

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE, INC.,

Petitioner

v.

KOVE IO, INC.,

Patent Owner

IPR2024-01017
U.S. Patent 7,103,640

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
2001	Declaration of Dr. Michael T. Goodrich In Support of Patent Owner's Preliminary Response
2002	Declaration of Nancy Adams, EdD
2003	Curriculum Vitae of Nancy Adams, EdD
2004	Website for ETH Zürich Research Collection - ETH Zürich Jahresbericht 1993 (available at https://www.research-collection.ethz.ch/handle/20.500.11850/643838)
2005	ETH Zürich, <i>Jahresbericht</i> (1993)
2006	Website for ETH Zürich Research Collection - Distributed file organization with scalable cost/performance (available at https://www.research-collection.ethz.ch/handle/20.500.11850/68912)
2007	Metadata of Distributed File Organization With Scalable Cost/Performance in the ETH Zurich repository (available at https://www.research-collection.ethz.ch/handle/20.500.11850/68912?show=full)
2008	ETH Zurich Library Online Catalog Search Results
2009	ETH Zurich Library Online Catalog Search Result for Jahresbericht – Eidgenössische Technische Hochschule
2010	Marc Record for Jahresbericht – Eidgenössische Technische Hochschule (available at https://eth.swisscovery.slsp.ch/discovery/fulldisplay?docid=alma99117224951305503&context=L&vid=41SLSP_ETH:ETH&lang=en&search_scope=DiscoveryNetwork&adaptor=Local%20Search%20Engine&tab=discovery_network&query=any,contains,1015-4191&mode=basic)
2011	Certified English Translation of ETH Zürich, <i>Jahresbericht</i> (1993)
2012	Norrie et al., <i>The Database Research Group at ETH Zurich</i> (available at https://dl.acm.org/doi/pdf/10.1145/181550.181567)
2013	Joint Claim Construction Chart in <i>Kove IO, Inc. v. Amazon Web Services, Inc.</i> , Case No. 1:18-cv-08175 (N.D. Ill. May 29, 2020) (Dkt. 382)

I. INTRODUCTION

The Petition falls well short of demonstrating a reasonable likelihood of prevailing on its challenge to any claim of U.S. Patent No. 7,130,640 (“’640 patent”).

All challenged claims include the element, “(i) if the first data location server does not possess the location string, transmitting a redirect message to the [first] client, (ii) the redirect message containing information for use by the [first] client to calculate a location of a [second / different] data location server, wherein the [second / different] data location server contains the location string.”¹ The element recites sub-elements denoted for ease of reference as (i)-(ii). The Petition relies on the Kahn reference for its Ground 1 (anticipation) argument but fails to identify any disclosures meeting the sub-elements. Kahn’s lack of disclosure defeats Ground 1.

In Ground 2, Petitioner argues that combining Kahn with Vingralek renders all challenged claims obvious. As a threshold matter, Petitioner did not provide sufficient evidence qualifying Vingralek as pre-AIA § 102(b) prior art.

¹ This quote comes from element [10.c] of claim 10 of the ’640 patent and is substantively representative of similar requirements present in all the claims challenged in this Petition. Petitioner’s arguments for claims 17 and 18 involving the “redirect message” limitation (i.e., [17.c] and [18.e]) refer back to its arguments for [10.c]. Pet. 36-37, 42-43, 58-60.

Additionally, Vingralek does not teach sub-elements (i) and (ii) and cannot cure Kahn's deficiencies. Petitioner's obviousness theory also rests on a fundamental misreading of Kahn, which undermines its argument for combining the references. The Petition also provides no plausible rationale for combining Kahn with Vingralek or any basis for why a person of ordinary skill in the art would have a reasonable expectation of success. Each failure is an independent basis to deny institution as to Ground 2.

While the Petition suffers from additional defects beyond those listed here, the fundamental shortcomings above are fatal to Petitioner's ability to demonstrate a reasonable likelihood of prevailing as to any challenged claim. Trial should therefore not be instituted under 35 U.S.C. § 314(a). Should the Board nonetheless decide to institute, Patent Owner reserves the right to further address these and other issues.²

² This Response focuses on certain limitations of the challenged claims and presents arguments for why the Petition should not be instituted due to the specific deficiencies in the Petition described herein. However, the Petition fails to establish that the challenged claims are invalid for additional reasons, and Patent Owner reserves the right to present additional evidence and arguments if the Petition were instituted.

II. RELATED MATTERS

The '640 patent is among the patents asserted against Petitioner (Google) in the matter *Kove IO, Inc. v. Google LLC*, Case No. 1:23-cv-04244 (N.D. Ill.). In another related litigation, claim 18 of the '640 patent was asserted against Amazon Web Services in *Kove IO, Inc. v. Amazon Web Services, Inc.*, Case No. 1:18-cv-08175 (N.D. Ill.). In that matter, which was tried before a federal jury in April of 2024, Amazon dismissed all of its invalidity defenses with prejudice, and the jury found infringement of all asserted claims. The court denied Amazon's motion for judgment as a matter of law and request for a new trial. The case is currently on appeal.³ Amazon also filed an IPR challenging a related patent, U.S. Patent No. 7,233,978 (IPR2020-00276), where institution was denied. The '640 patent was also subjected to two concluded *ex parte* reexaminations: No. 90/014,552, where substantial new questions of patentability were denied, and No. 90/019,036, where claims 17, 18, and 24 were confirmed. The '640 patent is pending in a third *ex parte* reexamination No. 90/019,166, where questions of patentability were raised regarding claims 17, 18, and 24 and reexamination was ordered in April 2023. No office action has been issued.

³ 24-2350 *Kove IO, Inc. v. Amazon Web Services, Inc.*

III. BACKGROUND

A. Overview of the '640 Patent

Drs. John Overton and Stephen Bailey, co-inventors of the '640 patent (Ex. 1001), developed breakthrough distributed data storage technology while studying at the University of Chicago in the 1990s. By 1998, the inventors of the '640 patent recognized that data would grow so fast that storing and retrieving it reliably and efficiently would require a new and better way of doing things. The inventors founded a company to commercialize their inventions, which enabled high-performance, hyper-scalable distributed storage, years before the advent of the cloud. While that technology was ahead of its time commercially, Dr. Overton later went on to develop adjacent technologies for his company Kove IO, which is the Patent Owner. Kove's patented distributed storage innovations addressed the challenges of efficiently storing and retrieving location information for massive amounts of data across distributed servers, enabling the scalable distributed storage systems that are ubiquitous today. Goodrich Decl. (EX2001), ¶¶38-40.

The '640 patent describes an innovative system for efficiently managing and retrieving data stored across a distributed computing network. In large-scale distributed data collections, data may be spread across many different data repositories in a network. Locating and retrieving the data associated with a particular entity can be challenging in such environments. The '640 patent teaches

techniques to efficiently separate the “what” (i.e., the data itself) from the “where” (i.e., the location of the data). EX2001, ¶38.

The ‘640 patent teaches that, for example, data entities are stored in data repositories, where each data entity is associated with a unique identifier. EX1001, 4:7-9, 34-36. (“An ‘identifier string’ or an ‘identifier’ is a unique string with which zero or more location strings are associated in an NDTP server. ... NDTP defines an entity key (or “identifier”) as a unique string used to refer to an entity about which a distributed query is performed”). A network of data location servers stores the mappings between identifiers and the locations of the corresponding data in the data repositories. *See, e.g., id.*, 3:18-20 (NDTP servers “maintain a mapping between entity identifiers and data locations.”) The patent further teaches that it is expected that the list of data location servers may change over time. *Id.*, 16:4-13; EX2001, ¶39.

B. Overview of Challenged Claims

Towards the latter half of the 1990’s, data storage was still relatively manageable. Most data could be stored locally, on local drives, compact discs (CDs) or disk drives. Single servers were often sufficient for data storage needs. Not long thereafter, the amount and size of data began increasing, soon reaching exponential rates. Networking became ubiquitous and storing data in single servers became

impractical if not impossible. This paved the way for distributed data collection environments. EX2001, ¶¶41-52.

Distributed data collection involves storing data stored and retrieved among multiple databases or data repositories connected by a network. Conventional distributed data collection environments maintained a static relationship of data and its location. In this regard, conventional distributed data collection environments maintained a static relationship of data and its location. Every time data moved from one location to the next, all of the systems that maintained the static relationship had to be updated. As a result, while conventional distributed data collection environments allowed for dispersed storage, doing so made reliably locating and retrieving the data challenging, particularly where data is added or removed dynamically. EX1001, 1:37-41; EX2001, ¶41.

