatentable. *Alice*, 134 S. Ct. at 2355; *Flook*, 437 U.S. at 593-94. They are also unpatentable because they do not recite an inventive concept related to a problem in computer technology and any purported business solution was already known, *see infra* Section IV.B.

3. Dependent Claims 2-6, 10-17, 19-23, and 27-34 Add Only Descriptions of Types of Data

Some dependent claims, such as claims 2-6, 10, 19-23, and 27, only limit the claims to types of "information" associated with the media work, generic audio, video, images, or advertisements. Other dependent claims, including 11-17 and 28-34, only limit the claims to marketing and commerce techniques. These claims are insufficient to render the claims patentable under § 101.

To the abstract idea of linking a media work to a business action, the dependent claims add types of data such as "associated data" related to "one or more products or services," "a product category," "a website," "a manufacturer," or "an advertisement," in claims 2-6, 10, 19-23, and 27, Ex. 1001 at 25:4-17 and 29-30, and 26:14-27 and 41-42, and known marketing and commerce techniques, such as providing a "hyperlink to a URL," "registering a user" with a "service," or "allowing a user . . . to interact with a video stream," in claims 11-17 and 28-34. Ex. 1001 at 25:31-50 and 26:43-62.

The Federal Circuit has stated that a "process that employs mathematical algorithms that manipulate existing information to generate additional information is not patent eligible." *Digitech*, 758 F.3d at 1351. The *Digitech* court also explained that collections of "intangible . . . information" are ineligible under § 101. *Id.* at 1350. Moreover, merely limiting an otherwise-abstract claim to a particular technological environment fails to render the claim patentable. *Bilski*, 561 U.S. at 612; *see also Mayo*, 132 S. Ct. at 1294.

The claimed different types of data fail to make the claim patent eligible. *See*

Digitech, 758 F.3d at 1351. Moreover, the claimed marketing and commerce-related

steps fail to provide anything that constitutes a significant or meaningful limitation on

the scope of the claims as they are merely business or business-related distinctions. *See*

Bilski, 561 U.S. at 610-12. Accordingly, because claims 1-34 merely tie an abstract idea

to conventional computer technology used in a particular industry, they are

unpatentable under 35 U.S.C. § 101.

4. The '464 Patent Does Not Satisfy the Machine-or-Transformation Test

Claims 1-34 of the '464 patent are unpatentable under § 101 for the additional

reason that they are not tied to any particular machine and do not transform any

article into a different state or thing. As discussed above, they only recite standard

computer systems (claims 1 and 18) and user electronic devices (claims 1 and 18).

Dependent claims 8 and 26 recite that the user electronic devices may be implemented

as one of a variety of standard devices, such as televisions, set-top-boxes, video

recorders, computers, cell phones, remote controls, or generic portable devices. Ex.

1001 at 25:20-24, 26:37-40. The remaining claims discuss either types of data (claims

2-6, 10, 19-23, and 27), known marketing and commerce techniques (claims 11-17 and

28-34), or conventional technology (claims 7, 9, 26, and 28).

Nothing in the '464 patent indicates that there is anything special or particular

about these components. The '464 patent even admits that they were all known. *Supra*

Section II.B.1. And this minimal type of computer involvement in claims 1-34 has long been found insufficient to impart patent-eligibility. *See, e.g.*, *Benson*, 409 U.S. at 67 (invalidating claims that "can be carried out in existing computers long in use, no new machinery being necessary," and "can also be performed without a computer"); *Fort Props., Inc. v. American Master Lease LLC*, 671 F.3d 1317, 1323 (Fed. Cir. 2012) (invalidating claims "using a computer" because the computer did not "play a significant part in permitting the claimed method to be performed").

Finally, the challenged claims of the '464 patent also do not transform any article into a different state or thing. The claims merely describe linking a media work to a business action, something that is not a patent-eligible transformation. *See, e.g.*, *CyberSource*, 654 F.3d at 1370 (finding the "mere collection and organization of data" insufficient to meet the transformation prong of the machine-or-transformation test).

Because claims 1-34 of the '464 patent are not tied to a particular machine and do not transform articles, and because they claim abstract ideas without adding significantly more, the claims are unpatentable under 35 U.S.C. § 101.

B.   Claims 1-34 are Unpatentable Under 35 U.S.C. § 103

1.   *Ferris* is Prior Art Under 35 U.S.C. § 102(a)

International Publication No. WO 99/04568 (Ex. 1006, "*Ferris*") published on January 28, 1999, before the earliest claimed priority date of the '464 patent, and is prior art under at least 35 U.S.C. § 102(a).

2.   *Lambert* is Prior Art Under 35 U.S.C. § 102(a)

U.S. Patent No. 4,381,522 (Ex. 1007, "*Lambert*") published on April 26, 1983, before the earliest claimed priority date of the '464 patent, and is prior art under at least 35 U.S.C. § 102(a).

3.   *Gionis* is Prior Art Under 35 U.S.C. § 102(a)

"Similarity Search in High Dimensions via Hashing" (Ex. 1008, "*Gionis*") was published for the 25th International Conference on Very Large Data Bases, which was held on September 7-10, 1999, before the earliest claimed priority date of the '464 patent, and is prior art under at least 35 U.S.C. § 102(a). Ex. 1008 at 518. It was republished in a book, Proceedings of the 25th International Conference on Very Large Data Bases (VLDB), on November 1, 1999, also before the earliest claimed priority date of the '464 patent. *Id.*

4.   *Philyaw* is Prior Art Under 35 U.S.C. § 102(a)

PCT Application Publication WO 00/16205 (Ex. 1009, "*Philyaw*") published on March 23, 2000, before the earliest claimed priority date of the '464 patent, and is prior art under at least 35 U.S.C. § 102(a).

5.   *Goldstein* is Prior Art Under 35 U.S.C. § 102(a)

U.S. Patent No. 5,410,326 (Ex. 1010, "*Goldstein*") published on April 25, 1995, before the earliest claimed priority date of the '464 patent, and is prior art under at least 35 U.S.C. § 102(a).

6.   *Ferris* in Combination with *Lambert* and *Gionis* Renders Claims 1-11, 13-15, 18-28, and 30-32 Obvious Under 35 U.S.C. § 103

Ferris discloses a communication system. Ex. 1006 at Abstract. An exemplary embodiment of the system is shown in Figure 3 of the reference:
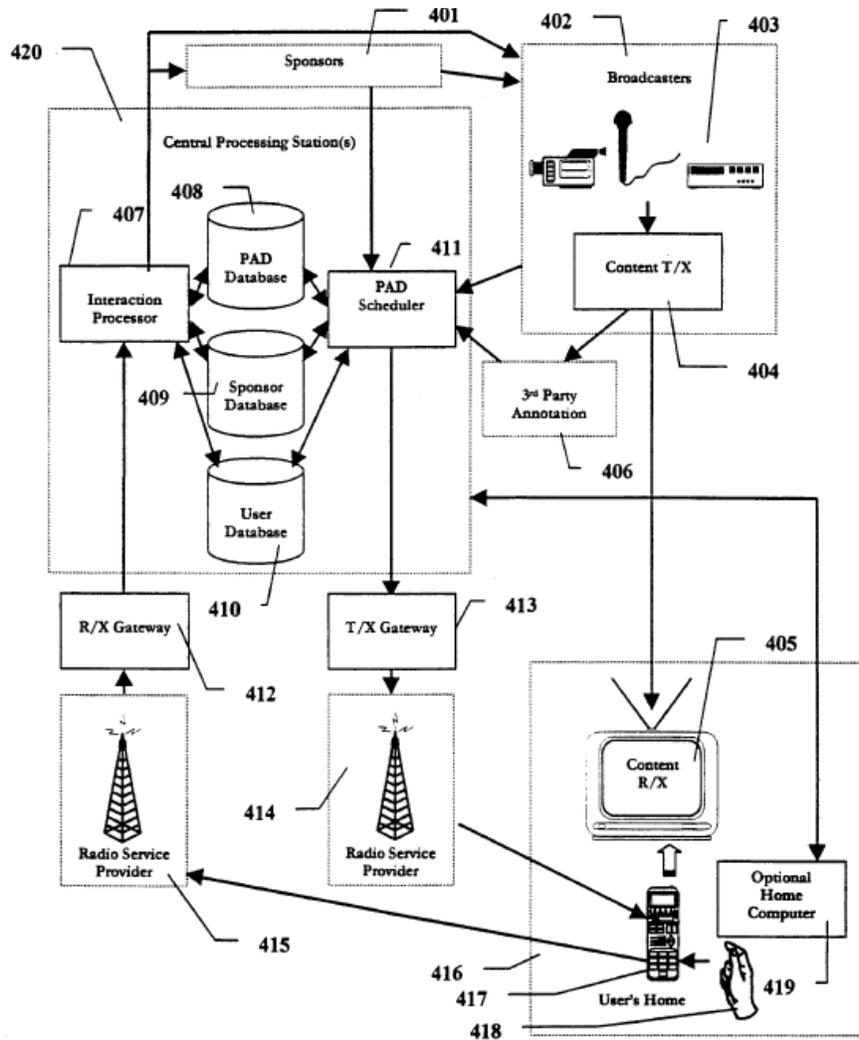
As shown, the system in *Ferris* includes Broadcasters 402, which generate and send video content to a Central Processing Station 420 and a user home 416. Ex. 1006 at Figure 3 and 10, ¶ 8 – 11, ¶ 1. Central Processing Station 420 receives the broadcast signal as it is sent and compares it to stored samples to determine whether any portions of the broadcast match any stored samples. Ex. 1006 at Figure 3 and 11, ¶ 3

– 12, ¶ 1. The comparison may be performed using sliding-window, square-of-difference techniques. *Id.* at 11, ¶ 3 – 12, ¶ 1.

User home 416 includes a user's receiving apparatus 417, which has a display on which advertisements, product and/or service offers, and other information, can be displayed to a user. Ex. 1006 at Abstract. If there is a match, Central Processing Station 420 sends a Programme Associated Data Unique Identifier, or PADUID, to receiving apparatus 417. *Id.* at 2, ¶ 5 (explaining the term "PAD"); 12, ¶ 3. A user may observe the advertisement or other information, and if interested, may actuate a button on receiving apparatus 417 to request more information. *See, e.g.,* Figure 2A, which depicts information about a power drill and enables the user to press a "BUY" button to initiate a purchase, an "INFO" button to request more information about the product, or "+1" and "-1" buttons to change the number of products requested:
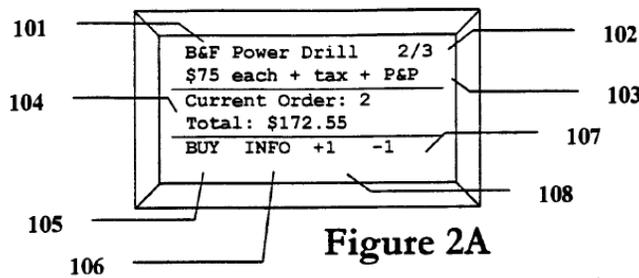
Figure 2A

