

Filed on behalf of: R2 Solutions LLC

By: Carder W. Brooks
Registration No. 75,456
NELSON BUMGARDNER CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, TX 76107
Telephone: (817) 377-9111
Email: carder@nelbum.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN AIRLINES, INC., and HILTON DOMESTIC OPERATING
COMPANY, INC.

Petitioners

v.

R2 SOLUTIONS LLC,

Patent Owner.

Case IPR2023-00666

U.S. Patent 8,341,157

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	BACKGROUND.....	3
	A. Overview of the '157 Patent.....	3
	B. Claim Overview.....	6
III.	LEVEL OF ORDINARY SKILL	9
IV.	CLAIM CONSTRUCTION	9
	A. The Claims, Specification, Prosecution History, and Petitioner's Previously Proposed Construction Require that the "identifying" Limitation Must Occur Before the "assigning" Limitation of Claims 1 and 2.	9
	1. Applicable Legal Standards	10
	2. Background	11
	3. Argument	12
	B. Additional Constructions.....	22
V.	APPLICABLE LEGAL STANDARDS	23
	A. Obviousness.....	24
	1. Claims cannot be found obvious if an element is absent.....	24
	2. A petition must provide articulated reasoning with rational underpinning to combine and/or modify references.....	27
VI.	SUMMARY OF THE REFERENCES	27
	A. Summary of <i>Wad</i>	27

B.	Summary of <i>Steele</i>	28
VII.	THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 1.....	28
A.	Wad Does Not Disclose “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects.”	29
B.	Steele Does Not Disclose “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects” as Properly Construed.....	30
VIII.	THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUNDS 2-5.....	36
IX.	PATENT OWNER’S FINAL COMMENTS.....	36
X.	CONCLUSION	37

TABLE OF AUTHORITIES

Cases

<i>Apple Inc. v. Motorola, Inc.</i> , 757 F.3d 1286 (Fed. Cir. 2014).....	10, 12, 15
<i>Arendi S.A.R.L. v. Apple Inc.</i> , 832 F.3d 1355 (Fed. Cir. 2016).....	25, 26
<i>Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.</i> , 709 F.3d 1348 (Fed. Cir. 2013).....	13
<i>CFMT, Inc. v. YieldUp Int’l Corp.</i> , 349 F.3d 1333 (Fed. Cir. 2003).....	24
<i>DSS Tech. Mgmt. v. Apple Inc.</i> , 885 F.3d 1367 (Fed. Cir. 2018).....	26
<i>Function Media, LLC v. Google, Inc.</i> , 708 F.3d 1310 (Fed. Cir. 2013).....	10, 12
<i>Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC</i> , IPR2012-00001, Paper 15 (P.T.A.B. Jan. 9, 2013)	25
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	24
<i>In re Kahn</i> , 441 F.3d 977 (Fed. Cir. 2006).....	27
<i>In re Rijckaert</i> , 9 F.3d 1531 (Fed. Cir. 1993).....	25
<i>Interactive Gift Express, Inc. v. CompuServe Inc.</i> , 256 F.3d 1323 (Fed. Cir. 2001).....	10
<i>InTouch Techs., Inc. v. VGo Comm’ns, Inc.</i> , 751 F.3d 1327 (Fed. Cir. 2014).....	26

<i>K/S Himpp v. Hear-Wear Techs., LLC</i> , 751 F.3d 1362 (Fed. Cir. 2014).....	25
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	26, 27
<i>LG Elecs., Inc. v. Cellular Commc’ns Equip. LLC</i> , IPR2016-00197, Paper 7 (PTAB April 29, 2016)	27
<i>Mformation Techs., Inc. v. Research In Motion Ltd.</i> , 764 F.3d 1392 (Fed. Cir. 2014).....	10, 12, 15
<i>N.V. v. Abbott Labs.</i> , 512 F.3d 1363 (Fed. Cir. 2008).....	27
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005).....	15
<i>Silicon Graphics, Inc. v. ATI Techs., Inc.</i> , 607 F.3d 784 (Fed. Cir. 2010).....	35
<i>TALtech Ltd. v. Esquel Apparel, Inc.</i> , 279 F. App’x 974 (Fed. Cir. 2008)	10
<i>Wellman, Inc. v. Eastman Chem. Co.</i> , 642 F.3d 1355 (Fed. Cir. 2011).....	23
<i>Williamson v. Citrix Online, LLC</i> , 792 F.3d 1339 (Fed. Cir. 2015).....	10
<i>Wireless Agents LLC v. Sony Ericsson Mobile Commc’ns Ab</i> , 189 F. App’x 965 (Fed. Cir. 2006)	35

Rules, Regulations, and Statutes

35 U.S.C. § 103	25
35 U.S.C. § 103(a)	24
35 U.S.C. § 311(b)	25

35 U.S.C. § 313	1
37 C.F.R. § 42.107	1
37 C.F.R. § 42.108(c).....	24
P.R. 4-2 (Eastern District of Texas).....	11

Other Authorities

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756 (Aug. 14, 2012)	24
PTAB Consolidated Trial Practice Guide (USPTO Nov. 2019)	25

PATENT OWNER’S EXHIBIT LIST

Exhibit	Description
2001	Order of Dismissal, <i>R2 Solutions LLC v. American Airlines, Inc.</i> , Case No. 4:22-cv-00353 (E.D. Tex. June 26, 2023), ECF 72
2002	American Airlines, Inc.’s P.R. 4-2 Preliminary Claim Constructions and Extrinsic Evidence, <i>R2 Solutions LLC v. American Airlines, Inc.</i> , Case No. 4:22-cv-00353 (E.D. Tex. Dec. 7, 2022) (“Preliminary Constructions”)
2003	Claim Construction Memorandum Opinion and Order, <i>R2 Solutions LLC v. American Airlines, Inc.</i> , Case No. 4:22-cv-00353 (E.D. Tex. April 3, 2023), ECF 58