The Inventors concluded that conventional systems were fundamentally limited in the types of searches that could be performed and the forms of data returned based on the search. EX1001, 1:43-53. For example, the '640 patent states, "One example is where a client requests files based on a subject, like a person's name. In the search results, therefore, only text files of peoples' names may be retrieved. Another problem in current retrieval systems is that the client may receive text and image files in the search results, but could not seamlessly access the image files. Yet another problem in current retrieval systems is that video and sound files

related to the request may not even be found in the search results. For example, a doctor might be able to retrieve medical records on a specific patient, but cannot view an MRI or X-Ray results associated with that record.” *Id.*, 1:45-55; EX2001, ¶42.

The Inventors addressed the limitations of pre-existing systems in the '640 Patent in two foundational ways. First, the '640 patent teaches separating the data location information from the data itself. *See e.g.*, EX1001, 1:62-65, 20:4-8, Fig. 11. Second, the '640 patent teaches several ways clients can request location information associated with an identifier string, where each request has a corresponding response message returned by the server receiving the request. *Id.*, 6:32-34. An example of NDTP protocol requests and responses are depicted in Figure 1:

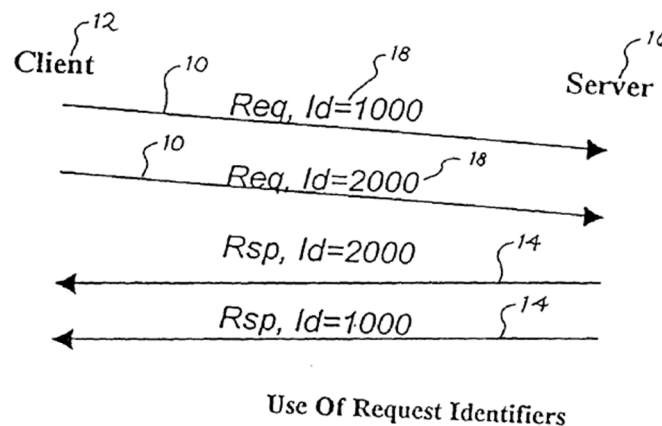
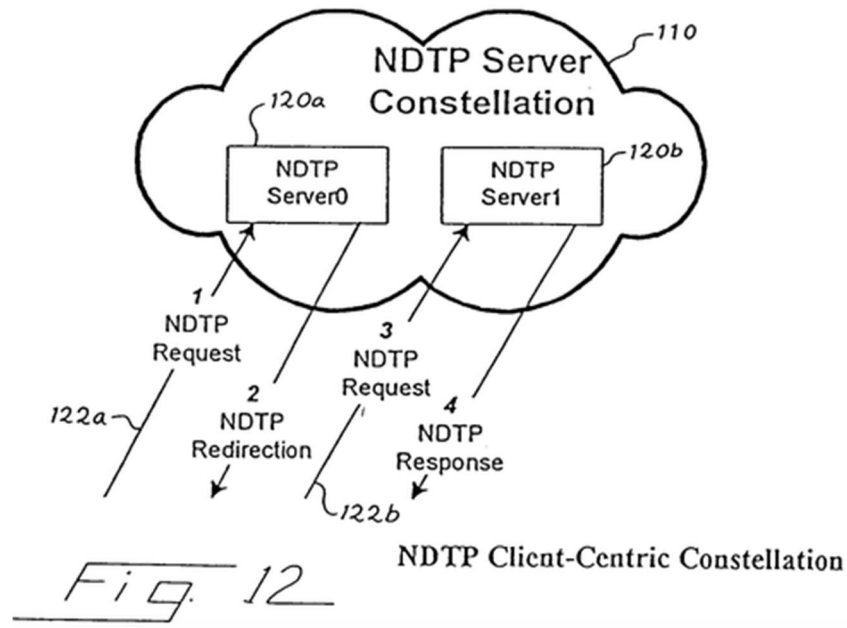


Fig. 1

Id., Fig. 1; EX2001, ¶43.

Also as relevant to the challenged claims, the '640 patent teaches an implementation illustrated by the “NDTP Client-Centric Constellation” schematic shown in Fig. 12:



EX1001, Fig. 12. In this client-centric approach, a client (not shown) may send a request (1 NTDP Request) to a server (NDTP Server0) in the network, requesting data. If Server0 does not have the requested data, it sends back an “NDTP Redirection” response, or *redirect message* (2 NDTP Redirection), to the client. The client uses the information contained in the redirect message to send the request to another server (NDTP Server1) that is expected to have the requested data. Server1 sends the requested data back to the client (4 NDTP Response). *Id.*, 17:9-21. In particular, the specification teaches:

[the] second NDTP redirection mechanism uses a NDTP_RDR_RSP message to indicate that the server 120 *a* to which the NDTP request 122 *a* was directed does not contain any of the location strings associated with the identifier string supplied in the NDTP request 122 *a*. **The NDTP_RDR_RSP message contains all the information required for the originator of the NDTP request 122 *a* [i.e., the client] to reissue the original NDTP request 122 *b* to a different NDTP server 120 *b* that does have location strings associated with the identifier string supplied in the NDTP request 122 *b*.**

Id., 17:45-54. The specification repeatedly and consistently teaches that a client may query a server in the network, and that queried server will provide a response back to the client. *Id.*, 2:36-40; 2:62-65; 3:3-6; 4:14-18; 4:29-33; 6:32-44; 9:15-21; 11:46-48; 12:50-54; 14:48-52; 16:53-56; 17:14-21; 17:49-54; 18:21-35. In other words, the patent teaches that responses to client queries always come from the queried server. This provides an efficient way for client requests to be serviced by “redirecting” the client’s query to the correct server if the storage of the sought-after information has changed from the queried server to a different server. EX2001, ¶44-45.

The independent claims at issue (claims 10, 17, 18) all claim the “redirect message” functionality. For example, claim 10 states:

10. A method for retrieving data location information for data stored in a distributed network, comprising the steps of:

[10.a] receiving at a first client a data query for retrieving data associated with an identification string, wherein the data is stored at a data repository in the distributed network and wherein a location string associated with the identification string of the data is stored in at least one of a plurality of data location servers;

[10.b] transmitting a data location request from the first client to a first data location server to retrieve the location string associated with the identification string in the data query, the data location request including the identification string;

[10.c] if the first data location server does not possess the location string, transmitting a redirect message to the first client, the redirect message containing information for use by the first client to calculate a location of a second data location server, wherein the second data location server contains the location string;

[10.d] calculating the location of the second data location server at the first client; and

[10.e] transmitting the data query from the first client to the second data location server.

In general, the claim claims a method in which a request for data location information is transmitted from a client to a first data location server. If that queried data location server does not have the requested location string, it transmits a “redirect message” back to the client, wherein the “redirect message” must “contain[] information for use by the first client to calculate a location of a second data location server.” EX1001, 21:38-61; EX2001, ¶¶46-47.

Element [10.c] is substantively common to all challenged claims and is the focus of the issues in dispute in this proceeding. That element relates to the redirection mechanism taught in the patent. The ‘640 patent describes two ways the necessary information in for client redirection can be provided: First, the redirect message can include a data location server table. The client then uses a hash function on the identifier string and server table to calculate the location of the correct server. EX1001, 14:56-15:34. Second, the redirect message can include a transmitted function that the client applies to the identifier string to calculate the location (URL) of the correct data location server *Id.*, 15:35-16:3. In both cases, the data location server that received the query directly sends the redirect message to the client. *Id.*, 14:48-55; EX2001, ¶¶48-49.

The importance of client redirection to the invention was underscored in the ‘640 patent Reexamination No. 90/014,552, which identified this feature as crucial

to Kove's patents' redirect message-based claims, citing to the patent's prosecution history:

This limitation was also the focus of the Applicant's remarks filed in response to the 2/9/05 Office action. The Applicant argued, "Referring to claim 24, when a user enters a request at a client for data at a first client, the data query includes an identifier string (e.g. a file name or URL) and expects to receive information (a location string) on where the data corresponding to that filename resides. ...During this navigation process, if a data location server does not possess the sought after location string, it transmits a redirect message back along the communication path the data location request traveled to the first client. The redirect message that is sent back to the first server contains information with which the first client is configured to determine a location of a second data location server that does contain the sought after location string. In other words, the redirect message allows the first server to calculate a new data location server address so that the first server "redirects" its query to the right data location server.

...Similarly, the method of claim 33 also includes includes [sic] the feature of redirection, however claim 33 addresses a more simplified scenario such as shown in FIG. 12, where there are not

necessarily any intervening devices between the client and the data

location servers.”

EX1027, 13-14 (quoting EX1003, 524 (August 11, 2005 Response to Office Action at 11) (emphasis in original). The reexamination proceedings and prosecution history further confirm that the ’640 patent’s redirect message provides the client the information necessary to determine the correct data location server and redirect its query to that server. EX2001, ¶¶50-52.

