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Paper 72
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,

v.

FG SRC LLC,
Patent Owner.

IPR2018-01594
Patent 6,434,687 B1

Before KALYAN K. DESHPANDE, JUSTIN T. ARBES, and CHRISTA P. ZADO, *Administrative Patent Judges.*

DESHPANDE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Microsoft Corporation ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–25 of U.S. Patent No. 6,434,687 B1 (Ex. 1001, "the '687 patent"). Paper 1 ("Pet."). FG SRC LLC ("Patent Owner") filed a Preliminary Response pursuant to 35 U.S.C. § 313. Paper 15 ("Prelim. Resp.").[1] Pursuant to our authorization, Petitioner also filed a Reply (Paper 19) and Patent Owner filed a Sur-Reply (Paper 20).

On April 12, 2019, we issued a Decision ordering that an *inter partes* review of claims 1–25 of the '687 patent "is hereby instituted with respect to all grounds set forth in the Petition." Paper 21 ("Dec."), 47. After institution, Patent Owner filed a Patent Owner's Response (Paper 36, "PO Resp."). Petitioner filed a Petitioner's Reply to Patent Owner's Response (Paper 50, "Pet. Reply") and Patent Owner filed a Patent Owner's Sur-Reply (Paper 59, "PO Sur-Reply). Petitioner and Patent Owner also filed Motions to Exclude Evidence (Papers 60 ("Pet. Mot."), 61 ("PO Mot.")), Oppositions to the Motions (Papers 62 ("Pet. Opp. Mot."), 63) and Replies to the Oppositions (Papers 66, 65). Petitioner and Patent Owner presented oral arguments on February 4, 2020, and a transcript has been entered into the record. Paper 71 ("Tr.").

The Board has jurisdiction under 35 U.S.C. § 6. In this Final Written Decision, after reviewing all relevant evidence and arguments, we determine

[1] Saint Regis Mohawk Tribe, originally named as Patent Owner, assigned the '687 patent to DirectStream, LLC on May 21, 2019. Paper 33, 1. DirectStream, LLC assigned the '687 patent to FG SRC LLC on January 22, 2020. Paper 69, 1.

that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–17 of the '687 patent are unpatentable, but has not met its burden with respect to claims 18–25.

B. Related Proceedings

The parties indicate that the '687 patent currently is involved in *SRC Labs, LLC et al. v. Microsoft Corp.*, Civil Action No. 2-18-cv-00321 (W.D. Wash.), which was transferred from *SRC Labs, LLC et al. v. Microsoft Corp.*, Civil Action No. 1-17-cv-01172 (E.D. Va.). Pet. 3; Prelim. Resp. 4–5. The following proceedings, before the Board, also involve the same parties: IPR2018-01599, IPR2018-01600, IPR2018-01601, IPR2018-01602, IPR2018-01603, IPR2018-01604, IPR2018-01605, IPR2018-01606, and IPR2018-01607.[2]

C. The '687 Patent (Ex. 1001)

The '687 patent discloses "systems and methods for accelerating web site access and processing utilizing a computer system incorporating reconfigurable processors operating under a single operating system image." Ex. 1001, 1:30–34. The '687 patent discloses that many electronic commerce web sites use various methods to vary content based on the demographics of a user. *Id.* at 1:37–40. Such demographic data can be obtained by requesting that the visitor respond to one or more questions or using "click stream" processing to infer the interests of the visitor from previous sites they have visited. *Id.* at 1:41–47. However, according to the '687 patent, studies show that the average user waits only a maximum of

[2] We consolidated IPR2018-01602 and IPR2018-01603 with IPR2018-01601. We also consolidated IPR2018-01606 and IPR2018-01607 with IPR2018-01605.

twenty seconds or so for a web page to be updated. *Id.* at 1:52–54. In view of this, the '687 patent discloses it is vitally important for the updating of page content (e.g., according to the visitor's interests) to be completed as rapidly as possible. *Id.* at 1:54–55. The '687 patent discloses that known web servers use standard microprocessor based servers, which limits their maximum performance due to the inherent limitations of such devices. *Id.* at 1:58–63.

The '687 discloses "a system and method for accelerating web site access and processing utilizing a multiprocessor computer system incorporating one or more microprocessors and a number of reconfigurable processors operating under a single operating system image." *Id.* at 2:6–10. As a result, algorithms for processing demographic data may be loaded into the reconfigurable processors (e.g., specially adapted field programmable gate arrays ("FPGAs")), which permits an algorithm to be implemented in hardware gates instead of software. *Id.* at 2:18–25. This allows the processing of data up to 1000 times faster than a standard microprocessor based server. *Id.* The '687 patent also states that reconfigurable processors can be used to accelerate electronic commerce in other ways, such as by performing decryption algorithms up to 1000 times faster than a conventional microprocessor, which allows for faster web site access and the use of more robust data encryption techniques. *Id.* at 2:48–60. According to the '687 patent, the use of "hybrid computer systems with a single system image of the operating system for web site hosting allows the site to employ user selected hardware accelerated versions of software algorithms currently implemented in a wide array of e-commerce related functions," which results in an easy to use system and shorter site visitor waiting periods. *Id.*

at 2:66–3:6.

A simplified illustration of a representative operating environment 300 is disclosed in Figure 12:

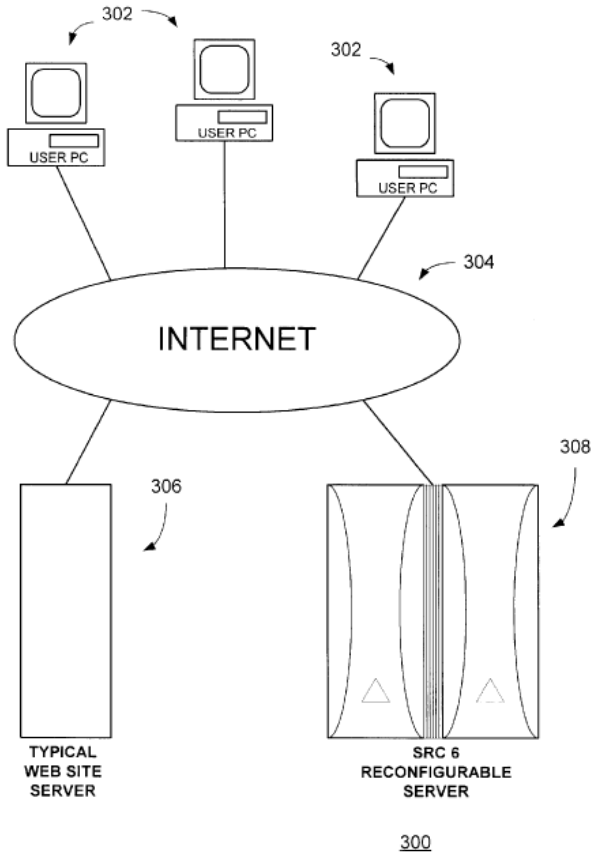

Fig. 12

Figure 12 illustrates how "a number of personal computers 302 or other computing devices are coupled to either the typical web site server 306 (in a prior art implementation) or the reconfigurable server 308 (in accordance with the system and method of the present invention) through the Internet 304." *Id.* at 20:47–51. In the '687 patent, typical web site server 306 is replaced by reconfigurable server 308 including one or more industry standard processors and one or more reconfigurable processors, all of which

are controlled by a single system image of an operating system. *Id.* at 20:36–46.

Figure 13 of the '687 patent depicts a flowchart for a conventional data processing sequence:

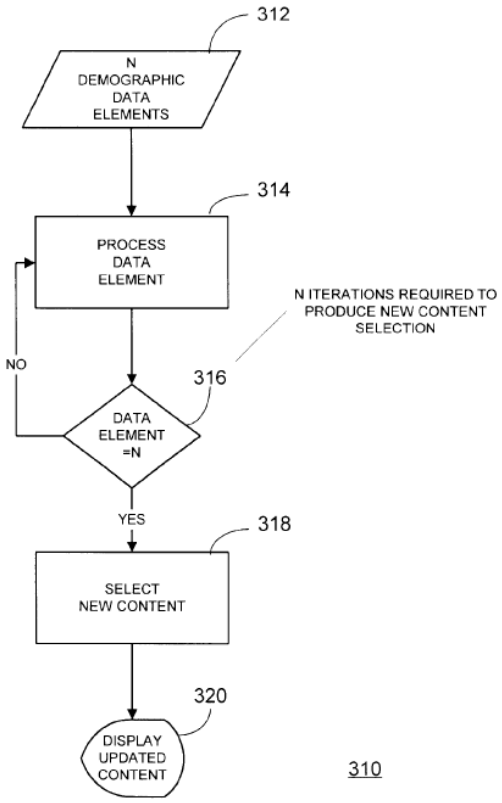

Fig. 13
Prior Art

In conventional data processing sequence 310, a number "N" of demographic data elements are input and processed by typical web site server 306. *Id.* at 20:52–57. The N data elements are serially processed (step 314) until the last of the data elements is determined and processed (step 316). *Id.* at 20:58–60. After this data processing period, typical web site server 306 can select new web page content that is specifically adapted to a particular visitor (step 318) and display that content (step 320). *Id.* at 20:63–67.