Figure 2C depicts a screen displayed on receiving apparatus 417 if the user opts to buy the advertised item, and requests that the user select a payment method (113) or cancel the order (117):
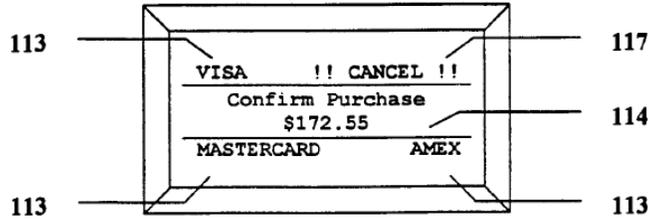
And Figure 4 depicts an embodiment where, while a viewer is viewing a show on a television (broadcast receiver 501), the viewer's handset displays an offer related to the show, such as the offer depicted in Figure 2A:
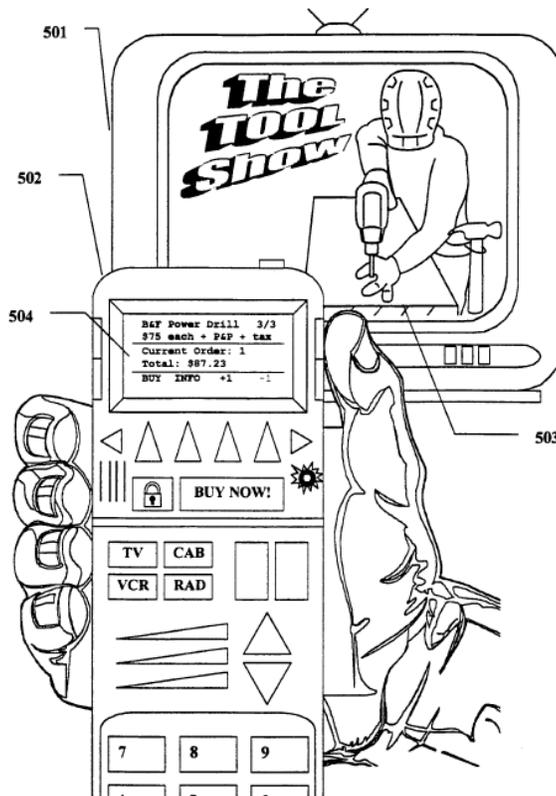
See also pp. 23-24 (describing Figures 2A, 2C, and 4).

If a user presses a button, for example, to initiate a purchase of an advertised item, receiving apparatus 417 sends a signal to Central Processing System related to the PADUID, such as to shop for the product displayed in the broadcast, track a

purchased package, request more information about a product, or the like. *Id.* at 13,

¶ 3, and 27, ¶ 2. Central Processing Station 420 may then send receiving apparatus 417

a response to that signal.

a. Implementation of *Ferris'* Broadcaster 402

To the extent *Ferris* does not explicitly disclose the hardware implementation of

Broadcaster 402, it would have been obvious to one of ordinary skill in the art to

implement Broadcaster 402 using a computer, because doing so was well known in

the art and would enable bidirectional communication between Broadcast Receiver

405 and Broadcaster 402. For example, bidirectional communication (as opposed to

unidirectional, or one-way, communication) enables systems such as

video-on-demand, where a viewer can request a particular program from a

broadcaster. Ex. 1003 at ¶ 58. As one example, *Lambert* taught a hardware

implementation of a broadcaster using a computer in 1983. Specifically, *Lambert*

taught a cable television system comprising a minicomputer 11. Ex. 1007 at Fig. 1.

Minicomputer 11 provides switching control signals to selectively couple video

programs for sending to television transmitters 14 for broadcasting the programs to

viewers. *Id.* at Figure 1, 2:34-49. *Lambert* enables viewers to "conveniently select a

particular program of interest and *have that program scheduled for viewing* shortly after

selection." *Id.* at 1:6-12 (emphasis added).

Much like the system in *Ferris*, *Lambert* teaches that programs can feature

products for purchase by users, such as automobiles, boats, home repair products,

31

and tools. *See id.* at 3:19-30 (explaining that advertisers can prepare programs long enough to "provide an interested consumer with useful information on more complex products and services that will assist the consumer in making intelligent buying decisions"); *see also* Ex. 1006 at Figures 2A, 2C, 4, and p. 23.

It would merely be a matter of design choice to implement Broadcaster 402 (as in *Ferris*) as a computer (as in *Lambert*). Ex. 1003 at ¶ 61. One of ordinary skill in the art would have done so to enable viewers to conveniently select when to watch a particular program, which could lead to more viewers for advertisements. Ex. 1007 at 1:6-12, 3:20-37; Ex. 1003 at ¶ 61. Moreover, this combination would merely be a simple substitution of one known element (a broadcaster as in *Ferris*) for another known element (a broadcaster implemented as a computer as in *Lambert*) to obtain predictable results – such as bidirectional communications, which creates a more useful system in that information can be communications between both systems. Ex. 1003 at ¶ 62. Therefore, it would have been obvious to one of ordinary skill in the art to implement Broadcaster 402 using a computer such as minicomputer 11.

b. Implementation of *Ferris'* Comparison

A matching engine in *Ferris* "continuously compares input from the various broadcast channels with" a "database of various audio and/or video samples (supplied ahead of time) taken from the programmes . . . which are to be augmented with data." Ex. 1006 at p. 11, ¶ 3 – p. 12, ¶ 1. *Ferris* teaches that this "matching engine" uses a "commonly known algorithm (such as a sliding-window, averaged,

square-of-difference system with an activation threshold)" to match samples with broadcasted programs. Ex. 1006 at p. 12, ¶ 1.

To the extent that *Ferris* does not teach that its comparison includes a "non-exhaustive, near neighbor search," it would have been obvious to one of ordinary skill in the art to implement the comparison using such a search, because doing so was well known in the art and would provide a robust and more efficient system of matching broadcast media with stored media. Ex. 1003 at ¶¶ 65-66. For example, *Gionis* discusses a method for approximate similarity searching in high-dimensional data such as image and video databases, pattern recognition, and other data having a large number of relevant features. Ex. 1008 at 518. *Gionis* discloses preprocessing a set of objects ('P') "so as to efficiently answer queries by finding the point in P closest to a query point q." Ex. 1008 at 520. *Gionis* contrasts its algorithm with those in the prior art by "introduc[ing] a new indexing method for approximate nearest neighbor." *Id.* at 519, col. 1, ¶ 3. The resulting algorithm is "*non-exhaustive*" in that it does not require the query to be compared to every record in the reference data set being searched until a match is identified. For example, page 521 of *Gionis* discusses performing a K-Nearest Neighbor Search for a query q, which outputs the "K points p_i closest to q" by searching "until we either encounter at least $c \cdot l$ points (for c specified later) or use all l indices." Ex. 1008 at 521, col. 1, ¶ 4 (emphases added); Ex. 1003 at ¶ 67.

Because *Gionis* stops searching after locating the "at least $c \cdot l$ points," the

query q will not be compared to every point (the claimed

"non-exhaustive . . . search"). Ex. 1003 at ¶ 68. *Gionis* explains that its system has

many advantages over the prior art, such as a reduction in disk accesses and a

speed-up of the algorithm. *See* Ex. 1008 at 519 (explaining that the algorithm is

"significantly faster than the earlier methods") and 526-28 (quantifying advantages of

the algorithm). Accordingly, *Gionis* discloses a "correlating, by the computer system

using a non-exhaustive, near neighbor search."

It would merely be a matter of design choice and a substitution of known

elements to implement the comparison in *Ferris* as the non-exhaustive, near neighbor

search in *Gionis*. Ex. 1003 at ¶ 69. *Ferris* and *Gionis* both relate to determining matches

between a particular piece of media, like video data, and stored samples of possible

matches. *See* Ex. 1006 at p. 11, ¶ 3 – p. 12, ¶ 1 ("continuously compares input from

the various *broadcast channels* with these *samples*, and uses a commonly known

algorithm . . . to determine when a '*match*' has occurred") and Ex. 1008 at p. 518, § 1

("A *similarity search problem* involves a *collection of objects* (e.g., documents,

images) . . . some examples are: . . . image and *video databases*") (emphases added).

Moreover, such a substitution would create a more powerful and faster-operating

system, which is a predictable and desirable result. *See* Ex. 1008 at 525-27; Ex. 1003 at

¶ 70. Therefore, it would have been obvious to modify *Ferris* to utilize a Broadcaster

comprising a minicomputer, as in *Lambert* and to implement the comparison as a

non-exhaustive, nearest neighbor search, as in *Gionis.*

   As further detailed below[3], the combination of *Ferris*, *Lambert*, and *Gionis*

teaches all elements of claims 1-11, 13-15, 18-28, and 30-32 of the '464 patent.[4]

[1.P] A method comprising:	Non-limiting preamble.
[1.A] receiving, by a computer system including at least one computer, a first electronic media work;	*Ferris* teaches a Central Processing System 420 and Broadcasters 402 (the claimed "computer system including at least one computer"). *See, e.g.*, p. 10-11 and Figure 3. Broadcasters 402 broadcast a transmission signal including live and taped video (the claimed "first electronic media work"). *See, e.g.*, p. 10-11. Central Processing System 420 receives the transmission signal (the claimed "receiving, by a computer system"). *See, e.g.*, Figure 3. For example: "Broadcasters 402 generate content from a number of sources 403, depending on the broadcast medium in use. For example, a television broadcaster might utilise *live feed from video cameras, and video played from tape*, as primary sources." P. 10, ¶ 8 – p. 11, ¶ 1. "In one envisaged embodiment of such a monitoring system, each central processing station contains a database of various audio and/or video samples (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data." P. 11, ¶ 3. *Lambert* teaches a broadcast system that comprises minicomputer 11 (the claimed "computer system including at

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[3] All emphasis in the claim charts in this petition is added unless otherwise noted.

[4] As Google argues in Section IV.C.1, the claimed "tag" is indefinite. Accordingly,

Google assumes meanings of this term only for the purposes of applying the prior art.

	least one computer"). *See*, *e.g.*, Figure 1. For example:
	"*Minicomputer 11 also provides switching control signals* over line 23 to video switches 24 that selectively couple a selected program source that may be a video tape cassette, disc or film source 25 or other television program source 26, such as scheduled programs from television broadcast stations being rebroadcast over the cable system, *to designated ones of television transmitters 14 for broadcast over a selected channel determined by switching control signals on line 23.*" 2:34-42.
[1.B] correlating, by the computer system using a non-exhaustive, near neighbor search, the first electronic media work with an electronic media work identifier;	*Ferris* teaches that Central Processing System 420 compares (the claimed "correlating, by the computer system") the received transmission signal (the claimed "first electronic media work") to samples (the claimed "electronic media work identifier") to determine which portions of the signal are to be augmented with data. *See*, *e.g.*, pp. 11-12. The comparison may be performed using an algorithm (the claimed "search") technique to match the transmission signal with one or more samples. *Id.* For example:
	"In one envisaged embodiment of such a monitoring system, each central processing station *contains a database of various audio and/or video samples* (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data. A matching engine then *continuously compares input* from the *various broadcast channels with these samples*, and uses a commonly *known algorithm* (such as a sliding-window, averaged, square-of-difference system with an activation threshold) to determine when a 'match' has occurred." P. 11, ¶ 3 – p. 12, ¶ 1.
	Gionis teaches a method for approximate similarity searching that preprocesses a set of objects in order to efficiently perform

	a Nearest Neighbor Search (the claimed "near neighbor")[5] that does not require the query to be compared to every record in

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[5] In construing terms in other patents related to the '464 patent, the Patent Owner

argued that "non-exhaustive search" be construed to mean a "search using an

algorithm designed to locate a match without requiring the query to be compared to

every record in the reference data set being searched until a match is identified," that

