IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

NORTHEASTERN UNIVERSITY and JARG CORPORATION Plaintiffs, v. GOOGLE INC. Defendant.	Case No. 2:07-CV-486-CE

**PLAINTIFFS NORTHEASTERN UNIVERSITY AND JARG CORPORATION'S
REPLY CLAIM CONSTRUCTION BRIEF**

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I. INTRODUCTION

Defendant's proposed constructions are wrong for several reasons. First, it is the claims—not the preferred embodiment—that define the invention. Yet Google repeatedly tries to import limitations into the claims, *e.g.,* by construing otherwise clear claim language like "a first portion and a second portion" to additionally require that those two portions be entirely <u>separate and distinct</u>, based on nothing more than its argument that this is how the preferred embodiment does it. Such arguments must fail. It is well-settled that the description of the preferred embodiment cannot be used to import limitations that are not expressly recited in the claim language itself.[1]

Second, Defendant errs by proposing constructions that exclude the preferred embodiment from the scope of all of the claims. As set forth in Plaintiffs' Opening Brief and further below, there are at least three different terms[2] for which Google proposes a construction directly contrary to the function of the preferred embodiment depicted in Fig. 1 on the very face of the patent. A construction that excludes the preferred embodiment is "rarely, if ever, correct" and necessarily requires "highly persuasive evidence."[3] Because the intrinsic record does not clearly and unmistakably compel such an extreme, disfavored result, Google's arguments in this regard must also fail.

Finally, Defendant mistakenly takes issue with Plaintiffs' position that five of the eleven claim terms in dispute are clear on their face and do not require further claim construction.[4] There is not, as Google suggests, some requirement for the Court to substitute new words and

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[1] *See, e.g., Liebel-Flarsheim Co. v. Medrad, Inc.,* 358 F.3d 898, 906 (Fed. Cir. 2004) ("[T]his court has rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment" has been repeatedly rejected.").

[2] (1) "a plurality of home nodes and a plurality of query nodes. . . "; (2) "transmitting, by said selected home node, each said hashed query fragment . . ." ; and (3) "using, by said query node, said second portion . . ." In addition, Google's construction for "predetermined degree of relevance" also reads out an expressly-disclosed embodiment of the invention. (*See* Pls. Brief at 19-20.)

[3] *See, e.g., Vitronics Corp. v. Conceptronic, Inc.,* 90 F.3d 1576, 1583 (Fed.Cir.1996).

phrases for the express language of the claim. While Google seeks to add new and confusing terminology (*e.g.*, "key value" and "central server") and import convoluted limitations not found in the plain meaning of the claim language, Plaintiffs simply ask for a construction that for these five terms, the claim language means exactly what it says. The Court should resolve this dispute by rejecting Google's proposed constructions and ruling that these terms carry their plain meaning.[5]

Specific responses to the most egregious examples of Defendant's claim construction errors are set forth below. Plaintiffs respectfully ask the Court to adopt its proposed constructions for all terms as set forth in their Opening Brief. (Dkt. 71.)

II. DEFENDANT'S PROPOSED CONSTRUCTIONS ARE ERRONEOUS

A. "a plurality of home nodes and a plurality of query nodes connected by a network"

Defendant proposes reading the express distinction between home nodes and query nodes out of the claims, and importing a negative limitation excluding an additional "central server" from the claims, based on isolated statements in the prosecution history taken out of context. In eleven pages of explanation, the prosecution history distinguishes the patented system from the references cited by the examiner based on the limitations expressly recited in the claims.[6] Yet Defendant concentrates on only a few lines from a single paragraph, stripped of their context, in a vain effort to provide the "clear and unmistakable" disclaimer necessary to read its two admittedly unrecited limitations into the claims. (*See* Def. Resp. Br. 5.) This tactic is improper.

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[4] These five terms are identified in Section III(B) of Plaintiffs' Opening Brief.

[5] *Motorola, Inc. v. VTech Comm'ns, Inc.*, 2009 WL 2026317, at *8 (E.D. Tex., July 6, 2009) ("A court may decline to adopt constructions that violate claim construction doctrine, such as improperly importing limitations, and may still construe terms to have their ordinary meaning.")(citing *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362-63 (Fed. Cir. 2008); *see also Biotec Biologische Naturverpackungen GmbH & Co. KG v. Biocorp, Inc.*, 249 F.3d 1341, 1349 (Fed. Cir. 2001).

[6] For example, on the basis that the invention is directed to "information retrieval using fuzzy queries" (pp. 16-19) of "non-relational databases" (pp. 7-10) that involve the "fragmenting" (pp. 11-13) and "hashing" (pp. 14-16) of queries. (*See* Ex. A to Def. Resp. Br.)