C. The Petition and Patent Owner’s Preliminary Response

The Petition raises two grounds, which collectively challenge claims 10-24 of the ’640 patent: Ground 1, anticipation by Kahn; and Ground 2, obviousness over Kahn in view of Vingralek. This Preliminary Response focuses on the independent claims challenged in the Petition: claims 10, 17 and 18. If Petitioner cannot prevail on the independent claims, it cannot prevail on the dependent claims.

This Preliminary Response further focuses on the limitations present in all challenged claims that require a “redirect message,” including which server is responsible for transmitting the redirect message (“if the first data location server does not possess the location string, transmitting a redirect message to the [first] client”), what information the redirect message must contain (“the redirect message containing information for use by the [first] client to calculate a location of a [second / different] data location server”), and what that other location server is expected to

contain (“wherein the [second / different] data location server contains the location string”). For the reasons explained in this Response, the Petition fails to demonstrate a reasonable likelihood of prevailing on its burden of proving that the challenged claims’ “redirect message” limitations are either anticipated by Kahn or rendered obvious by Kahn in view of Vingralek.

The Petition’s anticipation and obviousness arguments for the “redirect message” limitations in each claim, [10.c], [17.c], and [18.e], are substantively the same. For Ground 1 (anticipation by Kahn), Petitioner maps “redirect message” to different aspects of Kahn under two different theories. First, Petitioner says Kahn’s “not-responsible-for-handle” message is the claimed “redirect message.” Pet., 25-26. Under an alternate theory, Petitioner points to a “hash range/handle-server-domain-name table” as the “redirect message.” *Id.*, 26-28. Neither teaches the claimed “redirect message” because neither “contains information for use by the client to calculate a location of a [second/different] data location server, wherein the [second/different] data location server contains the location string.” Petitioner’s theory that a “hash range/handle-server-domain-name table” is the “redirect message” fails for the additional reason that the table is not “transmitted” to the client by the queried server.

For Ground 2 (obviousness under Kahn in view of Vingralek), the Petition again relies on the same disclosures and rationale for all claims. For limitation

[18.e], the Petition argues that “a POSITA would have been motivated and found it obvious to implement this feature in view of Vingralek.” Pet., 59-60. Likewise, for limitation [17.c], the Petition asserts that “a POSITA would have been motivated and found it obvious to implement this feature in view of Vingralek for reasons similar to those as discussed for claim 10 in Ground 2.” *Id.*, 58-59. And for limitation [10.c], the Petition contends that “a POSITA would have found it obvious to implement these features in view of Vingralek.” *Id.*, 45-53. Thus, the Petition’s obviousness arguments rely on the same Kahn disclosures and motivation to combine with Vingralek for all three claims. Moreover, Petitioner has not qualified Vingralek as prior art under pre-AIA 35 U.S.C. §102(b), making it an improper reference. A determination that Vingralek is not qualified prior art is dispositive of Ground 2.

The deficiencies in the Petition and failure to show reasonable likelihood of success are equally applicable to all challenged claims. Therefore, the reasons explained below for why both Ground 1 and Ground 2 of the Petition are unavailing are sufficient to show that the Petition has failed to demonstrate a reasonable likelihood of success on any challenged claim, and trial should not be instituted.

IV. LEGAL STANDARDS

Before instituting an inter partes review (IPR), the Director must determine, based on the parties’ submissions, whether “there is a reasonable likelihood that the

petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1361 (2018) (quoting 35 U.S.C. §314(a)). The burden rests with the petitioner to demonstrate “a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable.” 37 C.F.R. §42.108.

When evaluating the reasonable likelihood of success, “[n]ot every factual contradiction rises to the level of a genuine issue of material fact at the preliminary stage of a proceeding.” Consolidated Practice Trial Guide at 50-51. Moreover, “[t]he mere existence in the record of dueling expert testimony does not necessarily raise a genuine issue of material fact.” *Mortgage Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325–26 (Fed. Cir. 2016) (cited by the Consolidated Practice Trial Guide). For example, in *Honda Motor Co., Inc. v. Neo Wireless LLC*, IPR2023-00797, Paper 29 at 21-22 (PTAB Sept. 3, 2024), the Board denied institution where the patent owner submitted an expert declaration with its preliminary response that effectively countered the petitioner’s obviousness argument.

The petitioner also has the obligation to clearly set forth the basis for its challenges. *See Harmonic Inc. v. Avid Tech. Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. §312(a)(3), which requires IPR petitions to “identify with particularity . . . the evidence that supports the grounds for the challenge to each

claim”). A petitioner may not introduce new evidence or arguments during the trial, including in papers filed after institution to remedy defects in its original petition. *SAS Inst.*, 138 S. Ct. at 1355; *see also Koninklijke Philips N.V. v. Google LLC, et al.* 948 F.3d 1330 (Fed. Cir. 2020) (holding “[I]t is the petition, not the Board’s ‘discretion,’ that defines the metes and bounds of an inter partes review.”) Furthermore, “the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *In re Magnum Oil Tools Int’l, Ltd.* 829 F.3d 1381 (Fed. Cir. 2016). The Petitioner is the “master of the complaint” and may not reserve new theories to the reply. *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1367 (Fed. Cir. 2023); *see also Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) (holding that “a challenge can fail even if different evidence and arguments might have led to success”); *Intelligent Bio-Sys. Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 37 C.F.R. §42.23(b) (“All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition or patent owner response.”))

When alleging obviousness, a petition must provide a clear explanation of how specific references could be combined, the elements from each reference that would result in a predictable outcome, and how any proposed combination addresses the claims at issue. *ActiveVideo Networks, Inc. v. Verizon Commc’ns Inc.*, 694 F.3d

1312, 1327-28 (Fed. Cir. 2012); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 n.14 (Fed. Cir. 2016) (*en banc*) (“Of course, concluding that the references are within the scope and content of the prior art to be considered for obviousness does not end the inquiry.”). Obviousness must not rely on hindsight; the petitioner must establish a rational motivation to combine references and show that the combination would have been within the skill of a person of ordinary skill in the art. *Personal Web Techs. v. Apple, Inc.*, 848 F.3d 987, 993 (Fed. Cir. 2017). The Petition must articulate “some articulated reasoning with some rational underpinning” to support its proposed obviousness ground. *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Anticipation requires a prior art reference to disclose all elements of a claim as arranged in the claim itself. *Microsoft Corp. v. Biscotti Inc.*, 878 F.3d 1052, 1068 (Fed. Cir. 2017). Inherent anticipation cannot be based on “mere probabilities or possibilities.” *Therasense Inc. v. Becton Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010). The disclosure must “necessarily include” the limitation. *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1373 (Fed. Cir. 2002).

V. LEVEL OF ORDINARY SKILL

Patent Owner does not dispute Petitioner's definition of a POSITA for the purposes of the Preliminary Patent Owner Response. Patent Owner reserves its right to dispute the Petitioner's definition if this Petition is instituted.

VI. CLAIM CONSTRUCTION

Petitioner identifies certain claim constructions that were either construed in a previous IPR proceeding concerning a patent in the same family as the '640 patent (EX1022) or during a recent District Court litigation involving the '640 patent and related patents (EX1024, 1025). Pet., 10-13. These constructions are consistent with reexamination proceedings involving the '640 patent and its related patents, including claims similar to those at issue in this proceeding. *See e.g.*, EX1028, 19-20 (Request for *Ex Parte* Reexamination in *Ex Parte* Reexamination No. 90/019,036 at 13-15); *see also generally* EX1030; EX2001, ¶64. During proceedings before the Board, District Court, and Patent Office, the constructions were found to be consistent with the intrinsic record of the '640 patent. Kove believes, and Petitioner does not dispute, the applicability of constructions determined in previous IPR and district court litigation proceedings, as set forth in part in the Petition. Pet., 9-10. For ease of reference, the relevant constructions are:

'640 Patent Terms	AWS Proceeding/IPR Construction
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identifier ⁴	a unique encoding that identifies an individual entity, and with which zero or more data location specifiers are associated in a location server (EX1022, 13) a unique encoding that identifies an individual entity, and with which zero or more data location strings are associated in a location server (E2013, Exhibit B, 3)
location information location string ⁵	information pertaining to one or more locations of data and/or the identities of one or more location servers

⁴ Patent Owner agrees with Petitioner that “identifier,” “identification string,” and “identifier string” are used interchangeably in the ’640 Patent, and that the terms are used in substantially the same manner as the ’978 patent. Pet., n 5. For completeness, Patent Owner includes the construction of “identifier” adopted by the Court in the AWS Proceeding, which differs by a single word (*strings*) but which does not substantively alter the construction from the IPR Construction.