"neighbor" be construed to mean a "close, but not necessarily exact or the closest,

match of a feature vector, compact electronic representation, or set of extracted

features to another, that has a distance or difference that falls within a defined

threshold of a query," and that "non-exhaustive neighbor search" be construed to

mean a "non-exhaustive search to identify a neighbor." *See* Ex. 1004 at 3. The Patent

Owner also contended that "neighbor" and "near neighbor" have the same

construction. *Id.* The Patent Owner also contended that "neighbor search" means

"identifying a neighbor." Ex. 1020 at 14-15. Even if the Board adopts these

constructions, *Gionis* still teaches the claimed elements. Ex. 1003 at ¶ 72, n.4. For

example, page 521 of *Gionis* discusses performing a K-Nearest Neighbor Search for a

query q, which outputs the "K points p_i closest to q" by searching "until we either

encounter at least $c \cdot l$ points (for c specified later) or use all l indices." Ex. 1008 at

521, col. 1, ¶ 4. Because Gionis stops searching after locating the "at least $c \cdot l$

	the reference data set being searched until a match is identified (the claimed "non-exhaustive") on the size of a searched database. *See*, *e.g.,* p. 519-21. For example: "[W]e introduce a new indexing method for approximate nearest neighbor." P. 519, col. 1, ¶ 3. "The nearest neighbor search problem is defined as follows: Definition 1 (*Nearest Neighbor Search* (NNS)) Given a set P of n objects represented as points in a normed space l_p^d, preprocess P so as to efficiently answer queries by finding the point in P closest to a query point q." P. 520, col. 1, ¶ 2. "For Approximate K-NNS, we output the K points p_i closest to q." P. 521, col. 1, ¶ 4.
[1.C] storing, by the computer system, correlation information associating the first electronic media work and the electronic media work identifier;	*Ferris* teaches using a known algorithm to compare the transmission signal with stored samples, and determining that a match occurs only when a particular threshold is reached. *See*, *e.g.*, pp. 11-12. In determining whether that threshold was reached, Central Processing Station 420 stores the result of the comparison in memory[6] (the claimed "storing, by the computer system, correlation information associating the first electronic media work and the electronic media work identifier"). For example: "each central processing station contains a database of various audio and/or video samples (supplied ahead of

points," the query q will not be compared to every point (the claimed

"non-exhaustive . . . search"). Ex. 1003 at ¶ 72, n.4.

[6] The result must be at least temporarily stored, e.g., in random access memory or

buffer memory, because computers necessarily store calculations and other data in

memory. Ex. 1003 at ¶ 72, n.5.

	time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data. A *matching engine* then continuously compares input from the various broadcast channels with these samples, and uses a commonly known algorithm (such as a sliding-window, averaged, square-of-difference system *with an activation threshold*) to *determine when a 'match' has occurred.*" P. 11, ¶ 3 – p. 12, ¶ 1.
[1.D] accessing, by the computer system, associated information related to an action to be performed in association with one or more electronic media works corresponding to the electronic media work identifier;	*Ferris* teaches that Central Processing Station 420 (the claimed "computer system") may determine that a display message is due to be sent to a user device, and may retrieve the display message received from sponsors 401 from a database (the claimed "accessing . . . associated information related to an action"). *See, e.g.,* p. 12. The display message may be an action such as an advertisement to purchase an item (the claimed "action to be performed"). *See, e.g.,* Figs. 2A and 2C. The message may be determined to be transmitted based on the comparison between the samples and the transmission signal (the claimed "action to be performed in association with one or more electronic media works corresponding to the electronic media work identifier"). *See, e.g.,* p. 12. For example: "Commercial broadcasters will also have programmes and segments (such as *infomercials* and *commercials*) *provided by sponsors 401*, for insertion." P. 10, ¶ 8 – p. 11, ¶ 1. "A matching engine then continuously *compares input* from the various broadcast channels with these samples, and uses a commonly known algorithm (such as a sliding-window, averaged, square-of-difference system with an activation threshold) to *determine when a 'match' has occurred.*" P. 11, ¶ 3 – p. 12, ¶ 1. "When the next display message is *due to be transmitted*, as may be *detected at the PAD scheduler 411* using either a polling or, preferably, an interrupt mechanism, it is *retrieved from a PAD database 408*, given a unique identification number (PADUID), and sent to a transmission gateway 413, which may be physically remote, where it is translated into the correct format to be sent over a radio transmission service 414." P. 12, ¶ 3.

[1.E] generating, by the computer system, a tag associated with the first electronic media work;	*Ferris* teaches that Central Processing system 420 may retrieve a display message from a database and assign (the claimed "generating, by the computer system") a PADUID to the display message (the claimed "tag associated with the first electronic media work"). *See, e.g.*, p. 12. For example: "When the next *display message* is due to be transmitted, as may be detected at the PAD scheduler 411 using either a polling or, preferably, an interrupt mechanism, *it is . . . given a unique identification number (PADUID) . . . .*" P. 12, ¶ 3.
[1.F] providing, from the computer system to a user electronic device, the first electronic media work and the associated tag;	*Ferris* teaches that Central Processing system 420 may send the display message and PADUID to a remote control device 417 (the claimed "providing, from the computer system to a user electronic device, . . . the associated tag"). *Ferris* also discloses that Broadcasters 402 may send the transmission signal to remote control device 417, which is associated with a broadcast receiver 405, via broadcast receiver 405 (the claimed "providing, from the computer system . . . the first electronic media work"). *See, e.g.*, Figure 3 and pp. 12-13. Remote control device 417 may receive the signal via broadcast receiver 405 using a microphone. *See, e.g.*, pp. 6-7. For example: "When the next *display message* is due to be transmitted, as may be detected at the PAD scheduler 411 using either a polling or, preferably, an interrupt mechanism, *it is . . . sent to a transmission gateway 413*, which may be physically remote, where it is translated into the correct format to be sent over a radio transmission service 414." P. 12, ¶ 3. "Broadcasters 402 generate content from a number of sources 403, depending on the broadcast medium in use. For example, a television broadcaster might utilise live feed from video cameras, and video played from tape, as primary sources. Commercial broadcasters will also have programmes and segments (such as infomercials and commercials) provided by sponsors 401, for insertion. In the normal course of events this combined content stream is fed into a *transmission mechanism 404 for broadcast to into a user's home 416 where the content carrier is acquired and*

	the content reconstructed and displayed using a broadcast receiver 405." P. 10, ¶ 8 – p. 11, ¶ 1.
	"The apparatus, for example *a remote control* can determine whether a channel is selected on a broadcast receiver. In the case of a remote control this can be by way of selection by a user. A confirmation of the correct channel can be obtained by *receiving a signal from the broadcast receiver, for example using a microphone and comparing the signal with a predetermined signal or a signal received at this apparatus.*" P. 6, ¶ 5.
	"For now, simply note that the device 417 will display the incoming PAD display data to the user at the appropriate cue point, and may accept interaction from the user on the basis of the information so displayed. *Details of such interaction*, where relevant, may be *transmitted back to the central control station 420*, together with the unique handset/user id (HUUID) and *PADUID of the initial display data.*" P. 13, ¶ 3.
[1.G] obtaining, by the computer system from the user electronic device, a request related to the associated tag;	*Ferris* teaches Central Processing Station 420 receiving a return signal from remote control 417 (the claimed "obtaining, by the computer system from the user electronic device, a request"). *See, e.g.*, Figure 3 and p. 14. The return signal may include, for example, the PADUID and a command (the claimed "a request related to the associated tag"). *See, e.g.*, p. 13. For example:
	"For now, simply note that the *device 417* will display the incoming PAD display data to the user at the appropriate cue point, and may accept interaction from the user on the basis of the information so displayed. *Details of such interaction*, where relevant, may be *transmitted back to the central control station 420*, together with the unique handset/user id (HUUID) and *PADUID of the initial display data.*" P. 13, ¶ 3.
	"In any event, the return signal is picked up by the receiver network 415 of a radio service provider (which may or may not be the same as provider 414), and forwarded to a reception gateway 412. This gateway formats the interaction data in a manner suitable for

	processing by the rest of the system, and arranges for the translated message to be *transported to the appropriate central processing site 420*, which may be physically remote." P. 14, ¶ 2. "FIGS. 2J and 2L are given to illustrate some other potential uses of the device, less directly connected with programme-associated material In FIG 2J the user is prompted 306 to *enter a package tracking code 307 . . . .* Similarly, FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product vendor/identification code 311.*" P. 27, ¶ 2.
[1.H] generating, using the computer system, machine-readable instructions based upon the associated information to be used in performing, at the user electronic device, the action; and	*Ferris* teaches that Central Processing Station 420 receives a request from a user, and generates a response to enable receiving apparatus 417 to take further action. *See, e.g.,* Figures 2A, 2C, and 2L. For example, Central Processing Station 402 may receive a request including a product/vendor identification code and generate a message that includes information about the requested product (the claimed "generating, using the computer system, machine-readable instructions based upon the associated information to be used in performing, at the user electronic device, the action").[7] *See, e.g.,* Figures 2A and 2L, and p. 27. For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example),* if this is successful the user may initiate a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.

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[7] The message sent by Central Processing Station 402 comprises "machine-readable instructions" because the information is received by and displayed on receiving apparatus 417. Ex. 1003 at ¶ 72, n.6.

[1.I] providing, from the computer system to the user electronic device, the machine-readable instructions to perform the action in response to the request.	*Ferris* teaches that Central Processing Station 420 may respond to a request from a user. *See, e.g.,* Figures 2A, 2C, and 2L. For example, Central Processing Station 420 may generate and send (the claimed "providing, from the computer system") a message to remote control 417 (the claimed "to the user electronic device") that includes information about a requested product (the claimed "the machine-readable instructions to perform the action in response to the request"). *Id.* For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example),* if this is successful the user may initiate a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.
[2] The method of claim 1, wherein the associated information is related to one or more products or services.	*Ferris* teaches that Central Processing Station 420 may generate and send a message to remote control 417 that includes information about a requested product (the claimed "associated information is related to one or more products or services"). *See, e.g.,* p. 27 and Figures 2A and 2L. For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified,* in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example) . . . ." P. 27, ¶ 2.
[3] The method of claim 2, wherein the associated information is related to names of the one or more products or services.	*Ferris* teaches that Central Processing Station 420 may generate and send a message to remote control 417 that includes the name of a requested product (the claimed "associated information is related to names of the one or more products or services"). *See, e.g.,* pp. 23 and 27 and Figures 2A and 2L. For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified,* in a manner

	similar to that used by PAD product offers (as shown in FIG. 2A, for example) . . . ." P. 27, ¶ 2. "FIG. 2A illustrates the offer screen of the example from FIG. 4, after some interaction. *Line 101 contains a brief description of the product*, and line 103 gives pricing information." P. 23, ¶ 4; *see also* Fig. 2A ("*B&F Power Drill*").
[4] The method of claim 2, wherein the associated information is related to a product category associated with the one or more products or services.	*Ferris* teaches that Central Processing Station 420 may receive a message from remote control 417 requesting to purchase an album that contains a song that is currently playing, and that Central Processing Station 420 may send back information for displaying confirmation screens for purchase of the album that contains the song (the claimed "associated information is related to a product category associated with the one or more products or services"). *See*, *e.g.*, p. 27 and Figures 1 and 2I. For example: "Pressing the button corresponding to the 'BUY' label 305, or pressing the 'BUY NOW button (9 on FIG. 1) will initiate a *purchase of the album* or single *currently playing*. In this case, the user will be *prompted* with *further confirmation screens* (not shown in detail here)." P. 27, ¶ 1.
[5] The method of claim 2, wherein the associated information is related to a manufacturer of the one or more products or services.	*Ferris* teaches that Central Processing Station 420 may generate and send a message to remote control 417 that includes the manufacturer of a requested product, such as a manufacturer of a product or an artist who wrote a song (the claimed "associated information is related to a manufacturer of the one or more products or services"). *See* Figures 2A, 2I, and pp. 23 and 26-27. For example: "FIG. 2A illustrates the offer screen of the example from FIG. 4, after some interaction. *Line 101 contains a brief description of the product*, and line 103 gives pricing information." P. 23, ¶ 4; *see also* Fig. 2A ("*B&F* Power Drill"). "The system may be used with a number of different types of broadcast receiver, and FIG. 2I shows the sort of display that might be shown to accompany radio broadcasts. Details of the current station are shown 301,