It is the "totality of the prosecution history [that] informs the disavowal inquiry." *See Scicotech GMBH v. Boston Scientific Corp.*, 2008 WL 4148246, *4-5 (E.D. Tex. Aug. 29, 2008) (declining to import a limitation where the prosecution history as a whole revealed that there were other distinctions between the invention and the prior art).

> Defendant errs by taking its cited portion of the prosecution history out of context:
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> With regard to the comments associated with Figs. 2 and 3 of Chaturvedi, the architecture of Chaturvedi shown in those Figs. is quite different from the architecture of the present invention. More particularly, there is no central server in the present invention, and neither the nodes of the network nor the object fragments in the index have any kind of hierarchical structure. In the present invention, the home node of a query is randomly chosen, and different queries will generally have different home nodes.

(Ex. A. to Def. Resp. Br. 13.) Specifically, the first clause of this paragraph, which is omitted from the quote in Google's Brief, clarifies that this argument is made "[w]ith regard to the [examiner's] comments associated with Figs. 2 and 3 of Chaturvedi." (Ex. A to Def. Resp. Br. 13 (emphasis added).) Thus, one of skill in the art would understand that the succeeding terms "central server" and "hierarchical structure," which appear nowhere in the patent, refer only to those terms as disclosed in Chaturvedi. Figs. 2 and 3 of Chaturvedi show a specialized type of relational database system in which the data elements that make up records are divided. Data elements that change frequently, *i.e.*, "time sensitive attributes," are stored solely in the "central server," of Fig. 2, while other data elements are stored in nodes according to what Chaturvedi calls a "TIF hierarchy" as shown in Fig. 3. Chaturvedi, at 195-196. In its proper context, then, the prosecution history explains that the claimed invention is different because, *inter alia*, it does not have a single "central server" for storing time sensitive attributes as shown in Fig. 2, nor does it employ a TIF hierarchy to reduce redundancy as shown in Fig. 3.

Once unmoored from the disclosure Chaturvedi, Defendant urges that the statement "neither the nodes of the network nor the object fragments in the index have any kind of

hierarchical structure" logically and necessarily yields the limitation "any node may be defined as a home node or a query node." This simply does not follow: a disclaimer of "hierarchical structure" (however that term may be used) does not present a disclaimer of different types of nodes. The statement is an ambiguous distinction of the TIF hierarchy resulting from Chaturvedi's distribution of relation fragments and is unrelated to the claimed home nodes and query nodes. As such, it is not a basis for the wholesale importation of a limitation, which Google admits is not part of this term's plain and ordinary meaning. *See, e.g., SanDisk Corp. v. Memorex Prods., Inc.,* 415 F.3d 1278, 1287 (Fed. Cir. 2005) (holding that an "ambiguous disclaimer" during prosecution does not limit otherwise broader claim language). Thus, there is no basis to read out the structural and functional distinctions between the two types of nodes expressly required by the claims.

Likewise, the prosecution history does not disclaim any type of "central server." Defendant's "no central server" limitation would improperly exclude the preferred embodiment in Fig. 1, which shows a server (front end processor 14) that acts as a gateway between the user and the rest of the system.[7] *See, e.g., SanDisk Corp.,* 415 F.3d at 1285 (explaining that a construction that excludes a preferred embodiment is "rarely, if ever, correct"). Indeed, it is especially clear that the preferred embodiment was not <u>surrendered</u> during prosecution of the patent-in-suit because the "front end processor" of the preferred embodiment is expressly mentioned later in the same response that Defendant relies upon to support its disclaimer argument. (*See* Ex. A to Def. Resp. Br. 16.)

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[7] Google argues that this front end processor is not part of the claimed invention because the claimed invention is drawn only to the "search engine" inside the dashed boundary of Fig. 1. (*See* Def. Resp. Br. 9.) But the asserted claims are drawn to a "distributed database system" – not merely a "search engine." *See* '593 patent claims 1 and 8. And as stated in the first sentences of both the Abstract and the Summary of the Invention, the "distributed database system" may include that front end computer. *See* '593 patent at Abstract; col. 1 ll. 65-67.

Defendant's proposed insertion of a "no central server" limitation into the claim is also wrong because it renders the scope of the claim ambiguous. The term "central server" does not appear in the patent; is not a term of art found in technical dictionaries or treatises; and other than in the discussion of Chaturvedi above, is not found in the prosecution history. Presumably, Defendant proposes the "no central server" limitation so that it may later argue that some aspect of its systems is a disallowed central server. But Google offers no explanation whatsoever for what it contends its imported "no central server" limitation would exclude from the claims. Moreover, it is based solely on what is at most an ambiguous statement concerning a central server for storing time sensitive attributes of relational database objects – not a "central server" generally as Google contends. As such, it must be rejected. *See, e.g., SanDisk Corp.,* 415 F.3d at 1287.