⁵ “Location string” was not separately construed in any related proceeding. Patent Owner submits that the term is used interchangeably with “location information” in

	(EX1024, 35)
location server	a network-attached component that maintains a set of identifier/location mappings that are modified or returned in response to location request messages from clients (EX1024, 35)
client	a network-attached component (which may be software or hardware) that initiates update or lookup of identifier/location mappings from a location server with location request messages (EX1024, 35)
plurality of location servers	location servers in non-hierarchical structures (EX1025, 19)

VII. GROUND 1 - ANTICIPATION BY KAHN

This Preliminary Response addresses two substantial deficiencies present in Ground 1. Each of the challenged claim requires transmission of (or the ability to

the claims of the '640 Patent. Petitioner treats the terms interchangeably as well, e.g., Pet., 13, 19-24.

transmit) a “redirect message” from the queried data location server back to the requesting client. Element [10.c] is representative of all challenged claims:

[10.c] *(i)* if the first data location server does not possess the location string, transmitting a redirect message to the first client, *(ii)* the redirect message containing information for use by the first client to calculate a location of a second data location server, wherein the second data location server contains the location string

EX1001, 21:52-56. For at least the reasons detailed below, Kahn does not disclose any of the three limitations *(i)-(ii)* for any challenged claim of the '640 patent.

EX2001, ¶¶65-72.

A. *(i)* “if the first data location server does not possess the location string, transmitting a redirect message to the first client”

Each of the challenged claims requires that the queried location server “transmit[] a redirect message” back to the querying client if it does not have the requested information. Claim 18 expressly states this requirement (“the location server transmits a redirect message to the client”). Claims 10 and 17 would be understood by a POSITA to have a similar requirement that the redirect message be transmitted to the client by the server that the client queried. EX2001, ¶¶44-52, 65. In particular, the '640 patent teaches an NDTP protocol where (referring to Fig. 1) “[e]ach request message 10 sent by a client 12 has a corresponding response message 14 returned by the server 16.” As the patent describes, the purpose of the redirection

mechanism is to “allow cluster and hierarchical topologies” that enable a queried server to return information to “redirect” the client, either through provision of “redirection pointers” or the return of an NDTP_RDR_RSP message which contains information the client may use to locate the desired location server. EX1001, 14:27-15:49. As noted above (*supra* §III.B), the specification repeatedly and consistently teaches that a redirect message is returned to the client from the server the client queried. *Id.*, 2:36-40; 2:62-65; 3:3-6; 4:14-18; 4:29-33; 6:32-44; 9:15-21; 11:46-48; 12:50-54; 14:48-52; 16:53-56; 17:14-21; 17:49-54; 18:21-35; Fig. 1; Fig. 12; Fig. 13. The specification never describes or provides information to enable a system where a client queries one server but a different server or component returns the redirect information. EX2001, ¶¶44-52, 65. A POSITA would therefore understand that the “redirect message” limitations of the challenged claims are returned to the client by the server receiving the client’s location request. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 389, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (“[A claim] term can be defined only in a way that comports with the instrument as a whole.”); *see also Amdocs (Isr.), Ltd. v. Openet Telecom, Inc.*, 761 F.3d 1329, 1340 (Fed. Cir. 2014) (“The district court properly concluded that the embodiments define the outer limits of the claim term and did not err in reading the ‘in a distributed fashion’ and the ‘close to the source’ of network information requirements into the term ‘enhance.’”).

Petitioner offers two theories of how Kahn allegedly discloses “transmitting a redirect message” back to the client. As detailed below, neither are availing. Petitioner’s first theory maps “redirect message” to Kahn’s return of a “not-responsible-for-handle” message. Kahn teaches a “handle management system” that is “used to find the location of digital objects and the locations of each object’s RMS [rights management system].” EX1005, 28:29-31. “A handle for an object may be associated with zero or more pointers.” *Id.*, 31-22. Kahn teaches that a client sends a handle query request to a handle server in its handle management system. *Id.*, 29:5-12. If the handle server does not have the requested information, it transmits back to the client either a “not responsible” or “handle not found” message. *Id.*, Fig. 8 182 (annotated below). Petitioner’s theory identifies the “not responsible for handle” message as the alleged “redirect message.” Pet., 24-26.

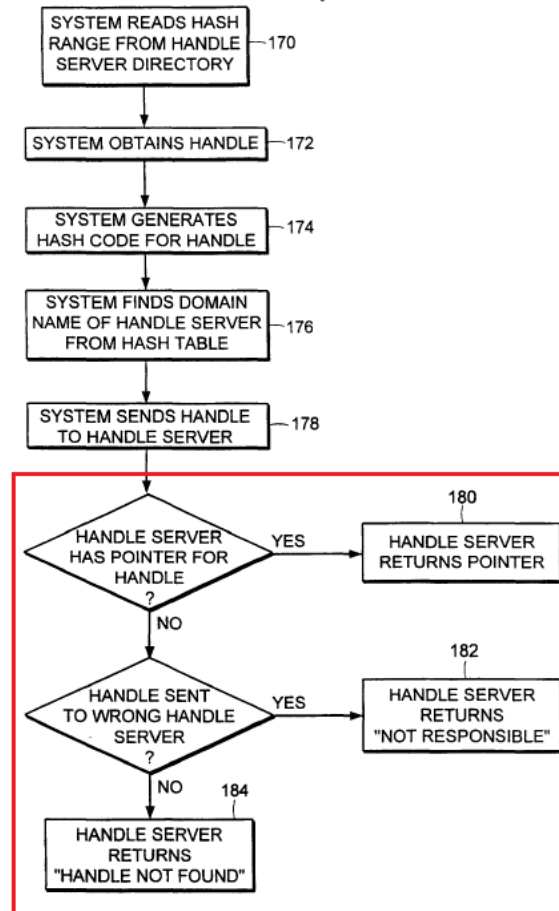


FIG. 8

The “not responsible for handle” message, however, cannot be the claimed “redirect message” for the straightforward reason that does not “redirect” the client to anything; it simply tells the client “This handle server doesn’t have what you’re looking for.” EX2001, ¶¶53-55, 66-67. In particular, a “not responsible for handle” message does not “contain information for use by the client to calculate a location of a second data location server.” Thus, even though the handle server (which is the server that received the client’s request) transmits a message back, that message is not the claimed “redirect message.” *Id.*

Petitioner's second theory maps "redirect message" to a "hash range/handle-server-domain-name table." The "hash range/handle-server-domain-name table" is something the client downloads from a "handle directory server" when the handle server it sent its query to returns a "not-responsible-for-handle" message. Kahn teaches that "handle servers" and "handle directory servers" are different servers.⁶ EX1005, 38:9-11. Kahn explains that "handle server system 1230 includes *handle servers 1232* and *handle directory servers 1234*" *Id.* (emphasis added).

⁶ Kahn uses "handle directory server" and "handle server directory" interchangeably. *See, e.g.*, EX1005, 38:9-11("As seen in Fig. 34, the handle server system 1230 includes handle servers 1232 and **handle directory servers** 1234 located at certain well known locations."), 46:29-32 ("In a first step 170, a client system downloads the table that associates hash ranges with handle server domain names from the **handle server directory** for future use.") (emphasis added).

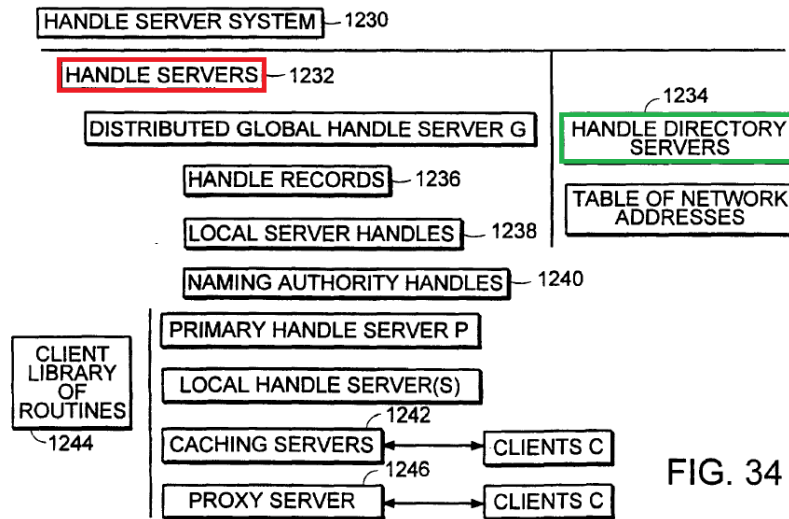


FIG. 34

Id., Fig. 34. Assuming *arguendo* that the client’s download of a “hash range/handle-server-domain-name table” from a handle directory server counts as a “transmission” of that message from the handle directory server to the client, that still does not meet the limitation of the claim. This is because the claim requires the transmission of “redirect message” come from the server that the client queried, not a different server. In Kahn, a client queries a *handle server*; what sends the “hash range/handle-server-domain-name table” is a *handle directory server* – a message coming from a different server cannot be the claimed “redirect message.” EX2001, ¶¶53-55, 68-69.