	and an indication of the receiver type 312. *Brief details of the currently playing song*, together with the current time, are given *303*." P. 26, ¶ 4 – p. 27, ¶ 1; *see also* Fig. 2I ("*Oasis: Wonderwall*"). "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311*. This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example)*, if this is successful the user may initiate a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.
[6] The method of claim 2, wherein the associated information is related to a website associated with the one or more products or services.	*Ferris* teaches that the remote control 417 may send a message to Central Processing Station 420; in response, Central Processing Station 420 may send a request to a web site owned by the sponsor (the claimed "website associated with the one or more products or services"). *See, e.g.,* pp. 6, and 14-15. For example: "The present invention provides apparatus and method for providing simple, efficient and economic display of advertisements, *product and service offers*, and other *information* (collectively, 'display data') to the users of broadcast receivers, and is intended to have particular application where said display data is related to the programmes picked up by such receivers." P. 6, ¶ 4. "the interaction might *constitute a request for further information*, in which case the sponsor will be so informed. Here, a convenient format may be a *'virtual hit' on the sponsor's Internet Web site*, suitably tagged so that the sponsor is aware of the mechanism through which the interest has been channelled." P. 14, ¶ 4 – p. 15, ¶ 1.
[7] The method of claim 1, wherein the first electronic media work comprises at least one of an audio, a video, or an image.	*Ferris* teaches that Broadcasters 402 may send a transmission signal that includes video data and audio data (the claimed "first electronic media work comprises at least one of an audio, a video, or an image"). *See, e.g.,* pp. 10-12 and Figure 3. For example: "Broadcasters 402 generate content from a number of

	sources 403, depending on the broadcast medium in use. For example, a television broadcaster might utilise *live feed from video cameras*, and *video played from tape*, as primary sources." P. 10, ¶ 8. "In one envisaged embodiment of such a monitoring system, each central processing station contains a database of *various audio and/or video samples* (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data." P. 11, ¶ 3.
[8] The method of claim 1, wherein the first electronic media work is received from a first electronic device, the associated information is received from a second electronic device, and the first electronic device, the second electronic device, and the user electronic device are different from one another.	*Ferris* teaches that Central Processing Station 420 may receive the transmission signal from broadcasters 402 (the claimed "first electronic device"). *See, e.g.*, Figure 3. *Ferris* also teaches receiving the display message and other information from sponsors 401 (the claimed "second electronic device"). *Ferris* also teaches that broadcasters 402, sponsors 401, and remote control 417 are all different from one another (the claimed "the first electronic device, the second electronic device, and the user electronic device are different from one another"). *See, e.g.*, Figure 3 and pp. 10, 11, and 13. For example: "*Broadcasters 402 generate content* from a number of sources 403, depending on the broadcast medium in use . . . . Commercial broadcasters will also have programmes and segments (such as *infomercials* and *commercials*) *provided by sponsors 401*, for insertion. In the normal course of events this *combined content stream is fed into a transmission mechanism 404 for broadcast to into a user's home 416 . . . .*" P. 10, ¶ 8 – p. 11, ¶ 1. "The message is received *in a given user's home 416 by receiving apparatus 417*, which in the preferred embodiment, is a remote control device for said broadcast receiver 405" P. 13, ¶ 1.
[9] The method of claim 1, wherein the user electronic device is at least one of a television, a set-top-box, a video	*Ferris* discloses remote control device 417 (the claimed "user electronic device is . . . a remote control, or a portable device"). *See, e.g.*, Figures 1, 3, and 4, and p. 6. For example: "The apparatus, for example *a remote control* can determine whether a channel is selected on a broadcast

recorder, a computer, a cell phone, a remote control, or a portable device.	receiver. In the case of a remote control this can be by way of selection by a user." P. 6, ¶ 5.
[10] The method of claim 1, wherein the associated information is related to an advertisement.	*Ferris* teaches that Central Processing Station 420 may generate and send a message to remote control 417 that includes information about a requested product (the claimed "associated information is related to an advertisement"). *See, e.g.*, p. 6 and Figure 1. For example: "The invention also provides apparatus and method for *users*, where applicable, to *interact with said display data* (for example, to order an offered product, or *to request more information about an advertised good or service)*, and for the details of such interaction (collectively, 'interaction data') to be sent back to the sponsoring party *for processing*." P. 6, ¶ 4.
[11] The method of claim 10, wherein the action comprises electronically registering a user associated with the user electronic device with at least one of a service or a product related to the advertisement.	*Ferris* teaches that remote control 417 can request more information about a good; the user can receive the information by postal mail (the claimed "electronically registering a user associated with the user electronic device with at least one of a service or a product related to the advertisement"). Users can also register to place bets on a horse race. *See, e.g.*, pp. 6 and 15 and Figure 2G. For example: "The invention also provides apparatus and method for *users*, where applicable, to *interact with said display data* (for example, to order an offered product, or *to request more information about an advertised good or service)*, and for the details of such interaction (collectively, 'interaction data') to be sent back to the sponsoring party *for processing*." P. 6, ¶ 4. "As the *user's name and address* is held in the user database 410, the process of purchasing, or *requesting the mail-out of information*, is greatly simplified." P. 15, ¶ 3. "FIG. 2G illustrates how the *system may be used as a betting terminal*, where the details of the event so bet upon may be broadcast on the currently selected <medium,

	channel> pair. Here, a simple horse racing screen is shown. *The user is prompted to select place a bet* and told of the time available so to do 212. Various horses 211 may be selected by pressing the appropriate side variable function button (15 on FIG. 1). Note that this is a simplified example, and in reality, such a *system would deal with setting the wager, displaying more information, including a larger number of potential candidates*, etc." P. 25, ¶ 2.
[13] The method of claim 10, wherein the action comprises allowing a user associated with the user electronic device to interact with a video stream related to the advertisement.	*Ferris* teaches that remote control 417 may be used to interact with a transmission (the claimed "allowing a user associated with the user electronic device to interact with a video stream"), such as by betting on a horse race or voting in a contest. *See, e.g.*, pp. 14-15 and 24-25, and Figures 2D and 2G. The transmission is related to at least the advertisements that air during the transmission and *vice versa* (the claimed "video stream related to the advertisement"). *Id.* For example: "There are a number of possible operations available to the interaction processor upon receipt of a message . . . In yet another common transaction, details are passed back to broadcasters 402, allowing the production of *genuinely interactive broadcasts* - for example, by allowing feedback *voting on a talent contest*, or *program story line selection*." P. 14, ¶ 4 – p. 15, ¶ 1. "FIG. 2G illustrates how the *system may be used as a betting terminal*, where the details of the event so bet upon may be broadcast on the currently selected <medium, channel> pair. Here, a simple horse racing screen is shown. *The user is prompted to select place a bet* and told of the time available so to do 212. Various horses 211 may be selected by pressing the appropriate side variable function button (15 on FIG. 1). Note that this is a simplified example, and in reality, such a system would deal with setting the wager, displaying more information, including a larger number of potential candidates, etc." P. 25, ¶ 2. "Another use of the system is for *interactive voting on broadcast content*, and FIG. 2D shows how the display might look when this feature is in use. Here, the *user is*

	prompted 116 to enter his/her vote for one of the acts 115 (in a talent show, for example), by pressing one of the side variable function buttons (15 on FIG. 1)." P. 24, ¶ 3.
[14] The method of claim 1, wherein the action comprises presenting a user associated with the user electronic device questions about the media work.	*Ferris* teaches that remote control 417 can vote or place bets related to the broadcast the user is watching (the claimed "presenting a user associated with the user electronic device questions about the media work"). *See, e.g.*, pp. 24-25 and Figures 2D and 2G. For example: "FIG. 2G illustrates how the *system may be used as a betting terminal*, where the details of the event so bet upon may be broadcast on the currently selected <medium, channel> pair. Here, a simple horse racing screen is shown. *The user is prompted to select place a bet* and told of the time available so to do 212. Various horses 211 may be selected by pressing the appropriate side variable function button (15 on FIG. 1). Note that this is a simplified example, and in reality, such a *system would deal with setting the wager, displaying more information, including a larger number of potential candidates*, etc." P. 25, ¶ 2. "Another use of the system is for *interactive voting on broadcast content*, and FIG. 2D shows how the display might look when this feature is in use. Here, the *user is prompted 116 to enter his/her vote for one of the acts 115 (in a talent show, for example)*, by pressing one of the side variable function buttons (15 on FIG. 1)." P. 24, ¶ 3.
[15] The method of claim 1, wherein the action comprises displaying additional information on the user electronic device.	*Ferris* teaches that Central Processing Station 420 may generate and send a message to remote control 417 that includes information about a requested product, in response to a user entering a product/vendor identification code. Remote control 417 may then display received information related to the product (the claimed "action comprises displaying additional information on the user electronic device"). *See, e.g.*, Figure 2L and p. 27. For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor*

	identification code 311. This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example)*, if this is successful the user may initiate a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.
[18.P] A method comprising:	Non-limiting preamble.
[18.A] receiving, by a computer system including at least one computer, associated information related to an action to be performed in association with a first electronic media work identifier;	*Ferris* teaches a Central Processing System 420 and Broadcasters 402 (the claimed "computer system including at least one computer"). *See, e.g.*, pp. 10-11 and Figure 3. *Ferris* teaches that Central Processing Station 420 (the claimed "computer system") may determine that a display message is due to be sent to a user device, and may retrieve the display message received from sponsors 401 from a database (the claimed "receiving . . . associated information related to an action"). *See, e.g.*, pp. 10-11. The display message may be an action such as an advertisement to purchase an item (the claimed "action to be performed"). *See, e.g.*, Figs. 2A and 2C. The message may be determined to be transmitted based on the comparison between the samples and the transmission signal (the claimed "action to be performed in association with one or more electronic media works corresponding to the electronic media work identifier"). *See, e.g.*, p. 12. For example:

"Commercial broadcasters will also have programmes and segments (such as *infomercials* and *commercials*) *provided by sponsors 401*, for insertion." P. 10, ¶ 8 – p. 11, ¶ 1.

"A matching engine then continuously *compares input* from the various broadcast channels with these samples, and uses a commonly known algorithm (such as a sliding-window, averaged, square-of-difference system with an activation threshold) to *determine when a 'match' has occurred.*" P. 11, ¶ 3 – p. 12, ¶ 1.