Figure 14 of the ’687 patent depicts a flowchart for a data processing sequence according to the invention of the ‘687 patent:

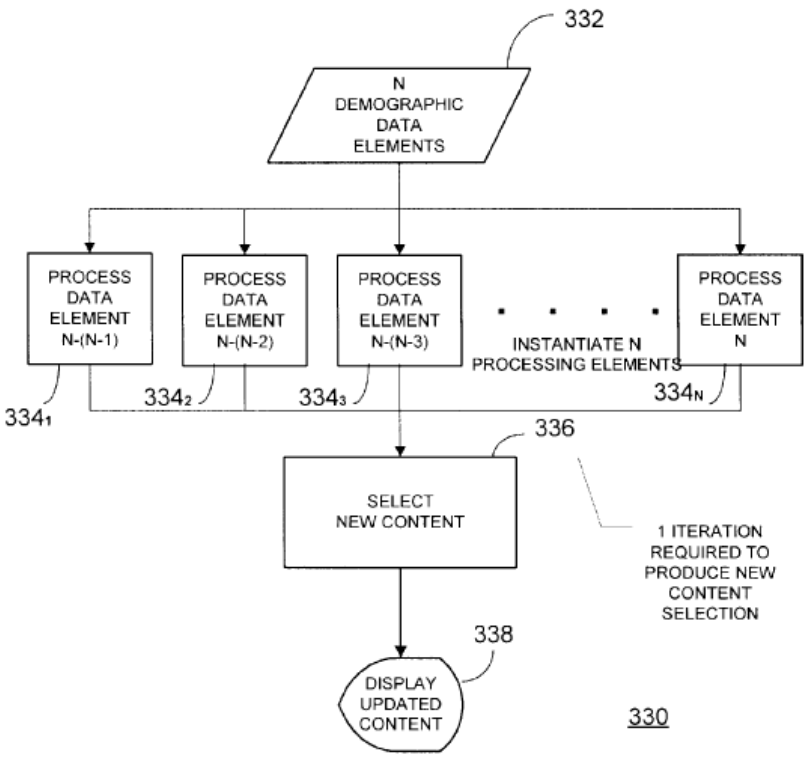

Fig. 14

According to the ’687 patent, use of reconfigurable servers 308 in Figure 12 provides a significantly faster data processing sequence because reconfigurable server 308 can process individual data elements in parallel due to a single reconfigurable process instantiating more than one processing unit tailored to a job, as opposed to reusing one or two processing units located within a microprocessor. *Id.* at 21:1–14.

D. Illustrative Claims

Petitioner challenges claims 1–25 of the ’687 patent. Pet. 21–70. Claims 1, 11, and 18 are the independent claims at issue. Claim 1, 11, and 18 are illustrative of the challenged claims and are reproduced below:

1. A method for processing data at an internet site comprising:

providing a reconfigurable server at said site incorporating at least one microprocessor and at least one reconfigurable processing element;

receiving N data elements at said site relative to a remote computer coupled to said site;

instantiating N of said reconfigurable processing elements at said reconfigurable server; and

processing said N data elements with corresponding ones of said N reconfigurable processing elements.

Ex. 1001, 21:51–62.

11. An internet processing acceleration service comprising:

a reconfigurable server coupled to said internet, said server comprising at least one microprocessor and at least one reconfigurable processor; and

a single system image of an operating system controlling said at least one microprocessor and at least a portion of said at least one reconfigurable processors;

said service instantiating N of said at least a portion of said at least one reconfigurable processors for substantially parallel processing of N data elements received by said server.

Id. at 22:22–34.

18. A process of accelerating access time of a remote computer to an internet site comprising:

providing a reconfigurable server at said site incorporating at least one microprocessor and at least one reconfigurable processor;

transmitting N data elements from said remote computer to said server;

substantially concurrently processing said N data elements with N of said at least one reconfigurable processors;

selecting a content of said internet site in response to said N data elements; and

transmitting said content to said remote computer.

Id. at 22:50–62.

E. The Asserted Grounds of Unpatentability

The information presented in the Petition sets forth grounds of unpatentability of claims 1–25 of the '687 patent as follows (*see* Pet. 21–70):[3,4]

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–5, 8–12, 16–19, 22–25	102[5]	Obelix[6]
1–25	103	Obelix
1–10, 16, 17, 22, 23	103	Obelix, Spencer[7]
5, 12, 13, 19	103	Obelix, Perkins,[8] with or without Spencer

[3] Petitioner supports its challenge with the Declaration of Harold Stone, Ph.D. Ex. 1003.

[4] All references to 35 U.S.C. §§ 102, 103 herein are pre-AIA.

[5] Petitioner challenges these claims under 35 U.S.C. § 102(a), (b). Pet. 17.

[6] Knezevic et al., *The Architecture of the Obelix – An Improved Internet Search Engine*, Proceedings of the 33rd Hawaii International Conference on System Sciences, IEEE (2000) (Ex. 1005, "Obelix").

[7] U.S. Patent No. 5,577,241, issued November 19, 1996 (Ex. 1007, "Spencer").

[8] U.S. Patent No. 7,072,888 B1, filed June 16, 1999, issued July 4, 2006 (Ex. 1008, "Perkins").

7, 15, 21	103	Obelix, Leong,[9] with or without Spencer
8, 9, 16, 17, 22, 23	103	Obelix, Curtis,[10] with or without Spencer
10–17, 24	103	Obelix, Davis,[11] with or without Spencer
2–4, 13, 25	103	Obelix, Skillen,[12] with or without Spencer

II. ANALYSIS

A. Claim Construction

The parties agree that the '687 patent has expired. Pet. 10; Prelim. Resp. 16. Accordingly, we apply the district court claim construction standard. *See* 37 C.F.R. § 42.100(b) (2017). In district court, claim terms are given their plain and ordinary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony*

[9] Leong et al., *A Bit-Serial Implementation of the International Data Encryption Algorithm IDEA*, IEEE Symposium on Field-Programmable Custom Computing Machines, pp. 122–131 (2000) (Ex. 1009, "Leong").

[10] U.S. Patent No. 6,278,992 B1, filed February 17, 1999, issued August 21, 2001 (Ex. 1010, "Curtis").

[11] U.S. Patent No. 6,230,307 B1, issued May 8, 2001 (Ex. 1011, "Davis").

[12] U.S. Patent No. 6,098,065 A, filed February 13, 1997, issued August 1, 2000 (Ex. 1012, "Skillen").

Computer Entm't Am. LLC, 669 F.3d 1362, 1365 (Fed. Cir. 2012). We determine that the following terms require construction.

1. "an internet site"

Claim 1 recites "[a] method for processing data at an internet site," and claim 18 similarly recites "[a] process of accelerating access time of a remote computer to an internet site." Petitioner argues that "an internet site" should be construed to mean "a location publically accessible on the Internet." Pet. 10. Petitioner asserts that although the term "internet site" is not described by the '687 patent specification, the term "internet" is used in its ordinary meaning of a "system of interconnected computer networks generally accessible by the public." *Id.* Petitioner further asserts that the term "site" means "a location at an address on the [World Wide] Web from which Web documents may be retrieved or received." *Id.* (citing Exs. 1015, 1016). Accordingly, Petitioner construes the term "an internet site" to mean "a location publically accessible on the Internet." *Id.*

As discussed in our Decision on Institution, we are persuaded by Petitioner that "an internet site" means "a location publically accessible on the Internet." Dec. 15. In the Preliminary Response, Patent Owner argued we should construe "an internet site" as "a web site accessed using a URL" (Prelim. Resp. 16–17), which we rejected. Dec. 14–15. However, in its Response, Patent Owner does not dispute Petitioner's interpretation of "an internet site." Although the '687 patent discusses replacing a "web site server" with a "reconfigurable server," we see no reason to limit the scope of "an internet site" to a World Wide Web address or site. Rather, "an internet site" may include a "web site," but we find no evidence requiring "an internet site" to be limited to only a "web site."

The parties do not further argue the meaning of "an internet site." We see no reason to depart from our construction in our Decision on Institution. Accordingly, we construe "an internet site" to mean "a location publically accessible on the Internet."

2. "receiving N data elements at said site" / "N data elements received by said server" / "transmitting N data elements from said remote computer"

Claim 1 recites "receiving N data elements at said site." Similarly, claim 11 recites "N data elements received by said server," and claim 18 recites "transmitting N data elements from said remote computer." Patent Owner and Petitioner propose different meanings for "N data elements." PO Resp. 17–19; PO Sur-Reply 4–12; Pet. Reply 8–9.

Patent Owner asserts that the plain and ordinary meaning of this limitation is "N data elements are those provided in real-time for the current user." PO Resp. 17. Patent Owner argues that the specification supports this construction because the '687 patent is directed to accelerating web site access and processing. *Id.* at 17–19 (citing Ex. 1001, Abstract ("[o]ne or more reconfigurable processors may be utilized, for example, in accelerating site visitor demographic data processing, real time web site content updating, database searches and other processing associated with ecommerce applications"), 1:30–34, 2:6–7, 1:41–51, 1:52–58, 20:63–67, 2:28–3:6, 21:21–23, Fig. 13, Fig. 14); *see* PO Sur-Reply 9; Ex. 2095 ¶¶ 151–157.

Petitioner argues that "[a] 'data element' is a single unit of data," and "[t]he ordinary meaning of 'N data elements' is therefore multiple units of data of number 'N.'" Pet. Reply 8. Petitioner argues that the "ordinary meaning simply does not require 'in realtime for the current user,'" and such a narrowing limitation is not supported by the specification. *Id.* at 8–9.

We agree with Petitioner's arguments that, in light of the '687 patent specification, the plain and ordinary meaning of the term "N data elements" does not require being provided in real-time for the current user. Although the '687 patent specification describes accelerated web site access and processing, the '687 patent specification does not require or disclose that the data elements have to be received or transmitted in real-time to a current user. Accordingly, we construe these limitations under their plain and ordinary meaning to require receiving or transmitting "multiple units of data of number 'N.'" *See* Pet. Reply 8.