B. (ii) “redirect message containing information for use by the first client to calculate a location of a second data location server”

Kahn also does not disclose this limitation. As explained above, Petitioner points to two messages in Kahn as the alleged “redirect message.” The first – a not-responsible-for-handle message – is not a “redirect message” because it doesn’t do

any redirecting. In particular, it does not “contain information for use by the client to calculate a location of a second data location server.” It’s a simple notification to the client that the handle server it queried is not the right one, and nothing more. EX1005, 47:13-19; Pet. 25⁷; EX2001, ¶70.

Petitioner roots its theory on the predicate that because Patent Owner “reads the ‘redirect message’ on a cache miss response due to stale or incorrect location information” in its complaint against Google (Petitioner) in a parallel proceeding (Pet., 24) that means Kahn’s “not responsible” message suffices to disclose the claimed “redirect message.” Not so. Patent Owner’s complaint (which is based on publicly available information) alleges facts sufficient to plausibly allege that Google’s accused system includes the claimed redirect message. Patent Owner’s allegation that “the client detects a miss, which is the redirect message” refers to the process triggered by the cache miss, which it believes includes receiving the required redirect message with the claimed contents. This is evident from the description of

⁷ Petitioner’s citation to EX1005, 74:5-9 adds nothing. Pet., 25, 27. The “invalid-handle-server-selected response UDP packet” merely tells the client that it has queried the wrong server. It does not “redirect” the client to the correct server because it does provides no information the client can use to calculate the location of the correct server.

using a “location algorithm which calculates a location of a second data location server,” which suggests the redirect message contains information used for this calculation, as required by the claims. *See* EX1001, cls. 10, 17-18; EX2001, ¶71. But how redirection actually works in those accused products – including whether the detection of a cache miss includes receiving information for use by a client to calculate the location of a server containing the desired information – is the subject of forthcoming discovery.⁸ Simply put, if the evidence shows that the accused products perform redirection in the manner claimed, then the products infringe; if not, then they don’t. What is not contestable, however, is the claim’s express requirement that a redirect message must “contain information for use by the client to calculate” the location of the correct data location server. Kahn’s “not responsible” message does not contain any such information. Therefore, Kahn does not anticipate this element. EX2001, ¶71.

Petitioner’s second theory – which argues that Kahn discloses a redirect message “even if Patent Owner’s interpretation is not applied,” Pet., 26 – also fails. To make this argument, Petitioner points to a “hash range/handle-server-domain-name table” (and not the “not-responsible-for-handle” message) as the supposed

⁸ Discovery in *Kove IO, Inc. v. Google LLC*, Case No. 1:23-cv-04244 (N.D. Ill.) is still in its early stages, and the case is currently stayed.

“redirect message.” *Id.*, 26-27 (“the hash range/handle-server-domain-name table (‘redirect message’)”); “the table would be transmitted to the client in the form of a message (‘transmitting a direct message to the first client’)”). As detailed above, “hash range/handle-server-domain-name table” comes from a handle directory server, not the handle server:

The system subsequently sends the handle to the handle server as part of a request pointer information UDP packet (step 178).

The handle server then returns its response to the requesting system. If the handle server found the pointers, a list of pointers is returned (step 180). This could include pointers to use one or more repositories and one or more RMS’s. **If the handle was sent to the wrong handle server, it returns a not-responsible-for-handle message (step 182).**

In this case, **the client system should download the hash range/handle server-domain-name table from the handle server directory** again and attempt the mapping again. The requester will determine how many times to try before giving up (and this same approach is used in other similar situations described below).

EX1005, 47:5-21 (emphases added). As explained above, the claims require that the server that received the request (here, the handle server) be the one that transmits a redirect message. Because Kahn teaches that a “hash range/handle-server-domain-

name table” comes from a handle directory server and not the handle server, that table cannot be the claimed redirect message. EX2001, ¶72.

Because Kahn does not teach a “redirect message containing information for use by the client to calculate a location of a second data location server,” where the “redirect message” must be transmitted to the client by the server it queried, Kahn cannot anticipate this element.

VIII. GROUND 2 - OBVIOUSNESS OVER KAHN AND VINGRALEK

The Petition fails to demonstrate a reasonable likelihood that the challenged claims are unpatentable under Ground 2, which argues that the challenged claims are obviousness in view of Kahn in combination with Vingralek. As a threshold matter, the Petition does not establish that Vingralek is prior art under pre-AIA 35 U.S.C. §102(a). Vingralek also does not cure Kahn’s deficiencies because it fails to disclose a “redirect message” in accordance with the claims’ requirements. The Petition also fails to demonstrate that a POSITA would have had a reasonable a motivation to combine Kahn with Vingralek, as well as a reasonable expectation of success in combining them to achieve the claimed invention.

A. Vingralek Is Not Prior Art

To qualify as printed publication prior art under pre-AIA 35 U.S.C. §102(b), Vingralek (EX1007) must have been publicly available prior to July 8, 1998, the

earliest possible priority date of the '640 patent.⁹ Petitioner bears the burden of demonstrating a reasonable likelihood of such public availability. As detailed in the accompanying declaration of Nancy E. Adams, an expert in library cataloging, classification, and searching, confirms, Petitioner has failed to carry its burden. EX2002, ¶¶ 14-40.

A reference is considered publicly accessible if it was “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.” *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016). Whether a particular reference qualifies as a printed publication is determined on a case-by-case basis. *In re Cornyn*, 890 F.2d 1158, 1161 (Fed. Cir. 1989) (internal quotations omitted). Petitioner’s burden for institution is to “identify, with particularity, evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent and therefore that there is a reasonable likelihood that it qualifies as a printed publication.” *Hulu, LLC*

⁹ Petitioner states that it does not believe the '640 patent is entitled to a priority date earlier than September 14, 1999, but also “does not raise that issue in this petition as it is not relevant.” Pet. n.2. Patent Owner reserves the right to dispute Petitioner’s position should trial be instituted.

v. Sound View Innovations, LLC, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Petitioner offers two theories in support of Vingralek's alleged public availability: (1) that Vingralek was included in a December 1993 *Jahresberich* (Annual Report) that was purportedly catalogued and indexed by libraries (Ex. 1020, ¶¶50, 51, 54) and (2) that Vingralek was mentioned in an article by Norrie that was purportedly published in 1994 (Ex. 1015). Neither theory is availaing: (1) the December 1993 Annual Report *does not* include Vingralek and is therefore irrelevant, EX2002, ¶¶ 20-21, EX2005, EX2011; and (2) Vingralek's mention in Norrie is not evidence of public availability because the two papers originated from the same department in the same university around the same time and share a common author, making it likely that Vingralek was known to Norrie personally, *id.*, ¶¶ 34-40, EX2012. Personal knowledge is not a sufficient indicator of public availability.

1. The Hall-Ellis Declaration Fails to Establish Vingralek's Public Availability Before the Critical Date

The copy of Vingralek provided as Ex. 1007 is an electronic file that was not available until 2017, which is years after the '978 patent's July 1998 priority date. EX2002, ¶¶ 23-25, EX2006, EX2007. To overcome this, Petitioner's declarant, Dr. Hall-Ellis, alleges Vingralek's public availability is tied to the publication of a different document – a 1993 Annual Report that she contends was catalogued by

various libraries around that time. EX1020, ¶46 (“The Vingralek article was published on pages 3-26 in Volume 207 dated December 1993 of the open access *Jahresbericht* [Annual Report] issue of the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich (ETH Zürich) and was found in the digital repository Zeitschriftendatenbank [German Union Catalog of Serials] (ZBD) (Berlin, Germany).”¹⁰ But the Annual Report (which was not included in Dr. Hall-Ellis’ Declaration but which was readily available on a website she identified) does not actually include Vingralek, making the Annual Report not relevant evidence of Vingralek’s public availability. EX2002, ¶¶ 20-21, EX2005, EX2011.

a. Vingralek Bears No Indicia of Public Availability and Was Never Part of a December 1993 *Jahresbericht*

Vingralek EX1007 does not contain any indicia evidencing a date of public availability. EX2002, ¶¶ 15- 16. The exhibit’s cover page bears a “Publication date” of “1993” but no corroborating indication of public accessibility. EX1007, 1. The second page has a date of December 1993, and the third page has a “© 1993.” *Id.*,

¹⁰ The terms *Jahresbericht* and Annual Report are used interchangeably herein and refer to the December 1993 copy of the open access *Jahresbericht* issue of the journal *Eidgenössische Technische Hochschule* Zürich (ETH Zürich) Dr. Hall-Ellis identifies in paragraph 46 of her Declaration (EX1020).