I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, R2 Solutions LLC (“R2 Solutions” or “Patent Owner”) submits this Preliminary Response to American Airlines, Inc. (“AA”) and Hilton Domestic Operating Company, Inc.’s (“Hilton”) (collectively, “Petitioner”) Petition for *Inter Partes* Review (“Petition”), challenging claims 1-23 of U.S. Patent No. 8,341,157 (the “’157 patent”) (Ex. 1001).¹

Petitioner argues that independent claims 1 and 2 (and dependent claims 3, 6-7, and 11) are obvious over U.S. Patent No. 8,375,048 (Ex. 1003, “Wad”) in view of U.S. Publication No. 2007/0294240 (Ex. 1004, “Steele”).² *Id.* But Wad and Steele

¹ The parallel district court action against AA was resolved and ultimately dismissed on June 26, 2023. *See* Ex. 2001. Counsel for AA contacted the Board on July 5, 2023 to request permission for R2 and AA to submit a Joint Motion to Terminate this proceeding as to AA, and a Joint Request to Maintain Confidentiality and Keep Separate the settlement agreement that is to be filed with the Board as part of the Motion to Terminate. The Motion to Terminate has not yet been submitted. The anticipated Motion to Terminate will not seek to terminate Hilton as a petitioner.

² Petitioner alleges that claims 1-23 are invalid based on five different grounds. *See* Petition at 2. Ground 1 is the only ground that addresses independent Claims 1 and

do not, individually or collectively, disclose or suggest all of the claim limitations. The '157 patent and its challenged claims are directed to a solution that first identifies a plurality of data objects that match at least one query keyword, and then assigns intent(s) to at least some of the identified data objects. But the Petition's primary reference, Wad, does not disclose that intent(s) can be assigned to any data objects, let alone the identified data objects that matched at least one query keyword. And Steele discloses assigning intents to documents well before such documents are ever identified in connection with a search query. Thus, each of Wad and Steele fail to disclose, suggest, or teach that the "identifying" and "assigning" steps are performed in the manner required by independent Claims 1 and 2 of the '157 patent. Because the Petition fails to show at least one element of each of the challenged independent claim in the asserted references or combinations, the Petitioner cannot show that any of the challenged claims are reasonably likely to be found unpatentable. The Board should not institute *inter partes* review of the '157 patent for at least this reason as described more fully herein.

2 of the '157 patent. *Id.* Accordingly, Ground 1 is the only ground discussed in this Preliminary Response.

II. BACKGROUND

A. Overview of the '157 Patent

The specification of the '157 patent explains that if, as in the case of traditional search engines, the “engine simply regards a web query as, for example, a ‘bag of words’, the search engine will search for web pages and other data objects (e.g., images, audio files, text files) that contain, or are otherwise associated with, the individual words within the query.” '157 patent at 4:1-5. However, simply treating a user query as a “bag of words” may yield results that do not align with the purpose of the user’s search. Additionally, it can be onerous to scrutinize generated results for a desired returned object, as the objects can be unremarkable as to each other. *Id.* at 4:10-15. Thus, the specification teaches:

Search results could be significantly enhanced if the likely intent of the query is known. For example, search results may be ranked such that results that are more relevant to the user’s intent appear at or near the top of the search results. Perhaps more significantly, however, the user’s intent can be used to customize the display and behavior of a search result to be narrowly targeted to a user’s intent. An illustrative list of such customizations could include a customized title or abstract for the result or specialized parameters of a displayed clickable URL to provide the landing page with information regarding the user’s intent or triggered by the user’s intent.

Id. at 4:16-26.

This “intent”-driven search engine process offers significant technical features that constitute enhancements over then-existing search engine technology. For example, the ’157 patent discusses how pre-programmed “intent” can be mapped to query keywords, and how “intent” determination can be fine-tuned via particular parameters:

The query is then classified into one or more likely intents, which can include an unclassified intent when no defined intents match the query 2300. An intent is a mapping from many combinations of keywords to a relatively small set of common goals that users pursue in a search query or session of multiple queries. Often, the intent of the query is not explicitly stated in the keywords. While the space of possible queries, is very large, the set of intents is much smaller. Examples of intents relating to product queries can be, for example: official-site, research, purchase, dealer, support, or reviews. Examples of intents relating to local/map queries: directions, reviews, phone, hours-of-operation. In one embodiment, query intent may be determined by linguistic analysis of query keywords. In one embodiment, previous queries in the user session, user profile information such as preferences, the set of all queries from all users or any subset of all users (e.g. a subset of users having specific demographics or usage patterns), and click data from previous sessions for the current user as well as the set of all users or any subset of all users are used to determine query intent.

Id. at 9:42-61.

The solution provided by “intent(s)”-driven search engine process of the ’157 patent first identifies a plurality of data objects that match the query:

A plurality of data objects accessible to the network that match the query are then identified 2400 using the computing device. Such data objects could be documents such as web pages, or could be any other type of data object, such as media objects, having at least one property by which such objects could be matched to a query. The data objects could be matched to the query using any conventional search engine technology known in the art, such as, for example, using a bag of words type to match query keywords to data objects.

Id. at 9:62-10:3.

The solution provided by the “intent(s)”-driven search engine process of the ’157 patent then assigns intent(s) to the identified data objects that matched a query keyword and then ranks the identified data objects that matched a query keyword:

The identified documents are then ranked 2500 by the computing device. In one embodiment, the data objects are ranked using any ranking algorithm known in the art, such as, for example, term counts, frequency within the corpus of documents, and quality of the site/page based on link analysis. In one embodiment, intent may be used to rank a document in a specialized ranking function rather than a traditional {query,document} score. In order to increase the probability of meeting the user’s goal, one or more documents may be included that matches highly against the 2nd or 3rd most likely intent, not just the most likely intent, based on a variety of features. While this approach lowers the

probability that the result matched against the less likely intent is the best one on average, it increases the marginal probability that the user gets at least one relevant result in the result set. In another embodiment, a score is assigned for each candidate result against multiple intents. In either case, once the final result set is computed, each result has a corresponding relevance score for each possible intent.