B.   "hashing"

There is no dispute that a person of ordinary skill would recognize that hashing is a commonly-used technique employed by computer programmers for many different applications. And although the term varies in application, as evidenced by the abundance of technical dictionaries cited by the parties, the consistent thread running through all these definitions is that "hashing" refers to the use of one or more functions to change or transform a value into a corresponding value. Google errs by importing limitations that would limit this broadly-applicable technique to a very particular situation, *i.e.*, one in which the value to be transformed is a "key value" and the value into which it is transformed is "the address of the location of data associated with the key value." (Def. Resp. Br. 14.) While that is one example of hashing, the surrounding claim language establishes that the term "hashing" itself is not so limited.

If the term "hashing" inherently included generation of addressing information, then there would be no need for the express language of the claims teaching that the product of the claimed

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"hashing" provide some addressing features, *i.e.* that a hashed query fragment is produced with "a first portion" that indicates a query node to which it will be transmitted and "a second portion" used to access data on that node. *See* '593 patent, claim 1 at col.10 ll. 34-47. Far from supporting Google's construction, the fact that the claims recites these addressing features indicates that the generation of addressing information is not inherent to the process of "hashing." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1324–25 (Fed. Cir. 2005) (explaining that the surrounding claim language informs the proper claim construction because the recitation of a "specific limitation on the term [in the claims] makes it likely that the patentee did not contemplate that the term [itself] already contained that limitation"). Indeed, because the claims already recite the required addressing features, Google's attempt to import new, unrecited terminology is likely to confuse, rather than clarify, issues for the jury.[8]

C.   "local hash table"

The dispute concerns Defendant's attempt to require both the local hash table and the data in that table to be unique. As pointed out in Plaintiffs' Opening Brief, such a construction leads to nonsensical results. If Google were running a single instance of the claimed system, it would infringe. But if Google were to run multiple instances of the exact same otherwise-infringing system, under its construction, it would no longer infringe, because the hash tables stored on each query nodes would no longer be "unique."

In its brief, Defendant whistles past this graveyard, suggesting that its "unique" limitation is compelled by the preferred embodiment—despite failing to identify any use of the word "unique" or any other express statement in the intrinsic record that the table or data cannot be

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[8] Nor does the adoption of Plaintiffs' construction result in unbounded claims directed to the "the result of any computer process" as Google contends. (Def. Resp. Br. 12.) As noted above, the claims expressly recite specific features required for the resulting hashed query fragments. *See, e.g.,* '593 patent, claim 1 at col.10 ll. 34–47. Accordingly, Plaintiffs' construction does not read on the result of any computer process but only on those where the result has the specific features recited in the claims.

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replicated. (Def. Resp. Br. 17.) Lacking intrinsic support, Defendant mistakenly turns to two dictionary definitions, which similarly fail to evidence a requirement that hash table data be "unique." (Def. Resp. Br. 18.) Because it is improper to import limitations absent legally-compelling evidence, the Court should decline Defendant's invitation to do so. *See, e.g., Liebel-Flarsheim*, 358 F.3d at 906.

D. **"transmitting, by said selected home node, each said hashed query fragment of said plurality of query fragments to a respective one of said plurality of query nodes indicated by said first portion of each said hashed query fragment "**

"using, by said query node, said second portion of said respective hashed query fragment to access data according to a local hash table located on said query node"

In its constructions for these two phrases, Defendant erroneously attempts to limit the claims to exclude the hashed query fragment from passing through intermediate nodes en route to the node indicated by the first portion of the hashed query fragment.[9]

Defendant overplays its hand in arguing that the statement in the prosecution history that the query fragments are not broadcast to every query node "unequivocally disavows" claim scope encompassing routing of the hashed query fragment through other query nodes before arriving at the indicated query node. Not only is this a non sequitur, it also controverts the understanding of one of skill in the art that, commonly in a network, nodes may be used to route data between other nodes.

Indeed, such a construction would read out the preferred embodiment depicted on the face of the patent itself. The specification teaches that a hashed query fragment is transmitted from home node 24 to query node 28 in Fig. 1. '593 patent, col. 3 ll. 26-50. Yet Fig. 1 does not illustrate a direct local area network connection between those two nodes, and the only way the

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[9] *See* Def. Resp. Br. 20, 22. Consequently, we address both constructions together.

hashed query fragment could be transmitted from home node 24 to query node 28 is by passing it through one of the other nodes in the network. Because Defendant's proposed construction would exclude this preferred embodiment, it should be rejected. *See, e.g., SanDisk Corp.* 415 F.3d at 1285.