3. "instantiating"

Claim 1 recites "instantiating N of said reconfigurable processing elements," and claim 11 similarly recites "said service instantiating N of said at least a portion of said at least one reconfigurable processors."

Petitioner argues that the "term 'instantiating' should be construed to mean creating, such as by configuring, a particular structure." Pet. 11. Petitioner identifies only one instance that the '687 patent specification uses "instantiating," where the '687 patent specification describes that "the processing units are created within the reconfigurable server by the process of instantiation." *Id.* (citing Ex. 1001, 21:7–14). Petitioner argues that a person with ordinary skill in the art "would have understood that structures are created within reconfigurable hardware such as the FPGAs of [the '687 patent] by configuring them." *Id.* (citing Ex. 1017, 81–89; Ex. 1003 ¶¶ 64–65). Patent Owner does not propose a construction of the term "instantiating."

As discussed in our Decision on Institution, we are persuaded that the term "instantiating" should be construed to mean "creating, such as by

configuring, a particular structure." Dec. 16. The parties do not further argue the meaning of "instantiating." We see no reason to depart from our construction in our Decision on Institution.

4. "N [data elements]" and *"[instantiating] N [. . . reconfigurable process[ors]/[ing elements]]"*

Claim 1 recites "receiving N data elements" and "instantiating N of said reconfigurable processing elements." Claims 11 and 18 recite similar limitations.

Patent Owner argues that the plain and ordinary meaning of these limitations is "[t]he processing units are configured in parallel, and the number of reconfigurable processing units is at least equal to the number of data elements received in real-time for the current user." PO Resp. 19–21 (citing Ex. 2095 ¶¶ 159–162). Patent Owner argues that the '687 patent specification describes that "the patent improves upon prior art by matching each data element to a processing unit to process all of the N data elements in a single iteration." *Id.* at 20 (citing Ex. 1001, 21:5–23; Ex. 2095 ¶¶ 161–162). Patent Owner argues that a person with ordinary skill in the art would recognize that "the same mathematical variable generally indicates that a single value governs the value" and Petitioner's expert agrees that the use of "N" indicates that "the number of processing units should be at least the same as the number of data elements, not less." *Id.* at 20–21 (citing Ex. 2048, 120:13–121:7).

Petitioner argues that Patent Owner's narrow construction is not supported by the intrinsic record. Pet. Reply 9–11. Petitioner argues that Patent Owner's construction is flawed as to three parts: 1) "configured in parallel," 2) "at least equal to," and 3) "in real-time for the current user." *Id.*

First, Petitioner argues that the '687 patent specification and claims describe "substantially parallel *processing* of N data elements" but do not disclose parallel *configuration* of the processing units/elements. *Id.* at 10 (citing Ex. 1001, 22:30–33, 21:5–23). As such, Petitioner argues there is no basis for reading "configured in parallel" into the claims. *Id.* Second, Petitioner asserts that the "claims require N data elements and N processing elements to process that data." *Id.* Petitioner, however, argues that because the claims use "comprising" and thus are open-ended, they encompass a system with *less* processing units/elements than data elements. *Id.* That is, Petitioner argues that "a prior art system that included 7 data elements and 6 processing elements would include 'N data elements' and 'N processing elements' for N=2, 3, 4, 5 or 6." *Id.* at 10–11. Third, similar to the arguments discussed above, Petitioner argues the phrases "real-time" and "current user" are not in the claims and appear only once in the specification in an unrelated context. *Id.* at 11; *see supra* Section II.A.2.

We agree with Petitioner's arguments, and decline to limit the scope of the phrases "receiving N data elements" and "instantiating N of said reconfigurable processing elements" to require reconfigurable processing elements "configured in parallel," data elements "at least equal to" the number of reconfigurable processing elements, or data elements in "real-time for the current user." Specifically, we agree with Petitioner that the scope of the claims is not limited to Patent Owner's proffered construction. Accordingly, we determine that the phrases have their plain and ordinary meaning encompassing a system with less processing units/elements than data elements, with no requirement of configuration in parallel or real-time operation for the current user.

5. "[processing said N data elements with] corresponding ones of said N reconfigurable processing elements"

Claim 1 recites "processing said N data elements with corresponding ones of said N reconfigurable processing elements."[13]

Patent Owner argues that the plain and ordinary meaning of this limitation is "[e]ach of the N data elements has a corresponding one of the N reconfigurable processing elements which processes that data element." PO Resp. 21–22. Patent Owner argues that the '687 patent specification discloses processing all data elements in a single iteration, and, therefore, supports this interpretation. *Id.* at 22–23 (citing Ex. 1001, Abstr., 1:52–63, 21:5–23, Fig. 14; Ex. 2095 ¶ 166); *see also* PO Sur-Reply 13 ("N data elements are sent to a corresponding processing element, and they are all processed concurrently in '1 iteration' to produce new content to be selected and displayed."). That is, Patent Owner argues that the '687 patent "requires that the N reconfigurable processing elements have a corresponding data element from the N data elements . . . requiring a 1-to-1 correlation." PO Resp. 36 (bolding omitted).

Petitioner argues that claim 1 requires "only that the data elements be 'processed' with corresponding processing elements; it never states that each data element 'has' a corresponding processing element." Pet. Reply 11. Petitioner asserts that the '687 patent specification does not support that "a data element 'has' a processing element." *Id*. at 11–12.

We are persuaded by Petitioner that the plain and ordinary meaning of the "corresponding ones of" limitation merely requires that data elements are

[13] Independent claims 11 and 18 do not recite this limitation.

"processed" with corresponding processing elements, and does not require that each data element "has" a corresponding processing element such that there is a 1-to-1 relationship between the data element and processing element. Patent Owner's narrow construction is based on processing of all N data elements in a single iteration. PO Resp. 21–22, 36 (citing Ex. 1001, Fig. 14). Although Figure 14 of the '687 patent discloses one processing unit per data element to achieve processing of all data elements in a single iteration, we do not find any language in the claims requiring a single iteration. *See Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004) ("[P]articular embodiments appearing in the written description will not be used to limit claim language that has broader effect."). Accordingly, we decline to import a single iteration requirement from the exemplary embodiment described in the specification into the claims.

According to its plain and ordinary meaning, we construe the limitation of "processing said N data elements with corresponding ones of said N reconfigurable processing elements" to require that "N data elements are processed by corresponding processing elements."

6. "substantially parallel processing" / "substantially concurrently processing"

Claim 11 recites "instantiating N of said at least a portion of said at least one reconfigurable processors for substantially parallel processing of N data elements." Claim 18 recites "substantially concurrently processing said N data elements with N of said at least one reconfigurable processors."[14]

Patent Owner argues that the plain and ordinary meaning of these limitations is "[e]ach of the N reconfigurable processing units is instantiated in parallel to process the N data elements at substantially the same time." PO Resp. 22–23 (citing Ex. 1001, Abstract, 1:52–63, 21:5–23, Fig. 14; Ex. 2095 ¶¶ 167–168). Patent Owner explains that a person of ordinary skill would understand that "during the duration of a single processing iteration, all of the data elements are being processed by all of the processing units." *Id.* (citing Ex. 2095 ¶ 169); *see* PO Sur-Reply 12.

Petitioner argues that claims 11 and 18 require parallel processing of data, not parallel instantiation of processing units. Pet. Reply 12 (citing Ex. 1001, 22:34–50). Petitioner argues that Patent Owner's construction, therefore, improperly imports a limitation into the claims. *Id.*

We disagree with Patent Owner. The claims plainly require parallel or concurrent "processing" of data (i.e., N data elements), not parallel instantiation of processing units. *Id.*

As such, we construe the limitation of "instantiating N of said at least a portion of said at least one reconfigurable processors for substantially parallel processing of N data elements" to require that the data elements are

[14] Claim 1 does not recite "parallel" or "concurrently" processing.

processed in parallel at substantially the same time. Similarly, we construe "substantially concurrently processing said N data elements with N of said at least one reconfigurable processors" to require that the data elements are processed at substantially the same time. No further interpretation is necessary.

7. Remaining Terms and Limitations

We determine that no other express claim construction analysis of any claim term is necessary. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only terms in controversy must be construed and only to the extent necessary to resolve the controversy) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

B. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art for a challenged patent, we look to "1) the types of problems encountered in the art; 2) the prior art solutions to those problems; 3) the rapidity with which innovations are made; 4) the sophistication of the technology; and 5) the educational level of active workers in the field." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 666–667 (Fed. Cir. 2000). "Not all such factors may be present in every case, and one or more of them may predominate." *Id.*

Petitioner's declarant, Harold Stone, Ph.D., testifies that a person of ordinary skill in the art at the time of the '687 patent would have had "an advanced degree in electrical or computer engineering, or computer science with substantial study in computer architecture, hardware design, and computer algorithms," and "at least two years' experience working in the field," or alternatively "a bachelor's degree covering those disciplines and at

least three years working [in] the field." Pet. 5–6 (citing Ex. 1003 ¶ 45). According to Dr. Stone,

> [s]uch a person would also have been knowledgeable about the programming, design and operation of computer systems based on reconfigurable components such as FPGAs (field programmable gate arrays) and CPLDs (complex programmable logic devices). That person would also have been familiar with hardware description languages such as VHDL that could be used to configure FPGAs and CPLDS that serve as components of reconfigurable computer systems.

Ex. 1003 ¶ 45.