In one embodiment, intent can be embedded in the search result set, for example:

```
<resultset
  <result
    <URL> result URL </URL>
    <INTENT>intent type</INTENT>
  </RESULT>
  <result>
    <URL> result URL </URL>
    <INTENT>intent type</INTENT>
  </RESULT>
  ...
</resultset>
```

Id. at 10:4-37.

The solution provided by the “intents”-driven search engine process finally builds a result that is transmitted to the user. *Id.* at 10:38-57.

B. Claim Overview

Independent Claims 1 and 2 are reproduced below with emphasis on the particular limitations that are at issue in this Preliminary Response:

1. A method comprising the steps of:

receiving, over a network, a query from a user, the query comprising at least one query token;

analyzing the query, using at least one computing device, to identify at least one query keyword;

determining, at least the one computing device, a plurality of intents from the at least one keyword, each of the plurality of intents indicates a type of information regarding the query keyword that is likely to be desired by a user submitting the query;

classifying the query, using the at least one computing device, into at least one of the plurality of intents;

identifying, using the at least one computing device, a plurality of data objects available over the network that match the at least one query keyword;

assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects;

ranking, using the at least one computing device, the plurality of data objects;

building a result, using the at least one computing device, using the ranked plurality of data objects, the result comprises a plurality of display entries, at least one display entry customized to a respective assigned intent is constructed for each of the ranked plurality of data objects; and

transmitting the result, over the network, to the user.

2. A computer-readable medium having computer-executable instructions for a method comprising the steps of:

receiving, over a network, a query from a user, wherein the query comprising at least one query token;

analyzing the query, using at least one computing device, to identify at least one query keyword;

determining a plurality of intents, by the computing device, from the at least one keyword, each of the plurality of intents indicates a type of information regarding the query keyword that is likely to be desired by a user submitting the query;

classifying the query, using the at least one computing device, into at least a subset of the plurality of intents;

identifying, using the at least one computing device, a plurality of data objects available over the network that match the at least one query keyword;

assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects;

ranking, using the at least one computing device, the plurality of data objects;

building a result, using the at least one computing device, using the ranked plurality of data objects, the result comprises a plurality of display entries, wherein at least one display entry customized to a respective assigned intent is constructed for each of the ranked plurality of data objects; and

transmitting the result, over the network, to the user.

The arguments in this Preliminary Response pertain to independent Claims 1 and 2, but are equally applicable to claims 3-23 because each of these claims depend from independent Claim 1 or 2. As such, should the Board accept Patent Owner's arguments that trial should not be instituted on Claims 1 and 2, it necessarily follows that trial should not be instituted on the dependent claims.

III. LEVEL OF ORDINARY SKILL

For the limited purpose of this Preliminary Response, Patent Owner does not contest Petitioner's definition of a person of ordinary skill in the art, but it reserves the right to do so if trial is instituted.

IV. CLAIM CONSTRUCTION

A. The Claims, Specification, Prosecution History, and Petitioner's Previously Proposed Construction Require that the "identifying" Limitation Must Occur Before the "assigning" Limitation of Claims 1 and 2.

As demonstrated below, the claims, specification, prosecution history, and Petitioner's previously proposed construction require that "identifying, using the at least one computing device, a plurality of data objects over the network that match the at least one query keyword" occur before "assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objections" as recited by Claims 1 and 2 of the '157 patent. The fact

that the “identifying” limitation must occur prior to the “assigning” limitation is simply the plain and ordinary meaning of these claim limitations.

1. Applicable Legal Standards

As a general rule, “[u]nless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one.” *Mformation Techs., Inc. v. Research In Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (quoting *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001)). However, a claim “requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that the steps be performed in the order written, or the specification directly or implicitly requires” an order of steps. *Id.* at 1398 (quoting *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 F. App’x 974, 978 (Fed. Cir. 2008)). “[I]f grammar, logic, the specification, or the prosecution history require the steps to be performed sequentially, then the claims are so limited.” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1309 (Fed. Cir. 2014), *overruled on other grounds by Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015); *see also Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1320 (Fed. Cir. 2013) (concluding that a claim that recites “processing” an “electronic advertisement” necessarily indicates that “the creation of the ad must happen before the processing begins”).

2. Background

In the district court litigation between R2 Solutions and co-Petitioner AA, AA served Preliminary Constructions for certain terms pursuant to Patent Rule 4-2 in the Eastern District of Texas. *See* Ex. 2002 (“Preliminary Constructions”). AA’s Preliminary Constructions were signed by lead counsel for Petitioner. *Id.* at 38-39. Therein, AA contended that in Claims 1 and 2, “[t]he receiving, analyzing, determining and classifying steps must occur in the order recited. *The identifying, assigning/ranking, building and transmitting steps must occur in the recited order, where the assigning and ranking steps can occur simultaneously or before or after one another.*” *Id.* at 14-15 (emphasis added).³ But now, in an apparent (and convenient) change of heart, Petitioner and its lead counsel propose that the “assigning” limitation is not required to be performed “in a particular order, let alone after the ‘identifying’ step.” Petition at 29-30.

³ On January 9, 2023, lead counsel for Petitioner informed counsel for R2 Solutions that AA dropped certain terms, including the order of steps in Claims 1 and 2, to streamline the issues for the district court. Whether the “identifying” limitation must occur prior to the “assigning” limitation of independent Claims 1 and 2 has thus not been previously decided.