E. "randomly selecting"

Defendant's proposed construction is entirely contrary to the ordinary meaning of "randomly selected" in the field of computer programming. The Federal Circuit addressed the proper claim construction of precisely the same claim term in another patent addressed to a "computer-directed process," observing that "persons of skill in the field of computer randomization would recognize that the product thereof is most aptly understood as <u>pseudo-random</u>" – as opposed to a selection made entirely by chance. *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1358, 1363 (Fed. Cir. 2007) (emphasis added). This is because when a computer makes a random selection the product of that selection is "pseudo-random" in the sense that, to the user, there is no apparent pattern to the selection made.[10] Plaintiffs' construction, "selecting without an apparent pattern," accurately reflects this well understood fact.

Indeed, Google's argument that a skilled computer programmer would read the claims to require computers that make selections without the use of an algorithm is absurd. (*See* Def. Resp. Br. 26.) Computers necessarily use algorithms to carry out the processes they perform, including those where "random" selections are made. This is evident from the technical IEEE dictionary definition of random:

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[10] Google's argument that Northeastern's claim construction would fail to give public notice is without merit. It is well accepted that people of ordinary skill in the art understand the meaning of "randomly selected" in a computer programming context. *See* <u>CIAS</u>, 504 F.3d at 1363.

Pertaining to a process or variable whose outcome or value depends on chance <u>or on a process that simulates chance</u> . . . for example . . . executing a computer-programmed random number generator**.**[11]

Google ignores the technical definition in favor of two carefully-selected dictionary definitions from <u>outside</u> the computer programming context. (Def. Resp. Br. 26.) While those general purpose definitions may be accurate in some contexts, they do not reflect the ordinary meaning in the relevant field of art and should be rejected.[12]

F.   **"non-relational, distributed database system"**

Here, Google seeks to import a cherry-picked, two-factor litmus test for what constitutes a "non-relational" database. Defendant argues that in prosecution, the Applicant defined <u>non-relational</u> databases to necessarily include what it calls "two key features:" (1) data objects must exist independently of their attribute values, and (2) data is not extracted using relational algebra. (Def. Resp. Br. 27-28.) This is not true.

The prosecution history describes a number of characteristics common to <u>relational</u> databases. (*See* Pls. Br. at 9-10.) Google chooses two of those <u>relational</u> database characteristics and attempts to create a litmus test for what constitutes a <u>non-relational</u> database. But that argument is based on the mistaken assumption that non-relational databases cannot share, to any degree, these relational database characteristics, and that any presence of either of these characteristics to any degree prevents the entire database from being non-relational. Indeed, Google's argument conflicts with the prosecution history, which explains that non-relational databases only generally, not necessarily as Google contends, have these alleged features. (*See* Ex. A to Google's Br. at 8 ("By contrast [to relational databases], data models other than the

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[11] THE NEW IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS 1064 (Christopher Booth, ed., Inst. of Electrical & Electronics Engineers, Inc., 5th ed., 1991) (attached as Ex. M to Google Br.) (emphasis added).
[12] *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (explaining that general purpose dictionaries are often not useful to ascertaining the meaning of a term in a particular field of art).

relational model <u>generally</u> assume that the basic objects do have object identity.")(emphasis added).)

Indeed, the underlying premise of Google's argument, *i.e.*, that these two features establish the dividing line between relational and non-relational databases, is further undermined by its own extrinsic dictionary definitions. Of the eight definitions of a relational database offered by Defendant, <u>five</u> entirely fail to mention relational algebra and <u>none</u> refer to a lack of object identity. (*See* Joint Claim Construction and Prehearing Stmt. (Dkt. 62.), at Ex. C, 2-3.) Instead, what these dictionary definitions, along with the applicant's statements in the prosecution history, establish is that "non-relational database" is a term of art readily understood by a person of ordinary skill in the art. (*See* Pls. Br. at 9-10.) The question of whether the accused distributed database systems use a relational model is a question of fact for the jury to decide, based on the evidence put forward at trial, as part of its infringement analysis. Google's attempt to cobble together a self-serving litmus test is not supported by the evidence and should be rejected.

III. CONCLUSION

In light of the foregoing, Northeastern respectfully requests that the Court adopt its proposed constructions.

Dated: January 12, 2010   Respectfully submitted,

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CERTIFICATE OF SERVICE

       The undersigned certifies that the foregoing document was filed electronically in compliance with Local Rule CV-5(a). As such, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed. R. Civ. P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email and/or fax, on this the 12th day of January, 2010.

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