Patent Owner states that it "does not dispute the level of education and skill promoted by Petitioner's expert in the '687 Patent," and Patent Owner's declarant, Houman Homayoun, Ph.D., states "[i]n general, I would agree to the level of education and skill" promoted by Petitioner's expert. PO Resp. 16 (citing Ex. 2095 ¶ 135). Patent Owner argues that a person of ordinary skill also "would have considered all of the state of the art in the design of computer architecture, including for example, the issues of reconfigurable programming, processor speed, FPGA speed, benchmarking, bottlenecking, and cost/benefit analysis of overhead introduction as applied to HPC applications." PO Resp. 7–8, 16 (citing Ex. 2095 ¶¶ 99–106, 134–148; Ex. 2136, 41, 45, 67–74, 363–387).

We have reviewed Patent Owner's arguments and supporting evidence regarding what a person of ordinary skill in the art allegedly would have considered when reading the asserted references. Patent Owner's arguments pertain more to its criticism of Dr. Stone's analysis as allegedly failing to understand the problems solved by the '687 patent and being based on "hindsight bias" than a dispute over the "level" of ordinary skill in the art.

See PO Resp. 7–16 (arguing that "Dr. Stone's own prior written admissions concur that [a person of ordinary skill in the art] would consider these issues . . . . But Petitioner ignored this basic analysis any [person of ordinary skill in the art] should have undertaken. The fundamental flaw of Petitioner's arguments is the hindsight bias . . . to focus on FPGAs as the solution to problems in high performance computing"). It suffices at this point to conclude that a person of ordinary skill in the art would have had the *technical education and work experience* set forth in Dr. Stone's declaration (and agreed to by Dr. Homayoun). *See Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986) ("The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art."). What that individual would have considered in evaluating particular references and making potential combinations, though, is an issue we address below in evaluating Petitioner's grounds of unpatentability.

Based on the full record developed during trial, including our review of the '687 patent and the types of problems and prior art solutions described in the '687 patent, as well as the sophistication of the technology described in the '687 patent, we conclude that a person of ordinary skill in the art would have had (1) an advanced degree in electrical or computer engineering, or computer science with substantial study in computer architecture, hardware design, and computer algorithms, and at least two years of experience working in the field, or (2) a bachelor's degree covering those disciplines and at least three years working in the field. We apply that level of skill for purposes of this Decision.

C. Anticipation of Claims 1–5, 8–12, 16–19, and 22–25 by Obelix

1. Overview

Petitioner contends that claims 1–5, 8–12, 16–19, and 22–25 of the '687 patent are unpatentable under 35 U.S.C. § 102(b) as anticipated by Obelix. Pet. 21–40. For reasons discussed below, we determine Petitioner has demonstrated by a preponderance of the evidence that Obelix anticipates claims 1–5, 8–12, 16, and 17, and we determine that Petitioner has not demonstrated by a preponderance of the evidence that Obelix anticipates claims 18, 19, and 22–25.

2. Obelix (Ex. 1005)

Obelix is directed to "An Improved Internet Search Engine" that determines the usefulness of a web page by tracking the actions of users on the web page. Ex. 1005, 1. A modified web client informs a dedicated server of users' actions on a web page (e.g., printing, bookmarking, or mailing) and a search algorithm uses this information to rank pages according to usefulness. *Id.* at 1–2. For instance, a page that has been visited a thousand times receives a higher rank than a page never visited. *Id.* at 1.

According to Obelix, a search server site includes the server collecting information about users' action, which has a machine architecture based on reconfigurable technology. *Id.* at 1–2. In particular, the search server site machine has slots for Peripheral Component Interconnect (PCI) cards and VCC HOT II reconfigurable boards plugged into the PCI slots. *Id.* According to Obelix, a reconfigurable FPGA board put into the Obelix server has three phases or configurations. *Id.* at 11. The first phase is the collection of user information, which occurs until the board memory is full.

Id. At that point, the board notifies Obelix software and reconfigures itself for phase 2. *Id.* The second phase is the calculation of weighted sums. *Id.* at 2, 7–8, 11. When the second phase is complete, the board notifies the Obelix software and reconfigures itself for the third phase, which is the transfer of data to main memory or directly onto the hard disk. *Id.* at 11. After the third phase, the board reconfigures itself for phase 1 once again. *Id.*

3. Analysis

a. Claims 1, 5, 8–12, and 16–17

Claim 1 recites a "method for processing data at an internet site." Petitioner argues that Obelix discloses an internet search engine system, where a server receives search requests and provides clients with search results. Pet. 22 (citing Ex. 1005, 1–2, 7–8; Ex. 1003 ¶ 116). According to Petitioner, Obelix further discloses that the "server processes 'user action' data received from clients" using a number of VCC Boards. *Id.* at 22–23 (citing Ex. 1005, 7–8; Ex. 1003 ¶¶ 118–120). Petitioner contends that Obelix discloses an "internet site" because Obelix discloses "a server that communicates directly with client computers over the Internet and is generally accessible by members of the public." *Id.* at 22; *see id.* at 40–41.

Claim 1 further recites "providing a reconfigurable server at said site incorporating at least one microprocessor and at least one reconfigurable processing element." Petitioner argues that Obelix discloses a server that includes a host machine and a number of reconfigurable VCC Boards, where a processor "communicates with the [reconfigurable] VCC Boards via a PCI bus." *Id.* at 23 (citing Ex. 1005, 1–5, 7, 9; Ex. 1003 ¶¶ 124–129). Petitioner asserts that the VCC Boards "are '[b]ased on reconfigurable technology,'

and include Xilinx FPGAs that can be reconfigured to include one or more units for performing a processing task." *Id.* (citing Ex. 1005, 2–3, 9, 11; Ex. 1028; Ex. 1003 ¶¶ 107, 127).

Claim 1 also recites "receiving N data elements at said site relative to a remote computer coupled to said site." Petitioner argues that Obelix discloses that a modified web client collects information about users' actions and packs the information into "IP packets." *Id.* at 24 (citing Ex. 1005, 2). According to Petitioner, each "IP packet" includes a header and a payload that includes a number of data elements, consisting of a Uniform Resource Locator (URL) and a specified action the user took at a particular URL. *Id.* (citing Ex. 1005, 2). Petitioner asserts that Obelix discloses that the server receives the "IP packets" via the Internet from the modified web client. *Id.* (citing Ex. 1005, 2, 10; Ex. 1003 ¶¶ 133–134).

Claim 1 additionally recites "instantiating N of said reconfigurable processing elements at said reconfigurable server." Petitioner argues that Obelix discloses that "[e]ach VCC Board is configured to contain several 'basic units' that perform the required processing of the FPGA" and each set of VCC Board FPGAs is configured to include a particular structure or basic unit. *Id.* at 25 (citing Ex. 1005, 2–3; Ex. 1003 ¶ 138). Petitioner contends that the configuring of the VCC Board to the basic unit constitutes instantiating the VCC Board. *Id*. (citing Ex. 1003 ¶ 138). Petitioner argues that each basic unit is a processing unit within a reconfigurable processor and each VCC Board is "plugged into PCI slots of the Obelix host machine." *Id.* at 26. Petitioner asserts that each VCC Board must be reconfigured to perform tasks associated with each phase (data collection, sum calculation, and result transfer) of operation. *Id.* at 26–27 (citing Ex. 1005, 2, 3, 5–6, 9–

11).

Claim 1 further recites "processing said N data elements with corresponding ones of said N reconfigurable processing elements." Petitioner argues that Obelix discloses that the "VCC Boards are arranged in a daisy-chain configuration and include 'basic units' that process weighted sum calculations." *Id.* at 27 (citing Ex. 1005, 3). Petitioner asserts that each "IP packet" contains a list of URLs and a user action associated with each URL. *Id.* at 28. Petitioner argues that "[t]hese data elements are processed on corresponding ones of the basic units," where the "correspondence [is] defined by the URL common to the data element to be processed and the basic unit that will process that data element." *Id.* (Ex. 1005, 2, 3; Ex. 1003 ¶¶ 146–147). That is, "each data element included *a particular URL* and the processing element assigned to process that data element stores *that same particular URL*." *See id.*; Pet. Reply 15 (bolding omitted). Petitioner argues that the correspondence is the common URL. *See* Pet. 28; Pet. Reply 17 (citing Pet. 28).

Claim 11 recites subject matter similar to independent claim 1, and Petitioner identifies each limitation in the prior art. Pet. 33–34. We do not repeat the overlapping subject matter and Petitioner's contentions here.

Claim 11's preamble recites "[a]n internet processing acceleration service." Petitioner argues that Obelix discloses a reconfigurable architecture in order to "conduct a real-time data processing and acquisition," and discloses that the reconfigurable architecture results in a system "speedup." *Id.* (citing Ex. 1005 1, 3, 6; Ex. 1003 ¶ 252).

Claim 11 additionally requires "a single system image of an operating system controlling said at least one microprocessor and at least a portion of

said at least one reconfigurable processors." Petitioner argues that Obelix discloses its server includes several computing engines, such as the main microprocessor, and that "FPGAs were available over the PCI bus, which put them under the exclusive control of the operating system of the main microprocessor and not visible to the user." Pet. 32–34 (citing Ex. 1003 ¶¶ 234–236, 257). Petitioner argues that "a single system image of an operating system" is "an operating system that provides the user the illusion that a collection of otherwise independent computer engines is a single computational resource." *Id.* at 32.

Claim 11 also recites "substantially parallel processing of N data elements received by said server." Petitioner argues that "Obelix discloses that '[w]hen a board receives a certain number of packages, it starts processing it.'" *Id.* at 35 (quoting Ex. 1003, 3). Petitioner argues that each basic processing unit is configured to process data from a particular URL and passes data associated with other URLs to the next basic processing unit in a daisy chain. *Id.* (citing Ex. 1003, Figs. 1, 2). Petitioner explains that, when different URLs are processed on the same board, "different basic processing units within a single VCC Board will at least some of the time be processing different packets at the same time ("*substantially parallel*"), such as by two or more basic units respectively comparing input and stored URLs at roughly the same time." *Id.* (citing Ex. 1003 ¶ 260). Petitioner further argues that "Obelix includes 'overlapping operation' in which multiple basic units would be processing at the same time." Pet. Reply 19 (citing Ex. 2095 ¶ 204).