3. *Argument*

Contrary to Petitioner's new position, there is an inherent order to the limitations of Claims 1 and 2. Indeed, the limitation "assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects" requires that the set of data objects to which intents are assigned is the same set of data objects that were previously identified in response to a query.

As a matter of logic and grammar, independent Claims 1 and 2 require that "identifying ... a plurality of data objects available over the network that match the at least one query keyword" must occur before "assigning ... at least one of the plurality of intents to at least some of the plurality of data objects." *See Mformation Techs.*, 764 F.3d at 1398; *Apple Inc.*, 757 F.3d at 1309; *Function Media, LLC*, 708 F.3d at 1320 (concluding that a claim that recites "processing" an "electronic advertisement" necessarily indicates that "the creation of the ad must happen before the processing begins"). The claim limitation of "identifying ... a plurality of data objects available over the network that match the at least one query keyword" locates the data objects that match a query keyword submitted by a user. This set of identified data objects is used in the subsequent claim limitations for "assigning ... at least one of the plurality of intents *to at least some of the plurality of data objects,*"

“ranking ... *the plurality of data objects*,” and “building a result ... using *the ranked plurality of data objects*.” Indeed, in the “building” step, the claims explicitly require “at least one display entry customized to a respective *assigned intent*” be “constructed for each of *the ranked plurality of data objects*.” There can be no question, then, that data objects are first identified, then assigned intents, then ranked, and then built into a result.

Put another way, the data objects that are identified are the data objects that are used in all of the subsequent limitations, and thus, the “identifying” limitation must occur before the “assigning” limitation. To hold otherwise would cause the “identifying” limitation to serve no purpose, demonstrating why Petitioner’s newly contrived construction is wrong. *See Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 709 F.3d 1348, 1356-57 (Fed. Cir. 2013) (declining to adopt a proposed construction because it would render another limitation superfluous). Logic and grammar thus dictate that both claims require that the data objects be identified before “assigning,” “ranking,” and “building a result” can proceed using such data objects.

The prosecution history also shows that there is an order to the claim limitations. On May 18, 2012, the patentee filed an amendment and response to a Final Office Action. *See Ex. 1002 at 109-121*. Therein, the patentee amended the

claim language to include the limitation of “assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects” for Claims 1 and 30, which issued as independent Claims 1 and 2 in the ’157 patent. *Id.* at 111, 117. These claims also include the limitation of “identifying, using the at least one computing device, a plurality of data objects available over the network that match the at least one query keyword,” as recited in independent Claims 1 and 2 of the ’157 patent. *Id.*

To overcome rejections submitted by the Examiner based on the reference “Zeng et al.,” the patentee argued that “Zeng et al. also fails to disclose or suggest, ‘assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects.’” *Id.* at 120. The patentee explained that “nowhere does Zeng et al. disclose or suggest ... assigning intents to the *data objects obtained as search results as recited in the subject claims.*” *Id.* (emphasis added). Thus, the patentee unambiguously and expressly made clear that “the plurality of data objects” within the limitation of “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects” refers back to the identified plurality of data objects obtained as search results that matched the at least one query keyword. The prosecution history, then, also requires that “identifying ... a plurality of data objects available over the network that match the

at least one query keyword” must occur before “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects,” as recited in Claims 1 and 2. *See Apple*, 757 F.3d at 1309 (“[I]f grammar, logic, the specification, or the prosecution history require the steps to be performed sequentially, then the claims are so limited.”); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005) (“[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention.”). Tellingly, Petitioner fails entirely to address the prosecution history of the ’157 patent in arguing for its construction. *See* Petition at 30-31.

Further, contrary to Petitioner’s allegations, the specification also requires that “identifying” data objects must occur before “assigning” intents to such data objects. *See Mformation Techs., Inc.*, 764 F.3d at 1398 (citation omitted) (a claim “requires an ordering of steps when ... the specification directly or implicitly requires an order of steps.”). Petitioner alleges the “assigning” limitation is only disclosed at the Abstract, column 1 at lines 43-49, and column 5 at lines 5-14, and further alleges that nothing in the specification requires the assigning step to occur in a particular order, let alone after the “identifying” limitation. Petition at 29-30. This is wrong.

Each of the passages identified by Petitioner actually discloses that the “identifying” limitation occurs prior to the “assigning” limitation, and further

reinforces that the “data objects” within the “assignment” are the same data objects that were already identified. *See* Ex. 1001 at Abstract (“A plurality of data objects that match query keywords is identified. The data objects are ranked, wherein at least one intent is assigned to at least some of the data objects.”), 1:40-44 (“A plurality of data objects available over the network that match query keywords are identified. The data plurality of objects are ranked, using the computing device, wherein at least one intent is assigned to at least some of the data objects.”), 2:1-7 (“a query search module for identifying ... a plurality of data objects available over the network that match the respective query keywords; a search result ranking module for ranking, for each query processed by the query search module, the respective plurality of data objects, wherein at least one of the at least one intents is assigned to at least some of the plurality of data objects.”). And Petitioner ignores other areas of the specification that support that the claims must proceed in a particular order. The excerpt reproduced below is annotated for emphasis:

A plurality of data objects accessible to the network that match the query are then identified 2400 using the computing device. Such data objects could be documents such as web pages, or could be any other type of data object, such as media objects, having at least one property by which such objects could be matched to a query. The data objects could be matched to the query using any conventional search engine technology known in the art, such as, for example, using a bag of words type to match query keywords to data objects.