2-3. Copyright and publication dates alone are not sufficient indication of public availability under §102(b).

For example, in *Sophos v. Open Text*, IPR2023-00731, the Board held that “[s]imply pointing to a date, alleged to be a ‘publication date,’ even where that date cascaded through various patent references, without interpretation or explanation, does not meet the threshold standard to show that it is reasonably likely that a reference was publicly accessible on that date.” Paper 23 (PTAB Nov. 2, 2023) (quoting *In-Depth Geophysical, Inc. v. ConocoPhillips Co.*, IPR2019-00849, Paper 17 at 5 (PTAB Mar. 30, 2020)). Dr. Hall-Ellis was also the declarant in the *Sophos* proceeding, and the Board found that “Petitioner and Dr. Hall-Ellis rely on nothing more than speculation that [the reference] was publicly accessible in the relevant time frame.” *Id.* at 19. The same is true here – Dr. Hall-Ellis “simply points to” the December 1993 date and speculates, without anything more, that Vingralek became publicly accessible around that time.¹¹ Ex. 1020 ¶46. That is not enough.

¹¹ Dr. Hall-Ellis’s opinion of Vingralek’s public availability around December 1993 is even more questionable in view of the fact the References section at the end of Vingralek cites to a paper from 1994, the year *after* Vingralek allegedly became publicly available. EX1007, 26 (“[HW94] Y. Huang, O. Wolfson, Object Allocation in Distributed Databases and Mobile Computers, Data Engineering Conference,

Overall, Exhibit 1007 bears no indication of whether or when it was made publicly available, either as a standalone document or as part of any other publication, including a *Jahresberich*. EX2002, ¶¶ 14-17.

Dr. Hall-Ellis explains that she downloaded Exhibit 1007 from a particular webpage.¹² EX1020, n. 20. Included at the bottom of that webpage is a “Show all metadata” hyperlink that identifies the paper availability date as 2017, nearly two decades after the 1998 priority date. EX2002, ¶¶ 23-25, EX2006, EX2007.

Distributed file organization with scalable cost/performance	
dc.contributor.author	Vingralek, Radek
dc.date.accessioned	2017-11-17T14:34:28Z
dc.date.available	2017-06-10T18:45:16Z
dc.date.available	2017-11-17T14:34:28Z

Houston, 1994.”). A paper that was supposedly available in 1993 could not have cited to a paper that did not yet exist.

¹² Dr. Hall-Ellis does not claim any personal knowledge of when Vingralek was first published or became publicly available. Her opinions appear to be based solely on her review of online databases (presumably around the time she prepared her declaration).

Dr. Hall-Ellis made no mention of metadata or the 2017 date in her declaration.¹³

Dr. Hall-Ellis included Attachments 1A-1D to her declaration as evidence supporting her opinion that Vingralek was publicly available around December 1993. All of the attachments relate to the Annual Report that she contends contains Vingralek. Ex. 1020, ¶46. Attachment 1A is supposedly “the web page where Vingralek is found on ZDB.” Ex. 1020, ¶46. Attachment 1A, however, relates to the “Jahresbericht / ETH, Eidgenössische Technische Hochschule Zürich” serial generally, but does not describe any individual articles published within it; that is not its purpose. EX2002, ¶ 27. Attachment 1A also identifies that the journal was published in German, not English. *Id.* Neither Vingralek nor a “volume 207” is mentioned anywhere in Attachment 1A. *Id.*, ¶¶ 18, 27.

Dr. Hall-Ellis claims Attachment 1B is “the MARC record for the open access *Jahresbericht* [Annual Report] of the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich in the ETH Zürich Library online

¹³ The Board has denied institution where a petitioner relied on a website without further evidence that it was a “true and correct copy” as of a date before the priority date of the patent at issue. *See I-Blason LLC v. Aevoe Corp.*, IPR2016-00231, Paper 6 at 14-15 (PTAB May 8, 2016); *Next Step Group, Inc. v. Deckers Outdoor Corp.*, IPR2024-00164, Paper 16 at 13-14 (PTAB Aug. 6, 2024).

catalog,” and cites to a link at footnote 21. Ex. 1020, ¶49, n.21. Attachment 1B, however, does not connect Vingralek to the *Jahresbericht ETH Zurich* publication and does not provide any evidence that Vingralek was published in the *Jahresbericht*. In fact, there is no support for Dr. Hall-Ellis’s statements that Attachment 1B is the true and correct copy of the MARC record for the print copy of *Jahresbericht ETH Zurich 1993*, where she claimed Vingralek was published. EX2002, ¶¶28-31, EX2008-EX2010.

Attachment 1C, which Dr. Hall-Ellis states is a “copy of the MARC record for the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich obtained from the OCLC bibliographic database” (EX1020, ¶52), also does not provide any link between Vingralek and the Annual Report of ETH Zurich. Attachment C, which also references a German language publication (EX2002, ¶18), contains no information regarding the existence of a “volume 207” or any particular articles or authors.

Finally, Attachment 1D is the site where Dr. Hall-Ellis says the *Jahresbericht* journal can be found, according to the WorldCat database. Again, Attachment D relates to a German language publication and does not mention Vingralek or any article, author, or volume. EX2002, ¶¶18, 28-33.

Curiously, Dr. Hall-Ellis never includes a copy of the December 1993 Annual Report, even though the report can be found in the ETH Zürich digital repository

identified in her declaration.¹⁴ Ex. 1020, ¶¶47-48, n. 19, 20. In particular, searching for “*Jahresbericht ETH Zurich*” at <https://www.research-collection.ethz.ch>¹⁵ returns 51 results, which, when filtered by date range from “1990-1999” yields 10 results, one of which is the 1993 Annual Report. EX2002, ¶19. Per Dr. Hall-Ellis, this issue supposedly contains the Vingralek article. It does not. EX2002, ¶¶20-22.

The 1993 Annual Report (EX2005) is a document written entirely in German, whereas Vingralek (EX1007) is written entirely in English. EX2002, ¶¶18-19. It **does not** contain the Vingralek article or any mention of Vingralek or his paper. EX2002, ¶¶20-21, 26, EX2005, EX2011. Dr. Hall-Ellis does not explain why she did not include the Report in her declaration, or whether she reviewed a copy of it before rendering her opinion that “[t]he Vingralek article was published on pages 3-26 in Volume 207 dated December 1993 of the open access *Jahresbericht* [Annual Report] issue of the journal *Eidgenössische Technische Hochschule*.”

¹⁴ Dr. Hall-Ellis identifies the link <http://www.research-collection.ethz.ch>. The 1993 *Jahresbericht* can be found by entering “Jahresbericht 1993” in the search box, which leads to the following website, which includes the PDF for download: <https://www.research-collection.ethz.ch/handle/20.500.11850/643838>. EX2002, ¶19.

¹⁵ EX1020, ¶47-48, n. 19, n. 20.

Vingralek's absence from the Annual Report renders it, and all evidence relating to it, including Dr. Hall-Ellis's declaration statements, irrelevant. Petitioner should not be permitted to rely on Dr. Hall-Ellis's opinions or Attachments 1A-1D as evidence of Vingralek's public availability. Even if Petitioner were so permitted, such evidence cannot support Vingralek's availability because they bear no discernable relationship to Vingralek.

b. Norrie is Not Sufficient to Establish Vingralek's Public Availability

Norrie (EX1015) is an article about database research centers that appears in the publication *SIGMOD Record* that bears the date March 1994. Norrie references Vingralek in a single footnote (and nowhere else):

[3] R. Vingralek, Y. Breitbart, G. Weikum and R. Yavatker, "Distributed File Organisation with Scalable Cost/Performance", Technical Report 207, Dept. of Computer Science, ETH Zurich, Switzerland, December 93.

EX1015, 121, n. 3. This footnote is not sufficient indication of Vingralek's public availability for the reasons below.

i. Vingralek was personally known to the Norrie authors

Both Norrie and Vingralek originated from the same institution (the Computer Science Department at ETH-Zurich) and shared a common author (Weikum). Compare EX1015, 1 to EX1007, 1. Both papers also appear to have been prepared around 1993-1994. *Id.*; EX2002, ¶38, 40.