We agree with Petitioner that Obelix discloses an internet search engine that collects input from users, gathers information about user's

actions while visiting a document, and re-ranks search request results based on collected information. Ex. 1005, 1–2, 7–8. Obelix specifically discloses processing packets of information on VCC boards, where each packet includes identification information and user action information. *Id.* at 2. When a user submits a search query, the results are re-ranked based on a Cassleman score, based on collected user actions, and the results are returned to the user. *Id.* at 7–8.

Notwithstanding Patent Owner's arguments, which we address below, we are persuaded that Obelix discloses the limitations of independent claims 1 and 11. Petitioner provides a similar analysis explaining how the limitations of claims 5, 8–10, 12, 16, and 17 are disclosed by Obelix, with supporting testimony from Dr. Stone, and we agree with Petitioner that Obelix discloses the limitations of claims 5, 8–10, 12, 16, and 17. *See* Pet. 21–36; Ex. 1003 ¶¶ 114–147, 189–191, 216–218, 229–230, 233–237, 251–263, 275–278.

Patent Owner makes several arguments with respect to independent claims 1 and 11. PO Resp. 25–41. Specifically, Patent Owner argues (i) Obelix fails to disclose "a current user's data [is used] to customize the search results for that user's current query"; (ii) Obelix fails to disclose "N data elements" and "N configurable process[ors]/[ing elements]"; (iii) Obelix fails to disclose the "corresponding" limitation of claim 1; and (iv) Obelix fails to disclose "substantially parallel processing" as recited in claim 11. PO Resp. 25–41; PO Sur-Reply 12–22. We address these arguments in turn.

(i) "a current user's data [is used] to customize the search results for that user's current query"

Patent Owner argues that claims 1 and 11 "require that the data elements received are for the current user visiting the website, which will be processed in real time." PO Resp. 26. Patent Owner argues that Obelix discloses that the server processes users' actions performed on a web page "so that a '[later] search algorithm relies on these information when ranking pages according to their usefulness.'" *Id.* at 27 (citing Ex. 1005, 1; Ex. 2095 ¶ 173). Accordingly, Patent Owner argues that Obelix fails to disclose "processing data in real time about a *current* visitor to a website." *Id.* at 31 (bolding and underlining omitted; italics added).

We disagree with Patent Owner. As discussed above, we are not persuaded that the above limitations of independent claims 1 and 11 require "real-time" data processing or that the processed data is about a *current* user. *See supra* Section II.A.2. Rather, independent claims 1 and 11 only require processing the data, and do not require selecting content "in response to said N data elements" and transmitting the content to the user, as recited in independent claim 18, for example.

As discussed above, Obelix discloses an internet search engine that collects the input from users, gathers information about users' actions while visiting a document, and re-ranks search request results based on collected information. Ex. 1005, 1–2, 7–8. Obelix specifically discloses processing packets of information on VCC boards, where each packet includes identification information and user action information. *Id.* at 2. When a user submits a search query, the results are re-ranked based on a Cassleman score, based on collected user actions, and the results are returned to the

user. *Id.* at 7–8.

As such, we are not persuaded by Patent Owner's argument that Obelix fails to disclose "processing data in real time about a *current* visitor to a website," as allegedly required by independent claims 1 and 11.

(ii) "N data elements" and "N configurable process[ors]/[ing elements]"

Patent Owner argues that Obelix fails to disclose "at least that the number of processing units (N) equal the number of data elements received (N)." PO Resp. 32–33. Patent Owner argues that the claims require the number of processing units to equal the number of data elements received because the '687 patent specification discloses "processing N data elements in a single iteration." *Id.* at 33–34.

We are not persuaded by Patent Owner that independent claims 1 and 11 require that the number of processing units equal the number of data elements received. We are persuaded, based on the complete record, that the number of processing units may be less than the number of data elements received. *See* Pet. Reply 13–14; *supra* Section II.B.5. Patent Owner's argument is based on the processing of N data elements being performed in a "single iteration"; however, we agree with Petitioner that the claims do not require processing N data elements in a single iteration. *See* Pet. Reply 13–14; *supra* Sections II.B.4–6. We are persuaded by Petitioner that Obelix discloses receiving two or more data elements and instantiating two or more basic processing units. Pet. Reply 14–15 (citing Ex. 1005, 3; Pet. 24–27). The claims recite "comprising" and are therefore open-ended, and thus include less, equal, or more data elements than processing units (provided there are at least two of each). *See* Pet. Reply 10–11 ("Additional elements

beyond those recited – such as additional data elements or processing elements—would therefore not avoid the claim. Thus, a prior art system that included 7 data elements and 6 processing elements would include 'N data elements' and 'N processing elements' for N= 2, 3, 4, 5 or 6.").

(iii) "corresponding"

Patent Owner argues that Obelix fails to disclose the "corresponding" limitation of claim 1 because it does not disclose "instantiating *N*-number of processing elements to match the *N*-number of data elements" or a 1-to-1 correlation or pairing of N data elements and N processing elements. PO Resp. 36–37. Patent Owner argues that the claims require a single iteration to process all the N data elements. *Id.*

As discussed above, based on the complete record, we construe the "corresponding ones of" limitation to merely require that data elements are "processed" with corresponding processing elements, and not to require that each data element "has" a corresponding processing element such that there is a 1-to-1 relationship between the data element and processing element. *See supra* Section II.A.5; Section II.C.3.a.ii. Accordingly, we are not persuaded by Patent Owner's argument for the reasons discussed above.

(v) "substantially parallel processing"

Patent Owner argues that Obelix lacks "substantially parallel processing," as per independent claim 11. PO Resp. 38–41. Patent Owner argues that Obelix fails to disclose substantially parallel/concurrent processing because Obelix fails to disclose processing "a current user's data to return customized results to that same user in real-time using substantially parallel processing." *Id.* at 38, 40–41. Patent Owner further argues that the

claims require "processing N data elements in a single iteration." *Id.* at 39–41 (emphasis omitted).

Patent Owner presents the same arguments for the limitation of "substantially parallel processing" as those discussed above. Accordingly, we disagree with Patent Owner for the same reasons discussed above. *See supra* Section II.C.3.a.i–iii.

b. Claims 2–4, 18, 19, and 22–25

Claim 18 recites subject matter similar to independent claims 1 and 11, but includes two additional limitations that are not present in claims 1 and 11.

Specifically, claim 18 recites, after processing the received N data elements, "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer." Petitioner argues that Obelix discloses that "the performed actions of a user . . . are used by the search engine to re-rank web page results from the search." Pet. 29, 38 (citing Ex. 1005, 1, 2, 7–8; Ex. 1003 ¶¶ 160–161). Petitioner argues that each identified web page result and the result listing is "a content of said internet site." *Id.* at 29. Petitioner further explains that ranking the web page results constitutes "selecting." *Id.* (citing Ex. 1003 ¶ 162). Because the results are ranked according to Obelix scores generated using the VCC Boards, Petitioner argues that the selecting is "in response to said N data elements." *Id.* at 29–30 (citing Ex. 1005, 7–8; Ex. 1003 ¶¶ 162–164), 38 (citing Ex. 1003 ¶¶ 158–165, 291). Petitioner argues that "Obelix discloses transmitting the search results back to the user." *Id.* at 30, 39 (citing Ex. 1005, 1–2, 7–8; Ex.1003 ¶¶ 178–180, 293) (emphasis omitted).

Patent Owner argues that Obelix does not disclose "selecting a content

of said internet site in response to said N data elements," as recited by independent claim 18 and dependent claims 2–4 and 13,[15] because Obelix uses data received from past users, not from current users, to re-rank the search results. PO Resp. 35–36 (citing Ex. 2095 ¶ 192). Patent Owner argues that Obelix discloses a "data collection phase" that does not collect actions by the current user, but rather includes information about previous users. *Id.* at 28 (citing Ex. 2095 ¶ 176). Patent Owner argues that during the "processing phase" of Obelix, additional incoming data will not be received. *Id.* at 29 (citing Ex. 1005, 2; Ex. 2095 ¶ 178).

We find Patent Owner's arguments persuasive. Claim 18, similar to independent claim 1, requires receiving or transmitting, from a remote computer, "N data elements" for processing by a server. Claim 18, however, further requires selecting content "in response to said N data elements" and transmitting the content back to the same remote computer that transmitted the N data elements. Claims 2–3 and 13 recite similar limitations. As discussed above, Obelix discloses a "data collection phase" and a "processing phase," where user actions are processed and results are transferred to the database. Ex. 1005, 2, 8. Obelix processes search requests based on a combination of search engine results and a calculated Cassleman score, which "represents the sum of overall scores of user actions." *Id.* at 2. That is, when a user submits a search request, the results are re-ranked based on "overall scores of user actions" in a database that were collected and

[15] Petitioner does not challenge claim 13, which depends from independent claim 11, as anticipated by Obelix. We, however, understand Patent Owner's argument to be towards the grounds for which claim 13 is challenged *infra*.

processed during the "data collection phase" and "processing phase." As such, we agree with Patent Owner that Obelix has not been shown to disclose "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as required by independent 18 and dependent claims 2–4 and 13.