The identified documents are then ranked 2500 by the computing device. In one embodiment, the data objects are ranked using any ranking algorithm known in the art, such as, for example, term counts, frequency within the corpus of documents, and quality of the site/page based on link analysis. In one embodiment, intent may be used to rank a document in a specialized ranking function rather than a traditional {query,document} score. In order to increase the probability of meeting the user's goal, one or more documents may be included that matches highly against the 2nd or 3rd most likely intent, not just the most likely intent, based on a variety of features. While this approach lowers the probability that the result matched against the less likely intent is the best one on average, it increases the marginal probability that the user gets at least one relevant result in the result set. In another embodiment, a score is assigned for each candidate result against multiple intents. In either case, once the final result set is computed, each result has a corresponding relevance score for each possible intent.

In one embodiment, intent can be embedded in the search result set, for example:

```
<resultset>
  <result>
    <URL> result URL </URL>
    <INTENT>intent type</INTENT>
  </RESULT>
  <result>
    <URL> result URL </URL>
    <INTENT>intent type</INTENT>
  </RESULT>
  ...
</resultset>
```

One or more search engine result pages (SERPs) are then built 2600 by the computing device using the ranked result set and are transmitted over the network to the querying user 2700. In one embodiment, duplicates are removed from the

Ex. 1001 at 9:62-10:62. The passages annotated in green disclose that at least one of the plurality of intents (e.g., “<INTENT>intent type</INTENT>”) is assigned to at least some of the identified plurality of data objects that match at least one query

keyword. Each “<URL> result URL </URL>” is an identified data object that matched a query keyword and each “result URL” is part of a “resultset” that includes the plurality of identified data objects that matched a query keyword. This demonstrates that the “identifying” step must occur before the “assigning” step. The passages annotated in blue also disclose that the “identifying” limitation must occur prior to the “assigning,” “ranking,” and “building” limitations. Indeed, these passages disclose that the “data objects” within the “assigning,” “ranking,” and “building” steps refers back to the plurality of data objects that were identified via matching keywords (*i.e.*, “the result”). And the temporal phrasing (annotated in red) just reinforces that the “identifying” step occurs prior to the “assigning,” “ranking,” and “building” steps.

Petitioner argues that Figure 2 of the '157 patent omits an “assigning” step and that this somehow shows that no order is required. *See* Petition at 29. This is nonsense. Omission of the “assigning” step in Figure 2 does not change the fact that the specification requires that the “identifying step” occur prior to the “assigning” step as previously discussed. And again, the specification discloses the “assigning” step in the same temporal context as the “ranking” step, *i.e.*, as taking place between the “identifying” step and the “building” step. *See* Ex. 1001 at Abstract, 1:40-50, 2:1-15, and 9:62-10:41.

Petitioner also asserts that the '157 specification supports that the assigning step may occur before the identifying step because the specification discloses that “an intent is a mapping from many combinations of keywords to a relatively small set of common goals that users pursue in a search query.” *See* Petition at 30. But this passage has nothing to do with “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects,” as recited in Claims 1 and 2 of the '157 patent. Rather, the passage is discussing embodiments regarding the limitations of “determining ... a plurality of intents from the at least [query] keyword” and “classifying the query ... into at least one of the plurality of intents.” This is apparent from the context in which the cited excerpt appears:

The query is then classified into one or more likely intents, which can include an unclassified intent when no defined intents match the query 2300. An intent is a mapping from many combinations of keywords to a relatively small set of common goals that users pursue in a search query or session of multiple queries. Often, the intent of the query is not explicitly stated in the keywords. While the space of possible queries, is very large, the set of intents is much smaller. Examples of intents relating to product queries can be, for example: official-site, research, purchase, dealer, support, or reviews. Examples of intents relating to local/map queries: directions, reviews, phone, hours-of-operation. In one embodiment, query intent may be determined by linguistic analysis of query keywords. In one embodiment, previous queries in the user

session, user profile information such as preferences, the set of all queries from all users or any subset of all users (e.g. a subset of users having specific demographics or usage patterns), and click data from previous sessions for the current user as well as the set of all users or any subset of all users are used *to determine query intent*.

Ex. 1001 at 9:42-61 (emphasis added).

While it is true that the “assigning” limitation assigns at least one of the plurality of intents determined by the query keyword, nothing in the passage cited by Petitioner discusses such assignment. Nevertheless, based on this excerpt, Petitioner asserts that a “POSITA would have understood that the set of intents used by a working system would have been finite and could be assigned to data objects based on the content of the data objects independently of the execution of a particular query.” Petition at 30. But this is a conclusory statement and should be given no weight. The fact is that Petitioner failed to cite to *anything* in the specification or prosecution history that supports its new allegation that the order of the claim limitations does not matter. This is because the claims, the specification, and the prosecution history (as well as co-Petitioner AA’s Preliminary Constructions) all demonstrate that the “identifying” limitation occurs prior to the “assigning” limitation Claims 1 and 2 of the ’157 patent.

In an attempt to remedy its glaring lack of intrinsic support, Petitioner next argues that the following testimony from Patent Owner's expert Mr. Davis that was offered in another case aligns with the understanding that the "assigning" step may occur before a query or query results:

Based on my expertise, the plain and ordinary meaning of 'intents' in the context of the '157 patent is 'goals that users pursue in a search query' that exist as preprogrammed items within and/or accessible to the architecture.

See Petition at 30; Ex. 1016 at ¶78. This is a red herring. Nothing in this testimony touches on the assigning of intents to data objects. Rather, the testimony is directed to explaining what "intents" are in the context of the '157 patent, and the above excerpt says nothing about the order in which the "assigning" of intents to data objects takes place.

Finally, Petitioner also asserts that "[n]othing in the ... claims requires the assigning step to occur in a particular order, let alone after the 'identifying' step." Petition at 30. This is wrong. Petitioner does not analyze the claim language at all and instead just baldly states a conclusion. *See* Petition at 29-30. As discussed above, a plain reading of the claims reveals that the "assigning" limitation must occur after the "determining" and "identifying" limitations of independent Claims 1 and 2.