"When the next display message is *due to be transmitted*, as may be *detected at the PAD scheduler 411* using either a polling or, preferably, an interrupt mechanism, it is *retrieved from a PAD database 408*, given a unique identification number (PADUID), and sent to a transmission gateway 413, which may be physically |

	remote, where it is translated into the correct format to be sent over a radio transmission service 414." P. 12, ¶ 3. *Lambert* teaches a broadcast system that comprises minicomputer 11 (the claimed "computer system including at least one computer"). *See, e.g.*, Figure 1. For example: "*Minicomputer 11 also provides switching control signals* over line 23 to video switches 24 that selectively couple a selected program source that may be a video tape cassette, disc or film source 25 or other television program source 26, such as scheduled programs from television broadcast stations being rebroadcast over the cable system, *to designated ones of television transmitters 14 for broadcast over a selected channel determined by switching control signals on line 23*." 2:34-42.
[18.B] receiving, by the computer system, a first electronic media work;	*Ferris* teaches that Broadcasters 402 broadcast a transmission signal including live and taped video (the claimed "first electronic media work"). *See, e.g.*, p. 10-11. Central Processing System 420 receives the transmission signal (the claimed "receiving, by the computer system"). *See, e.g.*, Figure 3. For example: "Broadcasters 402 generate content from a number of sources 403, depending on the broadcast medium in use. For example, a television broadcaster might utilise *live feed from video cameras, and video played from tape*, as primary sources." P. 10, ¶ 8. "In one envisaged embodiment of such a monitoring system, each central processing station contains a database of various audio and/or video samples (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data." P. 11, ¶ 3.
[18.C] correlating, by the computer system using a non-exhaustive, near neighbor search, the first electronic	*Ferris* teaches that Central Processing System 420 compares (the claimed "correlating, by the computer system") the received transmission signal (the claimed "first electronic media work") to samples (the claimed "electronic media work identifier") to determine which portions of the signal are to be augmented with data. *See, e.g.*, pp. 11-12. The comparison may be

media work with the first electronic media work identifier;	performed using an algorithm (the claimed "search") technique to match the transmission signal with one or more samples. *Id.* For example:
	"In one envisaged embodiment of such a monitoring system, each central processing station *contains a database of various audio and/or video samples* (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data. A matching engine then *continuously compares input* from the *various broadcast channels with these samples*, and uses a commonly *known algorithm* (such as a sliding-window, averaged, square-of-difference system with an activation threshold) to determine when a 'match' has occurred." P. 11, ¶ 3 – p. 12, ¶ 1.
	Gionis teaches a method for approximate similarity searching that preprocesses a set of objects in order to efficiently perform a Nearest Neighbor Search (the claimed "near neighbor") that does not require the query to be compared to every record in the reference data set being searched until a match is identified (the claimed "non-exhaustive") on the size of a searched database. *See, e.g.,* p. 519-21. For example:
	"[W]e introduce a new indexing method for approximate nearest neighbor." P. 519, col. 1, ¶ 3.
	"The nearest neighbor search problem is defined as follows: Definition 1 (*Nearest Neighbor Search* (NNS)) Given a set P of n objects represented as points in a normed space l_p^d, preprocess P so as to efficiently answer queries by finding the point in P closest to a query point q." P. 520, col. 1, ¶ 2.
	"For Approximate K-NNS, we output the K points p_i closest to q." P. 521, col. 1, ¶ 4.
[18.D] storing, by the computer system, correlation information	*Ferris* teaches using a known algorithm to compare the transmission signal with stored samples, and determining that a match occurs only when a particular threshold is reached. *See, e.g.*, pp. 11-12. In determining whether that threshold was

associating the first electronic media work and the first electronic media work identifier;	reached, Central Processing Station 420 stores the result of the comparison in memory[8] (the claimed "storing, by the computer system, correlation information associating the first electronic media work and the electronic media work identifier"). For example:
	"each central processing station contains a database of various audio and/or video samples (supplied ahead of time) taken from the programmes (including advertisement and infomercials) which are to be augmented with data. A *matching engine* then continuously compares input from the various broadcast channels with these samples, and uses a commonly known algorithm (such as a sliding-window, averaged, square-of-difference system *with an activation threshold*) to *determine when a 'match' has occurred.*" P. 11, ¶ 3 – p. 12, ¶ 1.
[18.E] generating, by the computer system, a tag associated with the first electronic media work;	*Ferris* teaches that Central Processing system 420 may retrieve a display message from a database and assign (the claimed "generating, by the computer system") a PADUID to the display message (the claimed "a tag associated with the first electronic media work"). *See, e.g.*, p. 12. For example:
	"When the next *display message* is due to be transmitted, as may be detected at the PAD scheduler 411 using either a polling or, preferably, an interrupt mechanism, *it is . . . given a unique identification number (PADUID) . . . .*" P. 12, ¶ 3.
[18.F] providing, from the computer system to a first user electronic device, the first	*Ferris* teaches that Central Processing system 420 may send the display message and PADUID to a remote control device 417 (the claimed "providing, from the computer system to a first user electronic device, . . . the associated tag"). *Ferris* also discloses that Broadcasters 402 may send the transmission

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[8] The result must be at least temporarily stored, e.g., in random access memory or buffer memory, because computers necessarily store calculations and other data in memory in order to utilize that such data. Ex. 1003 at ¶ 72, n.7.

electronic media work and the tag;	signal to remote control device 417, which is associated with a broadcast receiver 405, via broadcast receiver 405 (the claimed "providing, from the computer system . . . the first electronic media work"). *See, e.g.*, Figure 3 and pp. 12-13. Remote control device 417 may receive the signal via broadcast receiver 405 using a microphone. *See, e.g.*, pp. 6-7. For example:
	"When the next *display message* is due to be transmitted, as may be detected at the PAD scheduler 411 using either a polling or, preferably, an interrupt mechanism, *it is . . . sent to a transmission gateway 413*, which may be physically remote, where it is translated into the correct format to be sent over a radio transmission service 414." P. 12, ¶ 3.
	"Broadcasters 402 generate content from a number of sources 403, depending on the broadcast medium in use. For example, a television broadcaster might utilise live feed from video cameras, and video played from tape, as primary sources. Commercial broadcasters will also have programmes and segments (such as infomercials and commercials) provided by sponsors 401, for insertion. In the normal course of events this combined content stream is fed into a *transmission mechanism 404 for broadcast to into a user's home 416 where the content carrier is acquired and the content reconstructed and displayed using a broadcast receiver 405*." P. 10, ¶ 8 – p. 11, ¶ 1.
	"The apparatus, for example *a remote control* can determine whether a channel is selected on a broadcast receiver. In the case of a remote control this can be by way of selection by a user. A confirmation of the correct channel can be obtained by *receiving a signal from the broadcast receiver, for example using a microphone and comparing the signal with a predetermined signal or a signal received at this apparatus*." P. 6, ¶ 5.
	"For now, simply note that the device 417 will display the incoming PAD display data to the user at the appropriate cue point, and may accept interaction from the user on the basis of the information so displayed.

	Details of such interaction, where relevant, may be *transmitted back to the central control station 420*, together with the unique handset/user id (HUUID) and *PADUID of the initial display data*." P. 13, ¶ 3.
[18.G] receiving, at the computer system, a request generated at the first user electronic device and related to the tag;	*Ferris* teaches Central Processing Station 420 receiving a return signal from remote control 417 (the claimed "receiving, at the computer system, a request generated at the first user electronic device"). *See, e.g.*, Figure 3 and p. 14. The return signal may include, for example, the PADUID and a command (the claimed "a request generated at the first user electronic device and related to the tag"). *See, e.g.*, p. 13. For example:
	"For now, simply note that the *device 417* will display the incoming PAD display data to the user at the appropriate cue point, and may accept interaction from the user on the basis of the information so displayed. *Details of such interaction*, where relevant, may be *transmitted back to the central control station 420*, together with the unique handset/user id (HUUID) and *PADUID of the initial display data*." P. 13, ¶ 3.
	"In any event, the return signal is picked up by the receiver network 415 of a radio service provider (which may or may not be the same as provider 414), and forwarded to a reception gateway 412. This gateway formats the interaction data in a manner suitable for processing by the rest of the system, and arranges for the translated message to be *transported to the appropriate central processing site 420*, which may be physically remote." P. 14, ¶ 2.
	"FIGS. 2J and 2L are given to illustrate some other potential uses of the device, less directly connected with programme-associated material In FIG 2J the user is prompted 306 to *enter a package tracking code 307* . . . . Similarly, FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product vendor/identification code 311*." P. 27, ¶ 2.
[18.I] generating, using the computer system, machine-	*Ferris* teaches that Central Processing Station 420 receives a request from a user, and generates a response to enable receiving apparatus 417 to take further action. *See, e.g.*, Figures

readable instructions based upon the associated information to be used in performing, at a user electronic device, the action; and	2A, 2C, and 2L. For example, Central Processing Station 402 may receive a request including a product/vendor identification code and generate a message that includes information about the requested product (the claimed "generating, using the computer system, machine-readable instructions based upon the associated information to be used in performing, at a user electronic device, the action").[9] *See, e.g.*, Figures 2A and 2L, and p. 27. For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example),* if this is successful the user may initiate a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.
[18.J] providing, from the computer system to the first user electronic device, the machine-readable instructions to perform the action in response to the request.	*Ferris* teaches that Central Processing Station 420 may respond to a request from a user. *See, e.g.*, Figures 2A, 2C, and 2L. For example, Central Processing Station 420 may generate and send (the claimed "providing, from the computer system") a message to remote control 417 (the claimed "to the user electronic device") that includes information about a requested product (the claimed "the machine-readable instructions to perform the action in response to the request"). *Id.* For example: "FIG. 2L illustrates a 'shop from home' usage, in which the user is *prompted 310 to enter a joint product/vendor identification code 311.* This will initiate a remote query to *display information about the product so identified, in a manner similar to that used by PAD product offers (as shown in FIG. 2A, for example),* if this is successful the user may initiate

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[9] The message sent by Central Processing Station 402 comprises "machine-readable instructions" because the information is received by and displayed on receiving apparatus 417. Ex. 1003 at ¶ 72, n.8.

	a purchase, as with the PAD example discussed previously." P. 27, ¶ 2.	
[19] The method of claim 18, wherein the associated information is related to one or more products or services.	*See* above discussion for claim 2; *see also Ferris* at p. 27 and Figures 2A and 2L.	
[20] The method of claim 19, wherein the associated information is related to names of the one or more products or services.	*See* above discussion for claim 3; *see also Ferris* at pp. 23 and 27 and Figures 2A and 2L.	
[21] The method of claim 19, wherein the associated information is related to a product category associated with the one or more products or services.	*See* above discussion for claim 4; *see also Ferris* at p. 27 and Figures 1 and 2L.	
[22] The method of claim 19, wherein the associated information is related to a manufacturer of the one or more products or services.	*See* above discussion for claim 5; *see also Ferris* at Figures 2A, 2I, and pp. 23 and 26-27.	
[23] The method of claim 19, wherein the associated information is related to a website associated with the one or more products or services.	*See* above discussion for claim 6; *see also Ferris* at pp. 6 and 14-15.	
[24] The method of claim 18, wherein the first electronic media work comprises at least one of an audio, a video, or an image.	*See* above discussion for claim 7; *see also Ferris* at pp. 10-12 and Figure 3.	
[25] The method of claim 18, wherein the first electronic media work is received from a first electronic device, the associated information is received from a second electronic device, and the first electronic device, the second electronic device, and the first user electronic device are different from one another.		*See* above discussion for claim 8; *see also Ferris* at Figure 3 and pp. 10, 11, 13.
[26] The method of claim 18, wherein the first user electronic device is at least one of a television, a set-top-box, a video recorder, a computer, a cell phone, a remote control, or a portable device.	*See* above discussion for claim 9; *see also Ferris* at p. 6 and Figures 1, 3, and 4.	
[27] The method of claim 18, wherein the associated information is related to an advertisement.	*See* above discussion for claim 10; *see also Ferris* at p. 6 and Figure 1.	
[28] The method of claim 27, wherein the action comprises electronically registering a user associated with the first user electronic device with at least one of a service or a product related to the advertisement.	*See* above discussion for claim 11; *see also Ferris* at pp. 6 and 15 and Figure 2G.	
[30] The method of claim 27, wherein the action comprises allowing a user associated with the first user electronic device to interact with a video stream related to the advertisement.	*See* above discussion for claim 13; *see also Ferris* at pp. 14-15 and 24-25, and Figures 2D and 2G.	