Accordingly, Petitioner has not shown that Obelix anticipates claims 2–4 and 18. Dependent claims 19 and 22–25 incorporate by reference the limitations of independent claim 18, and, therefore, Petitioner has not shown that Obelix anticipates claims 19 and 22–25 for the same reasons.

4. Conclusion

Having considered Petitioner and Patent Owner's arguments, and the associated evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 1, 5, 8–12, 16, and 17 are anticipated by Obelix. We are not persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 2–4, 18, 19, and 22–25 are anticipated by Obelix.

D. Obviousness of Claims 1–25 over Obelix

1. Overview

Petitioner contends that claims 1–25 of the '687 patent are unpatentable under 35 U.S.C. § 103 as obvious over Obelix. Pet. 40–46. As discussed above, Petitioner has demonstrated that claims 1, 5, 8–12, 16, and 17 are anticipated by Obelix, and Petitioner has not demonstrated that claims 2–4, 18, 19, and 22–25 are anticipated by Obelix. *See supra* Section II.C. For the reasons discussed below, we are persuaded that Petitioner has demonstrated, by a preponderance of the evidence, that claims 6, 7, 14, and 15 are unpatentable over Obelix. However, we are not persuaded that

Petitioner has demonstrated, by a preponderance of the evidence, that claims 2–4, 13, and 18–25 are unpatentable under 35 U.S.C. § 103(a) as obvious over Obelix.

2. Analysis

a. Claims 1, 5, 8–12, 16, and 17

As discussed above, Petitioner has demonstrated that claims 1, 5, 8–12, 16, and 17 are anticipated by Obelix. *See supra* Section II.C. Accordingly, we do not reach Petitioner's alternative challenge to claims 1, 5, 8–12, 16, and 17 as obvious over Obelix alone.

b. Claims 6, 7, 14, and 15

Claims 6 recites the limitations of claim 1, and further recites "said N data elements comprise N encrypted data elements transmitted by said remote computer to said site." Claim 7 also recites the limitations of claims 1 and 6, and further recites "decrypting said N data elements." As explained above, Obelix discloses N data elements transmitted by a remote computer and receiving that data at the site. *See supra* Section II.C.3.a. The issue is whether encrypting or decrypting that data would have been obvious based on the teachings of Obelix.

Petitioner argues that Obelix discloses using "Netscape Navigator as a browser, . . . which was capable of encrypting communications." at the time of Obelix. Pet. 43 (citing Ex. 1005, 7, 8, 10; Ex. 1035, 1; Ex. 1036, 5:17–22; Ex. 1003 ¶ 202). Petitioner argues that "it would have been obvious to use that encryption capability to secure communications between client and server in the Obelix system in order to secure sensitive personal information, such as browsing habits and associated user actions, reflected in the action data and which was known to be susceptible to eavesdropping." *Id.* (citing

Ex. 1005, 1, 2; Ex. 1037, 237; Ex. 1003 ¶ 203). Petitioner's expert, Dr. Stone, explains that "the SSL encryption technique already present in the Netscape browser" was a known remedy to this problem. *Id.* (citing Ex. 1038, 1:18–22, 2:10; Ex. 1039, 2; Ex 1003 ¶ 203); Ex. 1003 ¶ 204. Petitioner argues that a person with ordinary skill in the art would have been motivated to use encryption techniques to secure data because of the "sensitive nature of the information being exchanged and the inherently insecure link over the Internet." *Id.* (citing Ex. 1036, 32:56–57; 1038, 1:19–21, 1039, 3; Ex. 1003 ¶ 204).

Petitioner cites to encryption capability already present in Obelix's system, and provides sufficient rationale for why one of ordinary skill in the art would have chosen to utilize that capability. Patent Owner does not argue that it would not have been obvious over Obelix to encrypt the data that Obelix's server receives and decrypt it once received. Moreover, the '687 patent specification refers to encryption (and decryption) in only one paragraph, discussing known "secure socket" operation as a possible application of the invention. Ex. 1001, 2:50–65. The specification discusses the speed advantages realized in encrypting/decrypting data according to the invention versus on conventional microprocessor systems. *Id.* Absent a persuasive showing of secondary considerations, which we discuss below, Petitioner's arguments as to why the limitations of claims 6 and 7 would have been obvious based on Obelix are persuasive. As discussed below, we are not persuaded by Patent Owner's general arguments regarding nonobviousness and alleged secondary considerations of nonobviousness. *See infra* Sections II.D.2.e, II.E.3.a.

As such, we are persuaded that Petitioner has demonstrated that claims 6 and 7 are unpatentable over Obelix. Patent Owner does not argue claims 6, 7, 14, and 15 separately. Claim 14 recites similar subject matter as claim 6, and claim 15 recites similar subject matter as claim 7, and accordingly, we are persuaded that Petitioner has demonstrated that claims 14 and 15 are also unpatentable over Obelix.

c. Claims 2–4 and 18–25

As discussed above, we agree with Patent Owner that Obelix has not been shown to anticipate independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner failed to show that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent claim 19–25 incorporate these limitations by reference. Claims 2–4 recite similar limitations. Petitioner does not set forth an analysis demonstrating that these limitations would have been obvious over Obelix. *See* Pet. 40–46. Accordingly, Petitioner has not shown that claims 2–4 and 18–25 would have been obvious over Obelix for the same reasons discussed above. *See supra* Section II.C.3.b.

d. Claim 13

Petitioner does not provide any analysis with respect to claim 13 in its obviousness ground based on Obelix. *See* Pet. 40–46; Dec. 43. As such, Petitioner has not established that claim 13 is unpatentable under 35 U.S.C. § 103(a) as obvious over Obelix.

e. *Objective Indicia of Nonobviousness*

Because the parties refer to the claims collectively in addressing objective evidence of nonobviousness, we do so as well and discuss our

findings as applied to all of Petitioner's obviousness grounds. *See* PO Resp. 60–63; Reply 25–27.

Patent Owner argues that objective indicia of nonobviousness demonstrate that claims 1–25 would not have been obvious to a person of ordinary skill in the art. PO Resp. 60–63.

"In order to accord substantial weight to secondary considerations in an obviousness analysis, the evidence of secondary considerations must have a nexus to the claims, *i.e.*, there must be a legally and factually sufficient connection between the evidence and the patented invention." *Fox Factory, Inc. v. SRAM, LLC,* 944 F.3d 1366, 1373 (Fed. Cir. 2019) (citations and internal quotation marks omitted). "The patentee bears the burden of showing that a nexus exists." *Id.* "To determine whether the patentee has met that burden, we consider the correspondence between the objective evidence and the claim scope." *Id.* A patentee is entitled to a rebuttable presumption of nexus "when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'embodies the claimed features, and is coextensive with them.'" *Id.* (citation omitted). However, "[a] finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations." *Id.* "To the contrary, the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention.'" *Id.* at 1373–1374 (citation omitted).

"Where the offered secondary consideration actually results from something other than what is both claimed and *novel* in the claim, there is no nexus to the merits of the claimed invention," meaning that "there must be a

nexus to some aspect of the claim not already in the prior art." *In re Kao*, 639 F.3d 1057, 1068–69 (Fed. Cir. 2011). On the other hand, there is no requirement that "objective evidence must be tied exclusively to claim elements that are not disclosed in a particular prior art reference in order for that evidence to carry substantial weight." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331 (Fed. Cir. 2016). A patent owner may show, for example, "that it is the claimed combination as a whole that serves as a nexus for the objective evidence; proof of nexus is not limited to only when objective evidence is tied to the supposedly 'new' feature(s)." *Id.* at 1330. Ultimately, the fact finder must weigh the secondary considerations evidence presented in the context of whether the claimed invention as a whole would have been obvious to an ordinarily skilled artisan. *Id.* at 1331–32.

Although Patent Owner generally alleges commercial success and praise for its SRC-6 and SRC-6e products, Patent Owner does not provide an analysis demonstrating that its products (SRC-6, SRC-6e) are coextensive, or nearly coextensive, with the challenged claims. *See* PO Resp. 60–63; *See* Pet. Reply 26–27 (citing Ex. 1051, 107:16–108:10). We, therefore, find that a presumption of nexus is inappropriate.

However, "[a] finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations." *Fox Factory*, 944 F.3d at 1373. "To the contrary, the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention.'" *Id.* at 1373–74 (quoting *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996)). "Where the offered secondary consideration actually

results from something other than what is both claimed and *novel* in the claim, there is no nexus to the merits of the claimed invention," meaning that "there must be a nexus to some aspect of the claim not already in the prior art." *In re Kao*, 639 F.3d 1057, 1068–69 (Fed. Cir. 2011) (emphasis in original). On the other hand, there is no requirement that "objective evidence must be tied exclusively to claim elements that are not disclosed in a particular prior art reference in order for that evidence to carry substantial weight." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331 (Fed. Cir. 2016). A patent owner may show, for example, "that it is the claimed combination as a whole that serves as a nexus for the objective evidence; proof of nexus is not limited to only when objective evidence is tied to the supposedly 'new' feature(s)." *Id.* Ultimately, the fact finder must weigh the secondary considerations evidence presented in the context of whether the claimed invention as a whole would have been obvious to a skilled artisan. *Id.* at 1331–32.