In summary, the claims, specification, and prosecution history all reveal that the data objects that are “assigned” the intents in the subject limitation are the very same data objects that were identified in the “identifying” step. Thus, the entirety of the intrinsic record supports that there is a particular order to the claims, meaning that the “assigning” step must occur after the “identifying” step in Claims 1 and 2. This aligns with the Preliminary Constructions advanced by AA and Petitioner’s lead counsel in related litigation. *See* Ex. 2002 at 14-15.

B. Additional Constructions

In district court cases not involving the Petitioner, the Eastern District of Texas issued constructions for the following terms of the ’157 patent:

<u>Term/Phrase</u>	<u>Construction</u>
“intent(s)” (Claims 1, 2)	plain meaning
“determining, at least the one computing device ...” (Claim 1)	plain meaning
“the query is classified by linguistic analysis of the at least one query keyword” (Claim 5)	plain meaning

EX. 1009 at 34, 40, 42.

In the district court case between R2 Solutions and AA, the Eastern District of Texas issued constructions for the following terms of the '157 patent:

<u>Term/Phrase</u>	<u>Construction</u>
“intent(s)” (Claims 1, 2, 11, 12, 22)	plain meaning
“ranking” (Claims 1, 2)	“arranging in an order”
“classifying the query ... into at least one of the plurality of intents” (Claim 1) and “classifying the query ... into at least a subset of the plurality of intents” (Claims 2)	“arranging or assigning the query to one or more of the plurality of intents determined from the at least one keyword identified from a query”

Ex. 2003 at 19-34.

Patent Owner submits that the Board need not construe any of these additional claim terms in a particular manner to arrive at the conclusion that the Petition is substantively deficient. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“need only be construed ‘to the extent necessary to resolve the controversy’”).

V. APPLICABLE LEGAL STANDARDS

The Board may only grant a petition for *inter partes* review where “the information presented in the petition . . . shows that there is a reasonable likelihood

that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(c). Petitioner bears the burden of showing that this statutory threshold has been met. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756 (Aug. 14, 2012) (“The Board . . . may institute a trial where the petitioner establishes that the standards for instituting the requested trial are met . . .”).

A. Obviousness

Section 103 provides that “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The obviousness analysis requires several threshold inquiries: the level of ordinary skill in the art must be established; the scope and content of the prior art must be determined; and any differences between the prior art and the claims at issue must be ascertained. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

1. Claims cannot be found obvious if an element is absent.

If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“[O]bviousness requires a suggestion of all limitations in a

claim.”); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection where prior art did not teach or suggest all claim limitations); *Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, Case No. IPR2012-00001, Paper 15 at 15 (P.T.A.B. Jan. 9, 2013) (refusing to institute an IPR under 35 U.S.C. § 103 where prior art did not disclose all claim limitations). The Board has recognized that, “in an obviousness analysis, conclusory assertions from a third party about general knowledge in the art cannot, without supporting evidence of record, supply a limitation that is not evidently and indisputably within the common knowledge of those skilled in the art.” See November 2019 Consolidated Trial Practice Guide at 36. “Furthermore, because an *inter partes* review may only be requested ‘on the basis of prior art consisting of patents or printed publications,’ 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications. In other words, expert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself.” *Id.*; see also *K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365 (Fed. Cir. 2014); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366-67 (Fed. Cir. 2016) (reversing obviousness decision because the Patent and Trial Appeal Board presumed a missing claim limitation was present in the prior art based on conclusory statements made by Petitioner’s expert).

Additionally, it is improper to use the challenged claim as a roadmap to piece together disparate disclosure using hindsight bias. *See InTouch Techs., Inc. v. VGo Comm'ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (reversing obviousness where “[i]t appears that [the expert] relied on the [] patent itself as her roadmap for putting what she referred to as pieces of a ‘jigsaw puzzle’ together.”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.”). And while “‘common sense and common knowledge have their proper place in the obviousness inquiry,” “common sense is typically invoked to provide a known motivation to combine, not to supply a missing claim limitation.” *DSS Tech. Mgmt. v. Apple Inc.*, 885 F.3d 1367, 1374 (Fed. Cir. 2018) (internal citations omitted) (quoting *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016)). The Federal Circuit has cautioned that “references to ‘common sense’—whether to supply a motivation to combine or a missing limitation—cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Id.*

2. *A petition must provide articulated reasoning with rational underpinning to combine and/or modify references.*

The conclusion of obviousness based on a combination of references must also be supported with explicit analysis of a reason to combine those references. *KSR Int'l Co.*, 550 U.S. at 418. The Federal Circuit has stated that such reasons must be more than “mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (agreeing with the district court’s reasoning that “some kind of motivation must be shown from some source, so that the jury can understand why a person of ordinary skill would have thought of either combining two or more references or modifying one to achieve the patented method”); *see also LG Elecs., Inc. v. Cellular Commc’ns Equip. LLC*, IPR2016-00197, Paper 7 at 7-11 (PTAB April 29, 2016) (faulting a petition’s obviousness analysis for lack of sufficient articulated reasons with rational underpinnings for modifying references to achieve particular elements required in the claims).

VI. SUMMARY OF THE REFERENCES

A. Summary of Wad

Wad is directed to a solution that augments a search query with terms based on past queries and user context to form a resultant query that better reflects the

intent of the query. Ex. 1003 at 1:37-40. Wad further discloses that the augmented query is sent to a federation broker that selects and calls federation engines and gathers responses from the called federation engines. *Id.* at 5:56-60.

B. Summary of Steele

Steele is directed to a solution that utilizes an index builder that assigns intents to the universe of data objects in an index that it builds based on data received from a web crawler. Ex. 1004 at ¶¶[0021]-[0024]. After the index is built, a search component is configured to receive user search input and interact with the index to identify a set of relevant documents responsive to the search input. Ex. 1004 at ¶[0025].