These facts indicate that the Norrie authors became aware of Vingralek through Weikum's shared authorship, as well as their departmental affiliations at ETH Zurich. As such, Norrie's citation to Vingralek cannot serve as reasonable indication that Vingralek was publicly accessible. *See Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1372 (Fed. Cir. 2019) (finding that a reference's accessibility to members of the authoring organization was insufficient to establish public accessibility); *Sophos*, Paper 23 at 18 (finding unpersuasive "citations by authors who had 'personal knowledge regarding the cited' reference").

ii. There is insufficient evidence that the *SIGMOD* publication containing Norrie was indexed or searchable

Dr. Hall-Ellis describes the cataloging of the *SIGMOD Record* generally. Ex. 1020 ¶¶56-61; EX2002, ¶36. The attachments she provides (Attachments 2A, 2B, 2C, 2D, and 2E) focus on the *SIGMOD Record* itself, and do not provide any indication of the contents of any article, nor any indication of how anyone would search for and locate a particular article within any record. *Id.* In other words, Dr. Hall-Ellis does not describe the cataloging or indexing of any article within any *SIGMOD Record* issue. Thus, based on the evidence submitted by Dr. Hall-Ellis, someone searching for Norrie would need to review each *SIGMOD Record*, its table of contents, and the documents within the record to find the particular article at issue. *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 773 (Fed. Cir.

2018) (finding a reference not publicly accessible where searching for it “would have required skimming through potentially hundreds of titles . . . with most containing unrelated subject matter”). And, with respect to Norrie itself, the title is simply “The Database Research Group at ETH Zurich,” which refers generally to the group at the university and does not describe any particular content or topic. EX2002, ¶36.

Dr. Hall-Ellis also does not provide any evidence or assertion as to when Norrie may have been published in an online form. She provides a link <<https://dl.acm.org/doi/pdf/10.1145/181550.181567>> and states that “[t]he Norrie article is available in the *ACM Digital Library* which indicates a March 1, 1994, publication date.” Ex. 1020, ¶55, n.23. The document available at the link (EX2012) is not the same as the version that was submitted as Ex. 1015. EX2002, ¶37. In particular, the online version is 6 pages (compared to 8 pages for Norrie) and does not include the general cover page or table of contents included in Norrie, which Dr. Hall-Ellis appears to indicate is a “print copy.” Ex. 1020, ¶57; EX2002, ¶37, EX2012. The spellings of the titles are also different (“Organization” versus “Organisation”), which raises further questions about the document referenced in footnote 3 relative to Vingralek, especially when Norrie does not include or describe the contents of the document referenced in footnote 3. EX2002, ¶37. There is no indication or evidence as to when an online version was first made publicly available.

B. Kahn in View of Vingralek Does Not Render the Challenged Claims Obvious

In Ground 2, Petitioner states: “To the extent that limitation [10.c] is interpreted to require that the ‘redirect message’ is sent from a ‘data location server’ and/or to the extent Kahn’s ‘redirect message’ does not disclose the redirect message ‘containing information for use by the first client to calculate a location of a second data location server,’ a POSITA would have found it obvious to implement these features in view of Vingralek.” Pet., 45. In other words, Petitioner relies on the combination of Kahn and Vingralek for [10.c](i) (“if the first data location server does not possess the location string, transmitting a redirect message to the first client”) and [10.c](ii) (“the redirect message containing information for use by the first client to calculate a location of a second data location server”).

Ground 2 fails because combining Kahn with Vingralek does not cure Kahn’s deficiencies or render any of the claims obvious. Petitioner alleges that a POSITA would have been motivated to “modify Kahn’s mechanism of notifying the client” by “[c]ombining the transmission of the message from the handle server with the update to the client’s hash function/table.” Pet., 51. For the reasons below, this alleged “combination” fails because it depends on Kahn’s handle servers storing hash tables, but they do not. EX2001, ¶¶73-85.

1. Client-server interaction in Vingralek

Vingralek teaches a “distributed file organization for record-structured, disk-resident files with key-based exact-match access.” EX1007, 3. In the Vingralek system, a client c sends a key K to a server s . *Id.*, 9. Server s applies certain hash functions to K until it identifies a server s' that it thinks has the records associated with K . *Id.* Vingralek goes on to explain:

If K does belong to the server that received it (i.e., if $s = s'$), the server performs the requested operation. However, **if K has been sent to the wrong server, the server forwards it to s' , and updates the client's view with its file level L , and its address table.** Eventually, K is received by the correct server and the client operation is executed. Further, as an important side effect, clients gradually bring their perception of the file up-to-date, so that the probability of wrongly addressed messages is significantly reduced.

Id., 10 (emphasis added). In other words, if the queried server s does not have the requested information, server s performs the calculation to identify server s' and forwards the key on. Server s also “updates the client's view with its file level L , and its address table.” Vingralek explains that:

[e]ach client c and each server s have their own perception of the file that is characterized by their value of the file level, denoted as L_c and

L_s , respectively, and a copy of the address table that they currently have.

The client's and the server's perception of the file may or may not coincide with the current picture of the file (i.e., they may have stale information on the file level and the address table).

Id., 9. This means that the next time the client c sends a new request, it will have updated (less stale) information to use to identify a new server to query. Importantly, this updated information is *not* used by the client to resolve its initial request involving K – as Vingralek teaches, that work is done by server s , not the client (“if K has been sent to the wrong server, the server forwards it to s ”). EX2001, ¶¶56-59, 74-75.

2. Kahn's “handle servers” do not store hash tables

Petitioner's argument that it would have been obvious to modify Kahn's “mechanism of notifying the client” by combining it with Vingralek to meet the “redirect message” limitation of the claims rests on Petitioner's ungrounded assumption that Kahn's handle servers store a copy of the hash table. Pet. 49. This fundamentally misreads Kahn. Petitioner's own citations disprove its theory. The first says:

As seen in Fig. 34, the handle server system 1230 includes handle servers 1232 and handle directory servers 1234 located at certain well known locations. **The directory servers will maintain a table of**

network addresses of handle servers (generally, each handle server will contain such a directory). This table will 15 generally be downloaded by each participating site frequently enough to be “acceptably” up-to-date at all times.

EX1005, 38:9-17 (emphasis added). The “directory” that each handle server generally contains is the “table of network address of handle servers.” This is not a hash table. EX2001, ¶¶76-77.

The second citation Petitioner points to says:

In a first step 170, **a client system downloads the table that associates hash ranges** with handle server domain names **from the handle server directory** for future use.

EX1005, 46:29-32 (emphasis added). Although this citation references a hash table, that table is downloaded by a *client* (not a handle server) and from a handle server directory (not a handle server). *See supra* §VII. Thus, when Petitioner posits that “a POSITA would have been motivated to use a verification method similar to that of Vingralek, i.e., applying the hash function to the server’s own hash table, as discussed above, especially because Kahn already discloses that the handle server stores a copy of the hash table” and cites to the citations above in support, Petitioner is mistaken. Kahn does not disclose that the “handle server stores a copy of the hash table.” Rather, Kahn teaches that hash tables are stored by handle directory servers,

which are (as detailed above) distinct from handle servers. EX2001, ¶¶56-59, 78-79.

C. A POSITA Would Not Have Been Motivated to Combine Kahn and Vingralek or Had a Reasonable Expectation of Success in Doing So

The Petition provides no rational underpinning for its theory that a POSITA would combine Kahn with Vingralek to achieve the claimed invention. The Federal Circuit has made clear that “obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis in the original). Merely showing that a POSITA could have combined the references is not enough; there must be a valid reason why they would have done so. *See Virtek Vision Int'l v. Assembly Guidance Sys.*, 97 F.4th 882, 886 (Fed. Cir. 2024); EX2001, ¶¶80-85.

1. A POSITA would not have been motivated to combine Kahn and Vingralek

Petitioner provides two theories for why it supposes POSITA would have been motivated to modify Kahn in view of Vingralek, neither of which are convincing: (1) Kahn and Vingralek both disclose that “client and handle server store copies of the hash table” and therefore a POSITA would have been motivated to “consider the teachings of Vingralek when implementing” Kahn (Pet. 46); (2) modifying Kahn to “include deferred hash table and hash function updates from the

handle server” would “reduce communication overhead associated with Kahn’s existing method” (Pet., 50-51). Both theories fail on the merits and as a matter of law.

Petitioner’s first theory is based on an incorrect supposition – Kahn never teaches that its handle servers “store copies of [] hash tables” (*supra* §VIII.B.2), thus making it fundamentally different from Vingralek, which does. Petitioner points to Kahn’s disclosure that states “[G]enerally, each handle server will contain such a directory). This table will generally be downloaded by each participating site frequently enough to be “acceptably” up-to-date at all times.” EX1005, 38:9-17. However, the directory stored in the handle server is a “table of network addresses of the handle servers” and is not a “hash range/handle-server-domain-name table,” which Petitioner alleges is the hash table. *Id.*, 38:7-17. Kahn only indicates that the “hash range/handle-server-domain-name table” is stored in the *handle server directory*, never the *handle server*. *Id.*, 46:29-47:8, Fig. 7 149. And Kahn never equates a “table of network addresses of the handle servers” to a “hash range/handle-server-domain-name table.” EX2001, ¶¶80-81.