[31] The method of claim 18, wherein the action comprises presenting a user associated with the first user electronic device questions about the media work.	*See* above discussion for claim 14; *see also Ferris* at pp. 24-25 and Figures 2D and 2G.
[32] The method of claim 18, wherein the action comprises displaying additional information on the first user electronic device.	*See* above discussion for claim 15; *see also Ferris* at p. 27 and Figure 2L.

7.   *Ferris* in combination with *Lambert, Gionis,* and *Philyaw* Renders Claims 16 and 33 Obvious Under 35 U.S.C. § 103

As explained above, *Ferris* in combination with *Lambert* and *Gionis* teaches all elements of independent claims 1 and 18. Claims 16 and 33 depend from claims 1 and 18, respectively, and recite that "the machine-readable instructions comprise a hyperlink to a URL." Ex. 1001 at 25:47-48, 26:59-60. To the extent *Ferris* may not explicitly disclose that its instructions "comprise a hyperlink to a URL," it would have been obvious to one of ordinary skill in the art to modify the instructions of *Ferris* to comprise a hyperlink, because such instructions were well known and would have enabled a more robust system by which users could receive information through web pages. Ex. 1003 at ¶ 75. For example, *Philyaw* discloses such instructions.

Philyaw relates to a system for linking analog signals to advertiser URLs. Ex. 1009 at Abstract. In one embodiment, a trigger signal stored inside audio signal 111 is received by a user's PC 302. *Id.* at p. 9, ll. 1-5 and Figure 3. Audio signal 111 also contains advertiser product information, which PC 302 extracts and appends to a URL related to an "Advertiser Reference Server" ("ARS") 308. *Id.* at p. 9, ll. 3-10 and Figure 3, Path A. ARS 308 returns a URL corresponding to advertiser server 312 to

PC 302 (the claimed "machine-readable instructions comprise a hyperlink to a URL").

Id. at p. 9, ll. 10-16 and Figure 3, Path B. PC 302 retrieves information from advertiser

312. *Id.* at p. 9, ll. 14-17 and Figure 3, Paths C and D. *Philyaw* teaches that companies

would use this system to provide the user with the ability to easily respond to multiple

companies. *Id.* at p. 2, ll. 2-10.

It would have been obvious to one of ordinary skill to modify *Ferris'* Central

Processing Station 420 to send machine-readable instructions comprising a URL (as in

Philyaw) because the combination would be a predictable combination of prior art

elements according to known methods. Ex. 1003 at ¶ 75. For example, *Ferris* discusses

sending product descriptions and purchase opportunities to interested users based on

information associated with received media. *See, e.g.*, Ex. 1006 at Fig. 2A and 23, ¶ 4.

Philyaw discusses sending advertiser product information to enable a user PC to

acquire information about a product, such as coupons, news programs, or

advertisements. Ex. 1009 at p. 21, ll. 23-28. One of ordinary skill in the art would have

thought of adding a URL to the types of information sent by *Ferris'* Central

Processing Station 420 as it would create a more robust system by giving advertisers

another channel over which to solicit viewers. Ex. 1003 at ¶¶ 75-76.

Such a combination would have been especially obvious because it would

merely be the use of a known technique – *e.g.*, sending a URL having information – to

improve similar devices – *i.e.*, communication devices. Ex. 1003 at ¶ 76. Moreover,

sending a URL in place of or in addition to other information would have had

predictable advantages, such as providing another channel over which a viewer can interact with an advertiser. Ex. 1003 at ¶ 76.

8. ***Ferris* in Combination with *Lambert*, *Gionis*, and *Goldstein* Renders Claims 12, 17, 29, and 34 Obvious Under 35 U.S.C. § 103**

As noted above, *Ferris* in view of *Lambert* teaches independent claims 1 and 18.

a.   Claims 12 and 29

Claims 12 and 29 depend from claims 1 and 18, respectively, and recite that "the action comprises electronically providing at least one of a coupon or a certificate related to the advertisement." Ex. 1001 at 25:35-37, 26:47-49. To the extent *Ferris* does not explicitly disclose that its action "comprises electronically providing at least one of a coupon or a certificate related to the advertisement," it would have been obvious to one of ordinary skill in the art to modify the action in *Ferris*, e.g., an advertisement to purchase an item, to comprise providing a coupon related to the advertisement, because such actions were well known and would have enabled a system by which viewers could receive discounts, concepts known to induce viewers to purchase items. Ex. 1003 at ¶ 82. For example, *Goldstein* teaches these elements.

Goldstein describes a programmable remote control device for interacting with consumer products and advertisements. Ex. 1010 at 1:6-11. The device in *Goldstein* contains a display capable of presenting menus and advertisements. *Id.* at 2:52-60. The remote control device detects advertisements by reading data signals embedded in audio or video portions of a broadcast signal. *Id.* at 2:5-14. The remote control

displays the advertisements. *Id.* at 4:14-26, 44-54. The advertisements presented to the user may contain particular discounts and prices. *Id.* at Fig. 8 ("Circuit City Proudly offers John Consumer a one-time extended service contract on your 20" Sony TV *ONLY $29.95*") (the claimed "action comprises electronically providing at least one of a coupon or a certificate related to the advertisement").

It would have been obvious to one of ordinary skill to modify *Ferris'* Central Processing Station 420 to send a coupon (as in *Goldstein*) because the combination would be predictable. Ex. 1003 at ¶ 82. For example, *Ferris* explains that users are "more likely to initiate an impulse purchase of information, products and services" if an offer is made to the user. Ex. 1006 at p. 1, ¶¶ 3-4. Providing a discount using a coupon gives users another motivation to make a purchase. Ex. 1003 at ¶¶ 82-83.

Moreover, such a combination would have been especially obvious because it is merely the use of a known technique – *e.g.*, coupons – to improve similar devices and systems – *e.g.*, systems for sending advertisements. *Ferris* and *Goldstein* relate to television broadcast and receipt systems. *See, e.g.*, Ex. 1006 at Fig. 3, Broadcasters 402 and Ex. 1010 at Fig. 1A, Cable Converter 61 and Television RF 9.

b. Claims 17 and 34

Claims 17 and 34 depend from claims 1 and 18, respectively, and recite that "the machine-readable instructions comprise instructions to dial a telephone number." Ex. 1001 at 25:49-50 and 26:61-62. To the extent *Ferris* does not explicitly disclose that its action "comprises electronically providing at least one of a coupon or a

certificate related to the advertisement," it would have been obvious to one of

ordinary skill in the art to modify *Ferris'* Central Processing Station 420 to send

machine-readable instructions to dial a telephone number (as in *Goldstein*) because the

combination would be predictable. Ex. 1003 at ¶ 86. For example, *Ferris* explains that

users are "more likely to initiate an impulse purchase of information, products and

services" if an offer is made to the user. Providing instructions to enable dialing of a

telephone number provides users with another motivation to make a purchase. Ex.

1003 at ¶¶ 86-87. *Goldstein* teaches these elements.

As explained above, *Goldstein* relates to a programmable remote control device

for interacting with consumer products and advertisements. Ex. 1010 at 1:6-11. The

remote control device may display advertisements. *See* Fig. 7 ("To Order *Call 762-

1212*"). The remote control device enables the user to initiate a command to dial a

phone number in the advertisement. *Id.* at 4:14-26 ("Upon command selection made

on the universal remote control device, *a command is sent to the telephone interface to

establish a phone connection with the service provider, i.e., fast food delivery service, etc.* This phone

connection will permit an order to be placed for the particular product being

advertised") and 44-54 ("The optical sensing of data buried in an advertised broadcast

may also be used to facilitate product-ordering. By detecting the data message buried

in a video signal used to advertise a product, *the phone number for the vendor supplying the

product may be decoded and retained in the remote control device. A phone connection can then be*

established between remote control system and vendor"); *see also* Fig. 7 (the claimed "machine-readable instructions comprise instructions to dial a telephone number").

It would have been obvious to one of ordinary skill to modify *Ferris*' Central Processing Station 420 to send machine-readable instructions comprising instructions to dial a telephone number (as in *Goldstein*) because the combination would be predictable. Ex. 1003 at ¶ 86. For example, *Ferris* explains that users are "more likely to initiate an impulse purchase of information, products and services" if an offer is made to the user. Ex. 1006 at p. 1, ¶¶ 3-4. Providing a viewer with an easy manner of initiating a telephone call with an advertiser could lead to more communication between the advertisers and the viewer, and thus more sales. Ex. 1003 at ¶ 86.

Such a combination would have been especially obvious because it is merely the user of a known technique – *e.g.*, instructions to dial a telephone number – to improve similar devices and systems – *e.g.*, systems for sending advertisements. Ex. 1003 at ¶ 87. For example, *Ferris* and *Goldstein* relate to television broadcast and receipt systems. *See*, *e.g.*, Ex. 1006 at Fig. 3, Broadcasters 402 and Ex. 1010 at Fig. 1A, Cable Converter 61 and Television RF 9.

C. Claims 1-34 are Unpatentable Under 35 U.S.C. § 112

1. Claims 1-34 are Indefinite Under 35 U.S.C. § 112, ¶ 2

"[A] patent must be precise enough to afford clear notice of what is claimed, thereby 'appris[ing] the public of what is still open to them.'" *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). A patent must thus "conclude with one

or more claims particularly pointing out and distinctly claiming the subject matter which the [applicant] regards as the invention." 35 U.S.C. § 112, ¶ 2. "A patent claim is indefinite, if its language, read in light of the specification delineating the patent and the prosecution history, 'fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.'" *Dealersocket,* CBM2014-00201, Paper 11 at 30-31 (citing *Nautilus*, 134 S. Ct. at 2124). Under this test, claims 1-34 are indefinite and unpatentable under 35 U.S.C. § 112, ¶ 2.

a. The Claimed "tag" Renders Claims 1-34 Indefinite

Independent claim 1 recites, in part: "generating, by the computer system, a tag associated with the first electronic media work; providing, from the computer system to a user electronic device, the first electronic media work and the associated tag." Ex. 1001 at 24:57-61. Independent claim 18 recites similar features. Ex. 1001 at 26:1-4. There are four possibilities for interpreting the term "tag." However, as detailed below, none of these possibilities is supported by the '464 patent. Therefore, independent claims 1 and 18 fail to inform, with reasonable certainty, those skilled in the art about the scope of "tag" under § 112, ¶ 2.

The '464 patent defines the *verb* "tagging" as a process of extracting a representative feature vector, assigning a unique identifier to the vector, and entering the identifier into "WID" and "WIDAT" databases. Ex. 1001 at 7:39-47. But the '464 patent fails to define the *noun* "tag." While the *noun* "tag," in general, may have a definition, Ex. 1003 at ¶¶ 42, 50-51, the term is unclear in the context of the patent

claims. Ex. 1003 at ¶ 42. Looking to the "tagging" process described in the specification yields at least three possibilities for the claimed "tag:" the "feature vector," the "unique identifier," or a record in the "WID" and "WIDAT" databases. Ex. 1003 at ¶ 43.