VII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 1.

Petitioner's combination of Wad and Steele fails to render obvious the challenged independent claims. As discussed above, the '157 patent and its challenged claims are directed to a solution that first identifies a plurality of data objects that match at least one query keyword, and then assigns intent(s) to at least some of the identified data objects that matched at least one query keyword. Wad, however, does not even disclose that intent(s) can be assigned to any data objects, let alone the identified data objects that matched at least one query keyword. Further, Steele only discloses data objects within an index that are assigned intents well

before a user query is received, which is contrary to the '157 patent. Thus, each of Wad and Steele fail to disclose, suggest, or teach that the “identifying” and “assigning” steps are performed in the manner required by independent Claims 1 and 2 of the '157 patent.

A. Wad Does Not Disclose “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects.”

Wad fails to disclose this limitation. This is evident from Petitioner’s own argument, reproduced below, which demonstrates only a half-hearted attempt to show that this limitation is disclosed by Wad:

Wad discloses using a federation engine that searches certain categories of data objects from specialized providers. For example, Wad searches travel web sites for airfares and hotels, or religious web sites for information about churches. *See* Wad, 2:54-62, 6:23-32. Furthermore, Wad teaches searching an index of webpages (156) with a categorizer that is supplied by a web crawler that browses the Internet, *Id.*, 3:11-33, Fig. 2, although Wad provides few details on how the index is categorized. EX-1010, ¶113.

Petition at 27. None of these arguments or passages are directed to “assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of data objects” identified by a search, as required by the subject limitation. To the contrary, the citations to Wad that Petitioner relies on are just directed generally to a search engine searching different categories of materials.

See id. Thus, Wad does not teach, suggest, or disclose the “assigning” limitation as recited by Claims 1 and 2. Accordingly, Petitioner cannot show a likelihood that the challenged claims are unpatentable over Wad.

B. Steele Does Not Disclose “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects” as Properly Construed.

Claims 1 and 2 recite “assigning, using the at least one computing device, at least one of the plurality of intents to at least some of the plurality of objects.” As discussed above, the claims, specification, prosecution history, and co-Petitioner AA’s Preliminary Constructions each require that the data objects to which intents are assigned are the same data objects identified in response to the query, signifying that the “identifying” limitation must occur prior to the “assigning” limitation. *Supra* § IV.A. Steele, however, does not disclose assigning intents after identifying data objects. Steele instead assigns intents to the entire universe of data objects in an index *before* a search query is submitted to the index and *before* identifying data objects that match a query keyword. *See* Ex. 1004 at ¶[0024] (“[T]he index 212 may store a tag indicating a ‘shopping’ intent with a document having a ‘buy’ button and metadata indicating pricing information. ... a variety of intent-based tags and formatted metadata may reside along with the documents in the index 212.”); *Id.* at ¶[0025] (“The search component 214 is configured to receive a user search input 216 and to interact with the index 212 so as to identify a set of relevant documents

responsive to the search input 216. Because the index 212 provides metadata and tags indicating an association between documents and potential user intents derived from the documents, the search component may leverage this intent-based information.”). Steele thus *teaches away* from Claims 1 and 2, which require that the assignment of an intent to a data object occurs after such data object is identified in response to a query.

Furthermore, Steele’s specific components and configurations illustrate that the assigning of intents occurs before a search is submitted and before results are identified. Steele’s “index builder 206” is configured to receive data from “web crawler 202” to build an index that can then be searched by “search component 214.” Ex. 1004 at ¶¶[0021], [0025]. Steele’s “index builder 206” and its associated components are also the only structures disclosed that are capable of assigning intents to data objects, and Steele never discloses that they interact with documents after the documents have been identified in response to a query. *See id.* at ¶¶[0021]-[0025]. It follows, then, that Steele’s index builder is necessarily configured to assign intents to a universe of data objects when building the index, which obviously occurs prior to the “search component 214” searching the index to identify data objects that match a query keyword. Indeed, the sole purpose of the “index builder

206” is to build an index which can then be searched, not to analyze results returned by queries.

In an attempt to obscure Steele’s clear teaching away, Petitioner alleges that “[e]ven if the claims required that the assigning step be performed after the identifying step (they do not), Steele teaches this too.” Petition at 30. This is wrong. Petitioner’s argument is reproduced below:

Steele’s index builder 206, using page classifier 208, assigns intent tags to the various data objects and stores them in the index. Steele, ¶¶0021-0024. The search component 214 then receives a user’s search query and leverages the intent tags in the index to “determine how well various results serve user intent in different situations.” *Id.*, ¶0025. A POSITA would have understood that determining how well certain results satisfy a user’s intent is a form of assigning an intent to the data objects that have been identified in the particular search. EX-1010, ¶120.

Petition at 30-31. As an initial matter, such a conclusory statement about what a “POSITA would have understood,” without any supporting evidence, should be given no weight. Putting that aside, these excerpts from Steele that Petitioner relies on explicitly teach that intents are assigned to data objects *before* a query is submitted and *before* data objects are identified. *See* Ex. 1004 at ¶[0024] (“[T]he index 212 may store a tag indicating a ‘shopping’ intent with a document having a ‘buy’ button and metadata indicating pricing information. ... a variety of intent-

based tags and formatted metadata may reside along with the documents in the index 212.”); *Id.* at ¶[0025] (“The search component 214 is configured to receive a user search input 216 and to interact with the index 212 so as to identify a set of relevant documents responsive to the search input 216. Because the index 212 provides metadata and tags indicating an association between documents and potential user intents derived from the documents, the search component may leverage this intent-based information.”).