Petitioner’s second theory fails because modifying Kahn in view of Vingralek would in fact not “reduce communication overhead associated with Kahn’s existing method.” As a threshold matter, if Kahn were to be modified in the manner Petitioner suggests, each of the handle servers would have to be somehow

configured to transmit the hash table to the client. Because, contrary to Petitioner's assertion, Kahn's handle servers do not store copies of the "hash range/handle-server-domain-name table" (i.e., the alleged hash table), modifying Kahn to both store tables and transmit them would increase Kahn's communication load. A POSITA would understand that to maintain current and consistent hash tables in each handle server in the network would require extensive updates and downloads of the hash table by *each* handle server. *Id.*, ¶82. This would increase the workload and burden on the handle servers, making it a non-obvious and undesirable change to Kahn's system. *Id.*, ¶¶82-84.

Indeed, a POSITA would understand that Kahn already provides a solution for retrieving an updated address table (i.e., by downloading it from the hash server directory). EX1005, 46:29-32. Petitioner offers no plausible reason why a skilled artisan would have discarded Kahn's approach in favor of Vingralek's error-prone system. *In re Anova Hearing Labs, Inc.*, 809 Fed. Appx. 840, 843 (Fed. Cir. 2020) ("The Board also does not explain why a person of ordinary skill in the art would be motivated to modify Brown, which already includes vents, to address occlusion effect.") Far from reducing overhead (even if that were a stated goal of Kahn's), incorporating Vingralek's scheme into Kahn would introduce additional complexity and inefficiency, as client requests bounce from server to server before eventually reaching their destination. EX2001, ¶¶82-84

The Federal Circuit has cautioned against the exact type of impermissible hindsight that animates Petitioner’s arguments, where an obviousness assertion “simply retrace[s] the path of the inventor with hindsight, discounting the number and complexity of the alternatives which might have been considered by the inventor but ultimately discarded.” *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008). The Petition’s failure to provide a rational motivation to combine the teachings of Kahn and Vingralek, as well as its improper reliance on hindsight, render its obviousness challenge untenable. The Board should reject this deficient attempt to reconstruct the claimed invention through the distorted lens of hindsight. *See Personal Web Techs.*, 848 F.3d at 993-94 (affirming PTAB decision rejecting obviousness where petitioner relied on “a conclusory assertion from its expert” and failed to explain sufficiently “why a skilled artisan would have been motivated to combine [the asserted references]”); *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) (reversing PTAB obviousness determination for “fail[ing] to identify a reason why one of ordinary skill in the art would make the modification” despite expert’s “unsupported and conclusory statement that the combination would be obvious to one of ordinary skill”).

2. A POSITA would not have had a reasonable expectation of success in modifying Kahn in view of Vingralek

A POSITA would not have a reasonable expectation of success to modify Kahn with Vingralek, as alleged by Petitioner to satisfy the requirements of claim 1.

Petitioner alleges a POSITA would have a reasonable expectation of success because in part “Kahn already utilizes a message to provide updated information to the client when a wrong server is reached, but would benefit from reducing communication overhead by implementing Vingralek’s teaching.” Pet., 53-54. However, Petitioner does not address how a POSITA would cure the deficiencies of the Kahn-Vingralek combination to arrive at the claimed invention. *Teva Pharms. USA, Inc. v. Corcept Therapeutics, Inc.*, 18 F.4th 1377, 1381 (Fed. Cir. 2021) (“The reasonable-expectation-of-success analysis must be tied to the scope of the claimed invention.”).

Neither Kahn nor Vingralek teach a location server configured to redirect a client’s query using a redirect message. As described above, Kahn’s handle servers do not transmit a “redirect message” to a client. *See supra* §VII. Similarly, Vingralek also does not teach redirecting a client’s query. As indicated above, in Vingralek, when a client queries a server, the server pushes an updated address table to the client. EX1007, 9-10. However, the pushed updated address table does not actually redirect the client’s query. *Id.* Instead, like Kahn, the queried server attempts to locate the requested data in another server by forwarding the query to the other server. *Id.* For example, Vingralek states “if *K* has been sent to the wrong server, the server forwards it to *s*’ ... Eventually, *K* is received by the correct server and the client operation is executed.” *Id.* The updated address table itself does not redirect the client’s query. Rather, the client may use it sometime in the future to

attempt to locate the correct server. As such, a POSITA would not have a reasonable expectation of arriving at the claimed invention by modifying Kahn with Vingralek, as neither reference teaches a location server “redirecting” a client’s query. EX2001, ¶85.

IX. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(a)

The Board should exercise its discretion under 35 U.S.C. § 314(a) to deny institution. The PTAB Consolidated Trial Practice Guide explains that “the panel will evaluate the challenges and determine whether, in the interests of efficient administration of the Office and integrity of the patent system (*see* 35 U.S.C. § 316(b)), the entire petition should be denied under 35 U.S.C. § 314(a).” PTAB Consolidated Trial Practice Guide (Nov. 2019) at 64. The decision “to deny a petition is a matter committed to the [USPTO’s] discretion.” *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 273, 136 S. Ct. 2131, 2140 (2016); *see also BioDelivery Sciences International, Inc. v. Aquestive Therapeutics, Inc.*, 935 F.3d 1362 (Fed. Cir. 2019). The Board has exercised this discretion to deny institution in cases where the Petitioner demonstrates a reasonable likelihood of prevailing on only a fraction of the challenged claims or asserted grounds. *See Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00621, Paper 12 at 28 (PTAB Sept. 21, 2021) (failure to demonstrate likelihood of prevailing on at least eighteen of nineteen challenged claims sufficient to denying institution); *Lenovo Holding Co.*,

Inc. v. InterDigital Tech. Corp., IPR2020-01515, Paper 11 at 46-47 (PTAB Apr. 15, 2021) (denying institution where petition met the institution threshold for at most two of twenty challenged claims); *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 at 41–43 (PTAB Jan. 24, 2019) (informative); *Chevron Oronite Co. v. Infineum USA L.P.*, IPR2018-00923, 11, Paper 9 at 10-11 (PTAB Nov. 7, 2018) (informative).

Here, Petitioner has failed to establish that Vingralek was publicly available on the alleged date, and thus, Vingralek is not qualified prior art. *See supra* §VIII.A. Ground 2 relies on Vingralek and therefore is non-meritorious. Furthermore, both Grounds 1 and 2 include significant weaknesses above and beyond Vingralek’s lack of qualification which prevent Petitioner from likely prevailing either ground. Instituting on grounds that are non-meritorious and/or include significant weaknesses would be inefficient administration of the Office. As such, the Board should exercise its discretion under 35 U.S.C. § 314(a) to deny institution “in the interests of efficient administration of the Office and integrity of the patent system”. PTAB Consolidated Trial Practice Guide (Nov. 2019) at 64.

X. CONCLUSION

For each of the foregoing reasons, the Petition fails to show a reasonable likelihood of prevailing against any challenged claim. Institution should be denied.

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By: /s/ Khue Hoang

Khue Hoang (Reg. No. 44,767)
khoang@reichmanjorgensen.com
REICHMAN JORGENSEN
LEHMAN & FELDBERG LLP
400 Madison Avenue, Suite 14D
New York, NY 10017
Telephone: (212) 381-1965
Facsimile: (650) 623-1449

Lead Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that Patent Owner's Preliminary Response (the "POPR") consists of 11,155 words, excluding the table of contents, certificate of service, this certificate of compliance, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare this paper (Microsoft Word).

Dated: November 19, 2024

Respectfully submitted,

/s/ Khue Hoang

Khue Hoang (Reg. No. 44,767)

Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served on, via electronic mail, as agreed to by counsel, upon the following counsel for Petitioner:

Naveen Modi (Reg. No. 46,224)
Joseph E. Palys (Reg. No. 46,508)
Daniel Zeilberger (Reg. No. 65,349)
Howard Herr (*pro hac vice* to be filed)
Alexa Lowman (*pro hac vice* to be filed)
Puja Patel (*pro hac vice* to be filed)

Paul Hastings LLP
2050 M Street NW
Washington, D.C. 20036,
Tel.: 202.551.1700
Fax: 202.551.1705
Email: PH-Google-Kove-IPR@paulhastings.com

Dated: November 19, 2024

/s/ Khue Hoang
Khue Hoang (Reg. No. 44,767)
Counsel for Patent Owner