As objective evidence of nonobviousness, Patent Owner submits the Declarations of Dr. Homayoun, Tarek El-Ghazawi, Ph.D, and Jon Huppenthal, the named inventor of the '687 patent, as well as deposition testimony of Stephen M. Trimberger, Ph.D., in two other *inter partes* reviews. *See* PO Resp. 60–63; Exs. 2095, 2084, 2143, 2060. Patent Owner asserts there was a "long-felt need in the HPC industry for very fast processing of large volumes of data (even approaching real-time processing speeds), as well as deploying systems with the appropriate computing power to meet the expected scale of tasks and minimize problems from underperformance or overkill." PO Resp. 61 (citing Ex. 2143 ¶¶ 17–25; Ex. 2145, 24–26; Ex. 2084 ¶¶ 36–41; Ex. 2095 ¶¶ 40–106). Patent Owner

asserts "[t]here was also skepticism in the HPC industry that reconfigurable processors could adequately satisfy these needs compared to other well-established solutions in the same technology space." *Id.* (citing Ex. 2060, 129:24–130:20). Patent Owner provides additional evidence that allegedly shows "others in the industry taught away from the claimed invention of the '687 Patent or attempted alternative solutions that failed or focused on improving other aspects of the technology to compensate for not addressing the above long-felt needs." *Id.* at 62 (citing Ex. 1005, 1; Ex. 2146, 12–20; Ex. 2139, 4; Ex. 2143 ¶¶ 32–43; Ex. 2084 ¶¶ 30–31, 36–41; Ex. 2095 ¶¶ 179–184; Ex. 2048, 168–9:169:4, 179:6–13, 197:8–11; Ex. 2060, 129:24–130:20).

We have reviewed all of the cited evidence and do not find it persuasive, as Patent Owner does not provide any explanation establishing a nexus to the challenged claims. Patent Owner does not provide a persuasive analysis of objective indicia that the claimed methods and services solved the identified problems of near real-time speed and reducing communication delays. Nor does Patent Owner explain how the cited testimony from Dr. Trimberger and Dr. Stone allegedly shows skepticism in the industry that the reconfigurable server approach *of the challenged claims* would reduce such issues, as opposed to mere views on reconfigurable processors in general. *See* PO Resp. 61–62.

Patent Owner also asserts that, regarding its SRC-6 and SRC-6e products, "there was commercial success and praise by others for their innovations, which . . . invented using [substantially] parallelism to process in real-time any large dataset transmissions and combining that with reconfigurability to instantiate in real-time a parallel system whose size

matched the variable sizes of the incoming datasets." *Id.* at 63 (citing Ex. 2084 ¶¶ 21–30; Ex. 2144, Fig. 4, 69–74; Ex. 2084 ¶¶ 82–87; Ex. 2095 ¶¶ 108–109, 118–119). Patent Owner, however, does not provide any explanation or analysis demonstrating that its "SRC-6" or "SRC-6e" products were used to implement the methods and services recited in any of the challenged claims. Patent Owner merely cites to four documents and alleges that the documents show commercial success and industry praise. *See id.* However, absent some explanation and evidence demonstrating commercial success or specifically providing industry praise of the inventions of the challenged claims, we are unpersuaded that there was commercial success or industry praise associated with the challenged claims. Accordingly, we find that Patent Owner has not established a sufficient nexus between any of the claimed methods and services and the alleged commercial success and industry praise.

For the reasons explained above, we conclude that Patent Owner's evidence purportedly showing commercial success, industry praise, long-felt need, skepticism in the industry, and failure of others does not weigh in favor of nonobviousness of the challenged claims.

3. Conclusion

We are persuaded by Petitioner's arguments as to claims 6, 7, 14, and 15, as they are supported by the cited evidence, including the testimony of Dr. Stone, which we credit, notwithstanding Patent Owner's arguments addressed above. Having considered the *Graham* factors, including the scope and content of the prior art, the differences between the prior art and the challenged claims, and the objective evidence of nonobviousness, we determine that Petitioner has demonstrated by a preponderance of the

evidence that claims 6, 7, 14, and 15 are unpatentable as obvious over Obelix. We determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 2–4, 13, and 18–25 are unpatentable as obvious over Obelix.

E. Obviousness of Claims 1–10, 16, 17, 22, and 23 over Obelix and Spencer

1. Overview

Petitioner contends that claims 1–10, 16, 17, 22, and 23 of the '687 patent are unpatentable under 35 U.S.C. § 103 as obvious over Obelix and Spencer. Pet. 46–50. For the reasons discussed below, Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 5–10, 16, and 17 of the '687 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Obelix and Spencer. Petitioner has not demonstrated, by a preponderance of the evidence, that claims 2–4, 22, and 23 of the '687 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Obelix and Spencer.

2. Spencer (Ex. 1007)

Spencer is directed to information retrieval systems and methods, particularly for combining multiple queries through an abstract programming interface. Ex. 1007, 1:8–11. Spencer's information retrieval system includes a search application having a variety of code module classes, where each code module class is for implementing a specific type of query model on particular data types in an attached database. *Id.* at 2:47–50. The code module classes ("QueryNodes") are derived from a common QueryNode class that defines the architecture of all query nodes. *Id.* at 2:50–52. Spencer discloses that each QueryNode subclass can be used to

instantiate a code object that performs a specific search query and returns a value describing its results. *Id.* at 6:7–11. The QueryNodes all share a common object interface so a system can combine QueryNodes for different query models into a single search query. *Id.* at 2:52–55.

Spencer further discloses a search operation for a database by associating a particular score with each document in the database and evaluating the score of each document using weighting and evaluation functions to segregate and rank the documents according to relevance for an input search query. *Id.* at 6:28–34. Spencer discloses these results in increased performance for the search operation because the number of non-zero (irrelevant) documents for such a search inquiry is significantly less than the number of documents in a database, which reduces search space a function must operate over. *Id.* at 6:64–7:2. Spencer discloses that its function, unlike conventional search routines that search many or all documents of a database, does not attempt to return all matching documents at one time, which permits a programmer to implement a search application in the most efficient manner, such as by delaying parts of a search query until system load decreases or higher priority processes are completed. *Id.* at 7:5–29.

3. Analysis

a. Claims 1, 5–10, 16, and 17

As discussed above, Petitioner has demonstrated that Obelix anticipates independent claims 1 and 11, and that claims 6 and 7 would have been obvious over Obelix. *See supra* Sections II.C–D.

Claim 1 recites "processing said N data elements with corresponding ones of said N reconfigurable processing elements." Petitioner argues that

Spencer discloses an "informational retrieval system" for querying a database, where "QueryNodes" execute elements of a larger complex search. *Id.* at 46 (citing Ex. 1007, Abstract, 12:18–27). The "QueryNodes" are hardware components in FPGAs. *Id.* (citing Ex. 1007, 9:52–54). Petitioner contends that in Spencer, a query with several elements is received, a "QueryNode" is instantiated for each element, and the system "iteratively combin[es] the results." *Id.* at 46–47 (citing Ex. 1007, 6:6–11, 7:34–40, Figs. 1–2; Ex. 1003 ¶¶ 149–153).

Petitioner argues that a person with ordinary skill in the art would have been motivated to combine the known elements of breaking a complex query into elements, as disclosed by Spencer, and processing the elements using reconfigurable VCC Boards, as disclosed by Obelix, in order to increase the efficiency and speed of processing search queries. Pet. 47 (citing Ex. 1003 ¶ 154). Petitioner asserts a person with ordinary skill in the art would have understood that "parsing complex queries into a group of simplified operations permitted more detailed search queries that would lead to better results." *Id.* at 48 (citing Ex. 1007, 6:64–7:2). Petitioner further contends that Obelix and Spencer are analogous art to the '687 patent and the combination of Obelix and Spencer "would have been an arrangement of old elements . . . with each performing the same function it had been known to perform (improving user access to database information) and yielding no more than what one would expect from such an arrangement." *Id.* at 47–48 (citing Ex. 1003 ¶ 156).

Patent Owner argues that Spencer fails to disclose "a parallel implementation of a search algorithm," and, therefore fails to disclose "instantiating N processing units to handle N data in a *single integration*."

PO Resp. 43, 47 (bolding and underlining omitted; italics added). Patent Owner argues that Spencer teaches that "the query nodes are run sequentially, *i.e.*, one after another, so that subsequent query nodes can take advantage of the results from all of the earlier query nodes." *Id.* at 44.

We disagree with Patent Owner. As discussed above, Petitioner argues that when different URLs are processed on the same board, "different basic processing units within a single VCC Board will at least some of the time be processing different packets at the same time ("*substantially parallel*"), such as by two or more basic units respectively comparing input and stored URLs at roughly the same time." Pet. 35 (citing Ex. 1003 ¶ 260). In its asserted obviousness ground based on the combination of Obelix and Spencer, Petitioner relies on Spencer as disclosing the "correspondence" between the data elements and processing units. *Id.* at 46–47. Accordingly, Patent Owner's argument that Spencer fails to disclose the full limitation is not persuasive because it is a mischaracterization of the arguments set forth by Petitioner. *Id.*

Patent Owner also argues that Spencer fails to disclose "parallel processing as required to be 'corresponding,' 'substantially parallel processing,' or 'substantially concurrently processing' the 'N data elements.'" PO Resp. 47–48. Patent Owner argues that "corresponding" requires a pairing of data elements to instantiated processors (i.e., the same number of processing elements as data elements), which is not shown in Spencer. *Id.* at 48. Patent Owner argues that "Spencer discloses a sequential implementation, not a parallel implementation," and "'[a]dapting' Spencer into a parallel architecture such as the '687 Patent would destroy its intended benefits." *Id.*

We disagree with Patent Owner. Rather, we agree with Petitioner that Spencer discloses that when a query with several elements is received, a "QueryNode" is instantiated for each element, and the system iteratively combines the results. Pet. 46–47 (citing Ex. 1007, 6:6–11, 7:34–40, Figs. 1–2; Ex. 1003 ¶¶ 149–153). That is, a processing element corresponding to each data element is instantiated. We are further not persuaded by Patent Owner's argument that Spencer fails to disclose a parallel implementation because Petitioner relies on Obelix as disclosing parallel processing of data elements.