The first possibility – that the claimed "tag" refers to the "feature vector" – may be correct because the feature vector is mentioned in the context of the process of "tagging." Ex. 1001 at 7:39-47; Ex. 1003 at ¶ 44. Moreover, the inventor admitted during prosecution that there is an "*extent*" to which the "extracted features *may be considered a 'tag.'*" Ex. 1002 at 237 (emphases added). However, while the claims require that the tag be provided "from the computer system to a user electronic device," there is no disclosure in the '464 patent of a computer system that sends the feature vector to the user electronic device. Monitoring Center 210 in Figure 2 or Real-Time Centralized Monitoring 580 in Figure 5 may extract a feature vector. *See* Ex. 1001 at Figure 1; 6:12-17 and 33-37; 7:39-47; Figure 5; 14:21-28. But the '464 patent does not disclose Monitoring Center 210 or Real-Time Centralized Monitoring 580 sending the feature vector to the user electronic device, so the feature vector cannot be the claimed "tag." Ex. 1003 at ¶ 44.

The second possibility – that the claimed "tag" refers to the "unique identifier" – could also be correct because the unique identifier is also mentioned in the context of the process of "tagging." Ex. 1001 at 7:39-47; Ex. 1003 at ¶ 45. However, while the claims require that the tag be provided "from the computer system to a user

electronic device," the patent attempts to distinguish itself from earlier systems by highlighting the fact that *no identifier* is sent to the user electronic device. *See, e.g.*, Ex. 1001 at 4:15-20 ("In view of the foregoing disadvantages of inserting an identification code into a work, thereby altering the existing signal, there is a need for techniques of identifying a work *without the need of inserting an identification code into a work*.") and 3:46-54 ("All the foregoing techniques of inserting code into a work can be categorized as active techniques in that they must alter the existing signal, whether it is music, print, television or other media, such that an identification code is also present. *There are several disadvantages that active systems share . . . . all media must be processed, before it is delivered to the end user, to contain these active signals*") (emphases added). Accordingly, the unique identifier cannot be the claimed "tag." Ex. 1003 at ¶ 45.

The third possibility is that the "tag" represents a record in one of the "WIDAT" or "WID" databases. Ex. 1003 at ¶ 46. The WIDAT database contains the unique identifiers ("work identifiers") and associated information. *See* Ex. 1001 at Figure 1 and 6:18-24. Just as with the other possible interpretations of "tag," there is no discussion in the patent of the work identifiers being sent to the user electronic device, so the work identifiers cannot be the claimed "tag." Ex. 1003 at ¶ 46. Associated information may be, for example, URLs, etc. Ex. 1001 at 6:28-32; *see also* claims 6, 16, 23, 33. While associated information may be sent to the user electronic device, the independent claims and the disclosure require that such associated information only be sent to a user electronic device *after the tag and work are sent to the*

user electronic device and the system *receives a request from related to the tag*, so the associated information also cannot be the claimed "tag." Ex. 1001 at 24:59-25:3. The WID database contains work identifiers and feature vectors. *See* Ex. 1001 at Figure 1 and 6:12-17. But as explained above, *neither work identifiers nor feature vectors* are provided to the user electronic device. Ex. 1003 at ¶ 46.

One embodiment of the '464 patent discloses that a user's local computer (e.g., audience member device 210) can store a database such as the WIDAT or WID database. *See, e.g.*, Ex. 1001 at 11:15-31 and Figure 2. However, in this embodiment, there is no disclosure of audience member device 210 "providing" the extracted feature vector, the unique identifier, or a record in the WID or WIDAT databases "to a user electronic device," as required by independent claims 1 and 18, because there is no disclosure that audience member device 210 provides an extracted feature vector *to itself*. Ex. 1003 at ¶ 47. Instead, a lookup operation merely searches for a matching feature vector in WID database 110. *See* Ex. 1001 at Figure 1 (showing feature vectors 114 in WID 110) and 6:38-42 (explaining that operations can "search for a matching feature vector 114").

Accordingly, neither the feature vector, nor the unique identifier, nor a record in a database can be the claimed "tag." Ex. 1003 at ¶ 48.

Nothing in the prosecution history removes the ambiguity associated with the claimed "tag." The concept of providing a "tag" to a user electronic device was added to the claims during prosecution in order to overcome a prior art rejection. *See* Ex.

67

1002 at 232. While the inventor indicated that there is an "*extent*" to which "extracted features *may be considered a 'tag,'*" Ex. 1002 at 237 (emphases added), as discussed above, the '464 patent does not disclose sending any feature vector to the user electronic device. Therefore, the feature vector cannot be the claimed "tag." Ex. 1003 at ¶ 49.

Because the '464 patent is not clear in its definition of the word "tag," and appears to distance itself from any of the above possibilities as being the "tag," one of ordinary skill may instead take the plain meaning of the term "tag" to be a reference to a "watermark." Ex. 1003 at ¶ 50.

For example, in the art of automatic content recognition algorithms, a system could embed a watermark in a media work before sending the media work to a viewer. *See, e.g.*, Ex. 1016 at 2:47-50, Ex. 1003 at ¶ 50. For example, a watermark may be inserted into an audio signal in such a manner to guarantee perceptibility and robustness. Ex. 1016 at 8:54-62, Ex. 1003 at ¶ 50. Such watermarks can be "associated" with a media work in that they are stored inside of the media work and may be used to control how the media work may be accessed. Ex. 1016 at 9:15-23, Ex. 1003 at ¶50. In discussing the prior art, the '464 patent also appears to equate the term "tag" with a watermark. *Id.* "Even if a [prior art] system is enthusiastically adopted, the logistics involved with inserting bar codes or *watermarks* into, say every printed advertisement, are formidable. Further, even if the rate of adoption is very

rapid, it nevertheless remains true that *during the early deployment of the system, most works will not be tagged.*" Ex. 1001 at 3:51-60 (emphases added).

However, the '464 patent disclaims any notion that such a watermark is inserted into a media work. Ex. 1003 at ¶¶ 45, 51. The patent criticizes such prior art techniques of "inserting code into a work" because they "alter the existing signal." *See* Ex. 1001 at 3:46-49. The patent also asserts that in its invention, there is no "need of inserting an identification code into a work," *id.* at 4:16-20, and that "[n]one of the embodiments of the invention require modification to the work or content." *Id.* at 24:29-31. Therefore, a watermark also cannot be the claimed "tag."

Accordingly, one of ordinary skill would not know from the specification and the prosecution history, with reasonable certainty, how to interpret the "tag" in independent claims 1 and 18. Ex. 1003 at ¶ 52. Independent claims 1-18, and their dependent claims 2-17 and 19-34 are thus indefinite and unpatentable under 35 U.S.C. § 112, ¶ 2. *See Nautilus,* 134 S. Ct. at 2124.

2. Claims 1-34 Lack Written Description Support Under 35 U.S.C. § 112, ¶ 1

A patent's specification must reasonably convey to those of skill in the art that, as of the filing date, the inventor had possession of the claimed subject matter; otherwise, the claimed subject matter lacks written description support under 35 U.S.C. 112, ¶ 1. *Ariad Pharms., Inc. v. Eli Lilly & Co.,* 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*). "One shows that one is 'in possession' of the invention by describing

the invention, with all its claimed limitations, not that which makes it obvious."

Lockwood v. Am. Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997).

While the meaning of terms, phrases, or diagrams in a disclosure is to be interpreted from the vantage point of one skilled in the art, "all the limitations must appear in the specification." *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008) (quoting *Lockwood*, 107 F.3d at 1572). Thus, "[t]he question is not whether a claimed invention is an obvious variant of that which is disclosed in the specification." *Id.* Rather, to find the written description requirement satisfied where the claimed subject matter is not expressly described in the specification, "'the "missing descriptive matter must necessarily be present in the [original] application's specification such that one skilled in the art would recognize such a disclosure.'" *TurboCare Div. of Demag Delaval TurboMachinery Corp. v. Gen. Elec. Corp.*, 264 F.3d 1111, 1119 (Fed. Cir. 2001) (quoting *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998)) (alteration in original). Under this test, claims 1-34 lack written description support under 35 U.S.C. § 112, ¶ 1.

> **a.   The '464 Patent Lacks Support for the Claimed "providing, from the computer system to a user electronic device, the first electronic media work and the associated tag"**

Independent claim 1 recites, in part: "providing, from the computer system to a user electronic device, the first electronic media work and the associated tag." Ex. 1001, 24:59-61. Independent claim 18 contains a similar recitation. Ex. 1001, 26:3-4.

These recitations of independent claims 1 and 18 lack written description support under 35 U.S.C. 112, ¶ 1, because the specification did not reasonably convey to those of skill in the art that, as of the filing date, the inventor had possession of the claimed subject matter.

As explained in Section IV.C.1.a above, the claimed "tag" has four possible meanings. These four possible meanings are the "feature vector," the "unique identifier," a record in the "WID" and "WIDAT" databases, or a watermark. Ex. 1003 at ¶¶ 43-47, 50. Applying each of these meanings to the claims reveals that for all of them, the specification lacks written description support for "providing, from the computer system to a user electronic device, the first electronic media work and the associated tag," as recited by independent claims 1 and 18, at least because the only disclosed computer systems that act on any of the possible tags—audience member devices and monitoring centers—do not provide "to a user electronic device, the first electronic media work and the associated tag."

> **i.** **The Disclosed Audience Member Devices do not Provide "to a user electronic device, the first electronic media work and the associated tag."**

Audience member devices, such as audience member device 210 (in Figure 2)[10], are described as extracting feature vectors from media works, which are associated with unique identifiers, for example "work identifier 116." Ex. 1001 at 6:10-12 and 10:24-36. But audience member device 210 *is* the claimed "user electronic device." *See* Ex. 1001 at 11:10-12 (referring to audience member device 210 as a "*user's* local machine") and 13:20-24 (referring to the "user device . . . 210" in Figure 2); Ex. 1003 at ¶ 38. So there is no disclosure of audience member device 210 providing anything, much less the extracted feature vector or unique identifier, to the claimed "user electronic device." Ex. 1003 at ¶ 38.