Indeed, paragraph [0025] (which includes the quotation relied on by Petitioner) reveals that Steele teaches grouping documents together by their related intents, *where the intents are already assigned to data objects in the index prior to any search occurring*:

The system 200 also includes a search component 214. The search component 214 is configured to receive a user search input 216 and to interact with the index 212 so as to identify a set of relevant documents responsive to the search input 216. Because the index 212 provides metadata and tags indicating an association between documents and potential user intents derived from the documents, the search component 214 may leverage this intent-based information. For example, the search component 214 *may aggregate (i.e., group) the various documents by their related intents*. In this manner, the intent tags in the result set may be identified, and the search component 214

may determine how well various results serve user intent in different situations.

Ex. 1004 at ¶[0025].

In short, Steele is very clear that intents are assigned to a universe of data objects prior to any search being conducted and prior to the data objects being identified in response to a query. It is thus nonsensical to suggest that a POSITA would have understood Steele to disclose something entirely different, namely, that intents are assigned after a query is submitted and after data objects are identified in response to the query.

As a last resort, Petitioner alleges that “Steele discloses that its steps do not need to be performed in ‘any particular order’ and that ‘different steps or combination of steps’ may be used to practice its disclosures.” Petition at 31; Ex. 1004 at ¶[0013]. But this just emphasizes why Wad and Steele cannot render Claims 1 and 2 obvious—in Claims 1 and 2, *the steps have to be performed in a particular order*. Steele does not require this, and in fact explicitly teaches away from the order required in the claims of the ’157 patent. Wad in view of Steele thus *cannot* render Claims 1 and 2 obvious.

Nevertheless, Petitioner alleges that “a POSITA would have understood that Steele contemplated performing classification (e.g., assigning intents) at different stages in Steele’s process, including after the search results were returned.” Petition

at 31. This is again wholly conclusory. But further, Petitioner’s argument demonstrates that Petitioner is just using Claims 1 and 2 of the ’157 patent as a roadmap to reinterpret or modify the solution disclosed in Steele using hindsight bias. Steele explicitly teaches that the assignment step happens before a search or result identification.⁴ Petitioner does not explain how Steele’s system, in which intents are assigned to a universe of data objects in an index prior to any search being conducted and are used to conduct the search, could possibly be modified such that data objects are assigned intents *after* the data objects are identified. See Ex. 1004 at ¶¶[0024]-[0025]; *Wireless Agents LLC v. Sony Ericsson Mobile Commc’ns Ab*, 189 F. App’x 965 (Fed. Cir. 2006) (“We see nothing in this [boilerplate] language that contradicts our reading of the specification.”); *Silicon Graphics, Inc. v. ATI Techs., Inc.*, 607 F.3d 784, 791-92 (Fed. Cir. 2010) (“Thus general language in the specification permitting some operations to be done in fixed point does not work to contradict the specific language that requires scan conversion in floating point.”).

⁴ It also appears that Petitioner is conflating “classifying” with “assigning,” even though each of these terms are used in discrete limitations recited in Claims 1 and 2.

For at least these reasons, neither Steele nor Wad teach, suggest, or disclose “assigning ... at least one of the plurality of intents to at least some of the plurality of data objects” identified in response to a query, as is required under the proper construction of Claims 1 and 2. Accordingly, Petitioner cannot show a reasonable likelihood that the challenged claims are unpatentable over Wad in view of Steele, and Ground 1 should be denied.

VIII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUNDS 2-5.

With respect to Grounds 2-5, Petitioner does not challenge independent Claims 1 or 2. *See* Petition at 2. Thus, for the same reasons set forth in Section VII, the proposed combinations of Grounds 2-5 do not disclose the limitations of independent Claims 1-2 addressed above in Section VII as to Ground 1. Accordingly, should the Board accept Patent Owner’s arguments that Petitioner has failed to show a reasonable likelihood of prevailing with respect to Ground 1, it necessarily follows that trial should not be instituted on the dependent claims discussed in Grounds 2-5. Accordingly, Grounds 2-5 necessarily fail.

IX. PATENT OWNER’S FINAL COMMENTS

Patent Owner does not concede the legitimacy of any arguments in the Petition that are not specifically addressed herein, and expressly reserves the right to rebut any such arguments in its Patent Owner Response if *inter partes* review is instituted.

Similarly, Patent Owner also does not concede any underlying contentions in the Petition and reserves the right to rebut them later. Additionally, Patent Owner is not limited to the arguments presented here in this Preliminary Response, but expressly reserves the right to raise further arguments, including claim construction arguments, not presented in this Preliminary Response.

X. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board decline to institute *inter partes* review of the '157 patent.

Dated: July 11, 2023

By: /s/ Carder W. Brooks
Carder W. Brooks
Registration No. 75,456
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: carder@nelbum.com
Brent N. Bumgardner
Registration No. 48,476
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: brent@nelbum.com
Attorneys for Patent Owner

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Preliminary Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 8,099 words, excluding the parts of this Patent Owner's Preliminary Response that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this Patent Owner's Preliminary Response.

Dated: July 11, 2023

By: /s/ Carder W. Brooks
Carder W. Brooks
Registration No. 75,456
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: carder@nelbum.com
Brent N. Bumgardner
Registration No. 48,476
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: brent@nelbum.com
Attorneys for Patent Owner

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response was served on July 11, 2023, to Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: jcampbell@McKoolSmith.com
 gsmith@McKoolSmith.com
 rchabaneix@McKoolSmith.com
 speters@McKoolSmith.com
 dfinkelson@mcguirewoods.com
 ksmith@mcguirewoods.com

/s/ Carder W. Brooks
Carder W. Brooks
Registration No. 75,456
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: carder@nelbum.com
Brent N. Bumgardner
Registration No. 48,476
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: brent@nelbum.com
Attorneys for Patent Owner