There is also no disclosure of an audience member device that uses, extracts, or determines the feature vectors or unique identifiers providing the "first electronic media work" to the claimed "user electronic device," again, because the audience member device *is* the user electronic device. Indeed, the *only device* disclosed as "providing" the electronic media work to an audience member device 210 is the satellite, cable, or terrestrial TV broadcast 220. *See, e.g.,* Figure 2, depicting satellite, cable, or terrestrial TV broadcast 220 sending a signal to audience member device 210:

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[10] Figures 3, 4, 6, and 7 depict different embodiments, but the following analysis related to Figure 2 applies equally to those Figures, because they are similar to Figure 2 in the respects discussed.
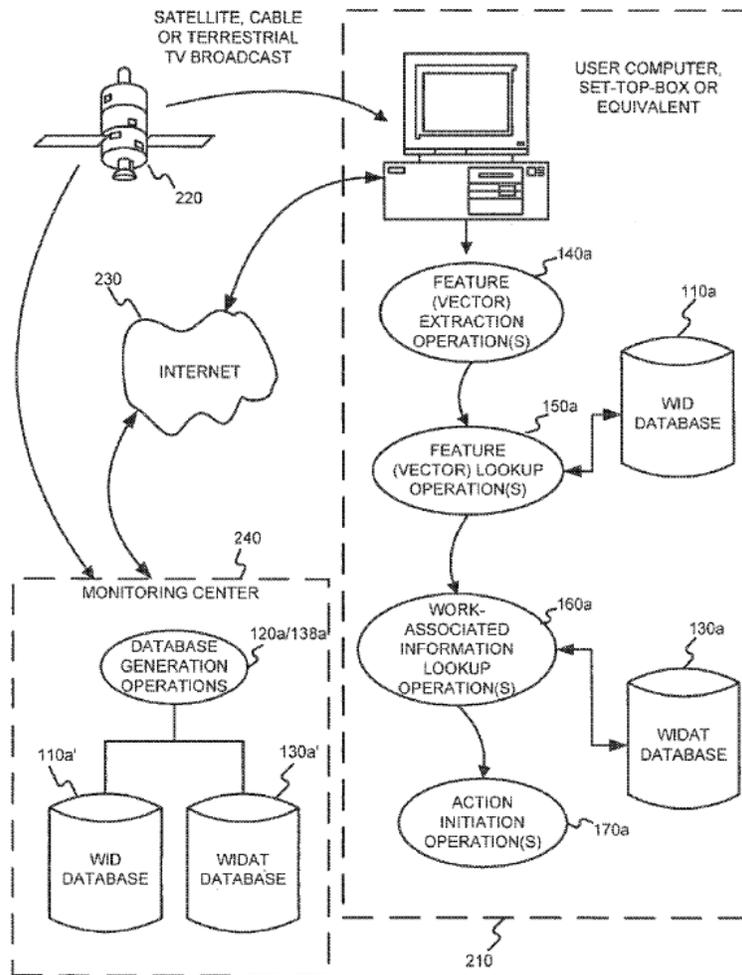
See also Ex. 1001 at 10:18-24 (explaining that an audience member device 210 "receives and renders a work") and 25-30 (explaining that the "computer 210 performs . . . a feature extraction operation(s) 140a"); Ex. 1003 at ¶ 39. Accordingly, there is no disclosure of audience member device 210 "providing, from the computer system to a user electronic device, the first electronic media work and the associated tag," as recited in independent claims 1 and 18.

ii.   **The Disclosed Monitoring Centers do not Provide "to a user electronic device, the first electronic media work and the associated tag."**

Monitoring centers, such as real-time centralized monitoring 580 (in Figure 5)[11], are disclosed as extracting feature vectors, from which a unique identifier may be determined, from media works. Ex. 1001 at 14:21-28; Ex. 1003 at ¶ 40.

But there is no disclosure of real-time centralized monitoring 580 providing the extracted feature vector or the unique identifier to a user electronic device. Instead, real-time centralized monitoring 580 performs a feature extraction operation 140d to extract a feature vector from a work, and performs a feature lookup operation 150d to match the extracted feature vector to one in WID database 110d. *See* Ex. 1001 at Figure 5 (showing feature vectors 114d in WID 110d), 6:38-42 (explaining that operations can "search for a matching feature vector 114"), and 14:56-60 (explaining that feature extraction and lookup operations 140d and 150d may be "moved" to a remote site 580); Ex. 1003 at ¶ 40.

There is also no disclosure of real-time centralized monitoring 580 providing the "first electronic media work" to a user electronic device. Instead, as made clear by Figures 2-4 and 6-8, the "first electronic media work," *i.e.*, a broadcast, is received by user electronic devices from a "satellite, cable, or terrestrial TV broadcast" – and not from any devices that also provide the user electronic devices with a "tag" of any type.

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[11] Figures 2, 3, 4, 6, and 7 depict different embodiments of monitoring centers, but the following analysis related to Figure 5 applies equally to those Figures, because they are similar to Figure 5 in the respects discussed.

See, e.g., Figure 8, which depicts Satellite TV Broadcast 860 transmitting a broadcast

signal to a satellite, cable, or terrestrial TV broadcast 820, and satellite, cable, or

terrestrial TV broadcast 820 transmitting the signal to Monitoring Center 840a and a

separate signal to Home Viewers 810:
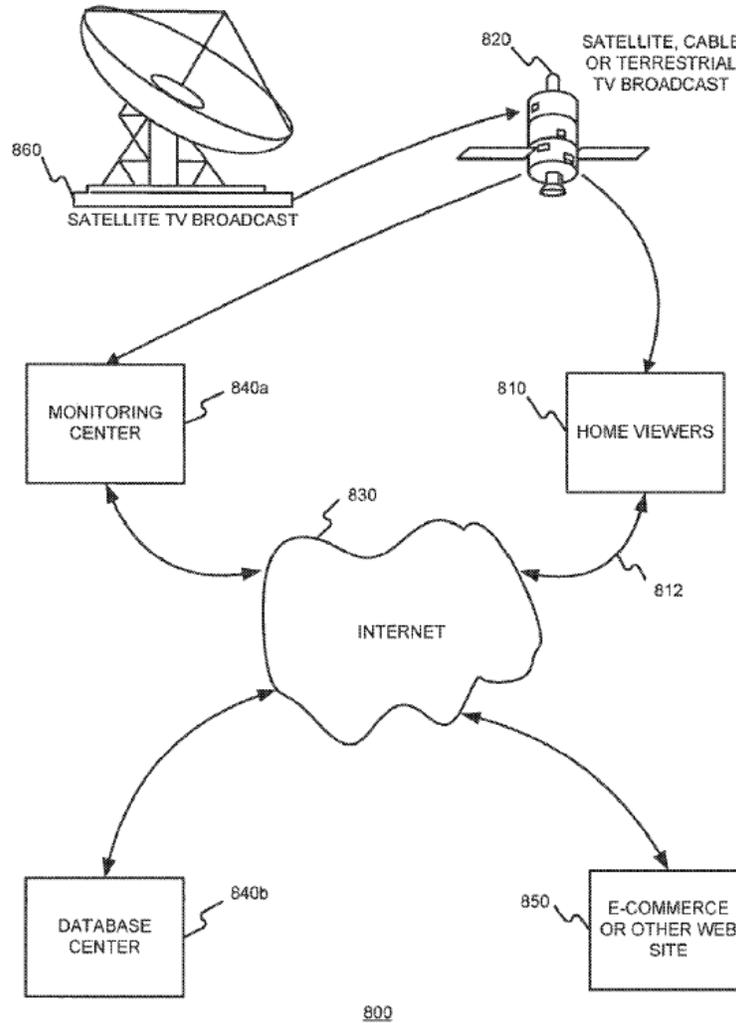
"Block 810 represents audience members (users) watching a TV channel in their

home . . . . The satellite broadcasts *are also being monitored* by one or more television

monitoring centers 840a." Ex. 1001 at 22:3-7 (emphasis added). *See also* Figure 5,

which depicts the "work" being received by real-time centralized monitoring 580 and not being sent, for example, to a user electronic device; Ex. 1003 at ¶ 41.

Finally, as explained above in Section IV.C.1.a, the "tag" also does not represent a watermark, at least because the '464 patent disclaims any notion that such a watermark is inserted into a media work. Ex. 1003 at ¶ 51. The patent criticizes such prior art techniques of "inserting code into a work" because they "alter the existing signal. *See* Ex. 1001 at 3:46-49. The patent also asserts that in its invention, there is no "need of inserting an identification code into a work," *id.* at 4:16-20, and that "[n]one of the embodiments of the invention require modification to the work or content." *Id.* at 24:29-31. Therefore, a watermark also cannot be the claimed "tag."

Accordingly, the specification did not reasonably convey to those of skill in the art that, as of the filing date, the inventor had possession of independent claim 1's and independent claim 18's "providing . . . to a user electronic device, the first electronic media work and the associated tag." Independent claims 1 and 18, and their dependent claims, thus lack written description support and are unpatentable under 35 U.S.C. 112, ¶ 1.

V. Mandatory Notices and Standing

A. Real Party-in-Interest

The real parties-in-interest are Google Inc. and YouTube, LLC, a subsidiary of Google Inc.

B.   Related Matters

Network-1 asserted the '464 patent against Google and YouTube in an action

captioned *Network-1 Technologies, Inc. v. Google Inc., et al.*, Case No. 1:14-cv-09558

(S.D.N.Y., Dec. 3, 2014). Ex. 1005 at 5-6.

Network-1 also asserted other patents related to the '464 patent, namely U.S.

Patent Nos. 8,010,988, 8,205,237, 8,640,179, and 8,656,441, in an action captioned

Network-1 Technologies, Inc. v. Google Inc., et al., Case No. 1:14-cv-2396 (S.D.N.Y., Apr. 4,

2014). Google filed Petitions for *Inter Partes* Review of these patents, and the

corresponding proceedings are respectively numbered IPR2015-00347, IPR2015-

00345, IPR2015-00343, and IPR2015-00348.

C.   Lead and Back-Up Counsel, and Service Information

Google identifies Erika H. Arner, Reg. No. 57,540, as lead counsel, Joshua L.

Goldberg, Reg. No. 59,369, as back-up counsel, and Christopher C. Johns, Reg. No.

68,664, as back-up counsel. Ms. Arner can be reached at Finnegan, Henderson,

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christopher.johns@finnegan.com).

D. At Least One Challenged Claim Is Unpatentable

As detailed above, claims 1-34 of the '464 patent are unpatentable under at

least one of 35 U.S.C. §§ 101, 112, and/or 103. Accordingly, it is more likely than not

that at least one of these claims is unpatentable. 35 U.S.C. § 324(a).

E. Google Has Been Sued for Infringement of the '464 Patent and Is Not Estopped

Google has been sued for infringement in *Network-1 Technologies, Inc. v. Google*

Inc., et al., Case No. 1:14-cv-09558 (S.D.N.Y., Dec. 3, 2014). Google has not been party

to any other post-grant review of the challenged claims. Thus, Google is not estopped

from challenging the claims on the grounds identified in this petition. 37 C.F.R.

§§ 42.302(b), 42.303.

VI. Statement of Precise Relief Requested For Each Claim Challenged

A. Claims for which Review Is Requested

Google requests review under 35 U.S.C. § 321 and AIA § 18 of claims 1-34 of

the '464 patent, and the cancellation of these claims as unpatentable.

B. Statutory Grounds of Challenge

Google requests that claims 1-34 be cancelled as unpatentable under 35 U.S.C.

§§ 101, 103, and/or 112. The claim construction, reasons for unpatentability, and

specific evidence supporting this request are detailed above.

VII. Conclusion

For the foregoing reasons, claims 1-34 of the '464 patent are unpatentable. Google therefore requests that a post-grant review of these claims be instituted pursuant to 35 U.S.C. § 324. The undersigned attorneys welcome a telephone call should the Office have any requests or questions. If there are any additional fees due with the filing of this paper, please charge the required fees to our deposit account no. 06-0916.

Respectfully submitted,

Dated: April 13, 2015   By: /Erika H. Arner/
                                         Erika H. Arner, Lead Counsel
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                                         Joshua L. Goldberg, Backup Counsel
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                                         Christopher C. Johns, Backup Counsel
                                         Reg. No. 68,664

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for Post-Grant Review

and associated Exhibits 1001-1016 and 1019-1021 were served on April 13, 2015, by

Federal Express at the following address of record for the subject patent.

Charles R. Macedo
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New York, NY 10016

The foregoing Petition and associated Exhibits were also served on the same

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