Patent Owner additionally argues a person with ordinary skill in the art would not have been "motivated to make the proposed combination of Obelix with Spencer in accordance with the Petition." PO Resp. 49. Petitioner argues that Spencer "is designed to avoid searching the same locations in a database multiple times as part of a complex search by leveraging the benefits of a sequential implementation," and its "purpose would be vitiated by converting Spencer into a parallel implementation." *Id.* at 50–51 (citing Ex. 2094 ¶¶ 224) (emphasis omitted). Patent Owner, consequently, argues that combining Obelix with Spencer would not accomplish the intended purposes Petitioner claims, and any motivation to combine Spencer "comes from a hindsight reading of the prior art." *Id.* at 51.

We disagree with Patent Owner. As discussed above, a person with ordinary skill in the art would have understood that "parsing complex queries into a group of simplified operations permitted more detailed search queries that would lead to better results." Pet. 48 (citing Ex. 1007, 6:64–7:2). Furthermore, both Spencer and Obelix are concerned with increasing

processing speeds, and the instantiation of a processing element for each data element would "allow[] searches to be optimized and provide[] flexibility and architectural independence." *Id.* (citing Ex. 1007, Abstract, 2:24–36, 7:34–40; Ex. 1005, 1). We further agree with Petitioner that Spencer does not teach away from the proposed combination because Spencer's disclosure is not limited to a sequential search implementation and "still allow[s] flexibility for alternative search implementations." Pet. Reply 22 (quoting Ex. 1007, 7:35–41).

Finally, Patent Owner raises various challenges to all of Petitioner's obviousness grounds collectively, in particular to Petitioner's reliance on the testimony of Dr. Stone. Patent Owner argues, for example, that Dr. Stone's testimony is conclusory, grounded in hindsight bias, fails to disclose the underlying facts or data on which his opinions are based under 37 C.F.R. § 42.65(a), fails to "articulate reasons why or how a [person of ordinary skill in the art] would combine the references" or consider whether the asserted combinations were "feasible," and "assume[s] all the benefits [of the asserted combinations] and ignores any drawbacks of cobbling together [the] prior art as proposed in the Petition." PO Resp. 7–16, 51-59 (emphasis omitted). Many of Patent Owner's arguments are premised on Petitioner's alleged failure to show that Obelix and Spencer teach various limitations. *See, e.g.*, *id.* at 51–56. Because we are not persuaded that the references have any of those alleged deficiencies, those arguments are not persuasive. *See supra* Sections II.C.3.a, II.D.2.

We have reviewed Patent Owner's arguments and cited evidence in the record and disagree with the remainder of Patent Owner's assertions as well. For example, with respect to the combination of Obelix and Spencer,

Petitioner explains in detail what teachings of the two references it is relying on as teaching the various limitations of claims 1, 5–10, 16, and 17, explains exactly how a person of ordinary skill in the art would have combined those teachings, i.e., breaking up a complex query into component parts, as taught by Spencer, using the reconfigurable VCC Boards of Obelix to process in parallel the query requests at increased speed. Pet. 46–50. Petitioner asserts that the references are combinable in an obviousness combination because they are both analogous art to the '687 patent and provides multiple reasons a person of ordinary skill in the art would have had for making the combination. *Id.* at 47–48. Petitioner's assertions are supported by the testimony of Dr. Stone. *See* Ex. 1003 ¶¶ 148–157, 219. That testimony is not based on hindsight bias, but rather the content of both asserted references, which Dr. Stone cites in his analysis. *See id.* Dr. Stone explains the exact combination of teachings and the reasons for making that combination. *See id.* Patent Owner never addresses those identified reasons to combine in its papers or explains in any way why they are factually incorrect. Further, we do not find any evidence in the record that combining Spencer's teachings regarding complex queries with Obelix's teaching of processing methods would have had any disadvantages that would have outweighed Petitioner's stated advantages.

b. Claims 2–4, 22, and 23

As discussed above, Petitioner has not demonstrated that Obelix anticipates independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent

claims 22 and 23 incorporate these limitations by reference. Claims 2–4 recite similar limitations. Petitioner does not set forth an analysis demonstrating that these limitations would have been obvious over the combination of Obelix and Spencer. *See* Pet. 46–50. Accordingly, we determine that claims 2–4, 22, and 23 have not been shown to be unpatentable over the combination of Obelix and Spencer for the same reasons discussed above. *See supra* Section II.C.3.b.

4. Conclusion

We are persuaded by Petitioner's arguments as to claims 1, 5–10, 16, and 17, as they are supported by the cited evidence, notwithstanding Patent Owner's arguments addressed above. Having considered the *Graham* factors, including the scope and content of the prior art, the differences between the prior art and the challenged claims, and the objective evidence of nonobviousness (*see supra* Section II.D.2.e), we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 5–10, 16, and 17 are unpatentable as obvious over Obelix and Spencer. We determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 2–4, 22, and 23 are unpatentable as obvious over Obelix and Spencer.

F. Obviousness of Claims 5, 12, 13, and 19 over Obelix and Perkins, With or Without Spencer

1. Overview

Petitioner contends that claims 5, 12, 13, and 19 of the '687 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Obelix and Perkins, with or without Spencer. Pet. 50–54. For reasons discussed below, we determine Petitioner has demonstrated by a preponderance of the evidence

that claims 5, 12, and 13 would have been obvious over Obelix and Perkins, with or without Spencer. *See id.* We determine Petitioner has not demonstrated by a preponderance of the evidence that claim 19 would have been obvious over Obelix and Perkins, with or without Spencer.

2. Perkins (Ex. 1008)

Perkins is directed to a process of refining a relevancy determination for Internet search engine databases via the use of user feedback. Ex. 1008, 1:7–9. Specifically, Perkins's invention applies user ratings of a search engine's ability to propose appropriate resources and utilizes user profile information to refine a method to by which data is searched, evaluated for relevance, and returned. *Id.* at 3:29–33. Once a user has been directed to a resource in response to a specific inquiry, the user is provided a means for rating the appropriateness of the resource to the query. *Id.* at 3:33–37. Perkins discloses registering a user's demographic data (e.g., gender, date of birth, location) and psychographic profile data with a search engine because different users need and expect different information for particular queries. *Id.* at 3:48–55, 6:14–59. Once such a profile is established, information for that profile can be used in all searches to provide the most relevant list of resources in response to a particular query. *Id.* at 3:57–59.

3. Analysis

a. Claims 5, 12, and 13

Claim 5 recites the limitations of claim 1, and further recites "said N data elements comprise demographic data pertaining to said remote computer." Petitioner argues that Obelix discloses that "each received package has information about demographic data of a user." Pet. 31 (quoting Ex. 1005, 2, 9; citing Ex. 1003 ¶ 191). Petitioner further asserts

that Perkins discloses a process for refining search engine query results based on user feedback, where a user's demographic (gender, date of birth, and location) and psychographic profile data is collected and used in ranking search results. *Id.* at 50–51 (citing Ex. 1008, Abstract, 3:48–50, 6:14–59, 5:16–20, 11:4–13:41; Ex. 1003 ¶ 193). Petitioner argues that a person with ordinary skill in the art would have been motivated to combine different types of data used to rank search results in order to provide better search results. *Id.* at 52 (citing Ex. 1042, 404–405; Ex. 1003 ¶ 197). Petitioner further contends that Obelix and Perkins are analogous art to the '687 patent and the combination of Obelix and Perkins "would have been an arrangement of old elements . . . with each performing the same function it had been known to perform (processing URLs, action data and demographic data) and yielding no more than what one would expect from such an arrangement." *Id.* at 51–52 (citing Ex. 1003 ¶ 196).

Patent Owner argues that Perkins does not disclose "multiple processors working together on a single algorithm or performing any sort of parallel processing." PO Resp. 54–55 (citing Ex. 2095 ¶ 232). Patent Owner's argument, specifically, is substantially the same as the arguments presented for independent claims 1 and 11. *See supra* Sections II.C.3.a. Patent Owner further argues that Obelix and Spencer do not disclose the other limitations that Petitioner alleges, and that Perkins fails to remedy those alleged deficiencies. PO Resp. 54–55. That is, Patent Owner reiterates its same arguments as presented above, and does not present any separate arguments towards the obviousness of claims 5, 12, and 13 over the combination of Obelix and Perkins, with or without Spencer. Patent

Owner's arguments are not persuasive for the same reasons discussed above. *See id.*

b. Claim 19

As discussed above, Petitioner has not demonstrated that Obelix anticipates independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent claim 19 incorporates these limitations by reference. Petitioner does not set forth an analysis demonstrating that these limitations would have been obvious over the combination of Obelix and Perkins, with or without Spencer. *See* Pet. 50–54. Accordingly, we determine that claim 19 has not been shown to be unpatentable over the combination of Obelix and Perkins, with or without Spencer, for the same reasons discussed above. *See supra* Section II.C.3.b.

4. Conclusion

We are persuaded by Petitioner's arguments as to claims 5, 12, and 13, as they are supported by the cited evidence, notwithstanding Patent Owner's arguments addressed above. Having considered the *Graham* factors, including the scope and content of the prior art, the differences between the prior art and the challenged claims, and the objective evidence of nonobviousness (*see supra* Section II.D.2.e), we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 5, 12 and 13 are unpatentable based on Obelix and Perkins, with or without Spencer. We determine that Petitioner has not demonstrated by a preponderance of

the evidence that claim 19 is unpatentable based on Obelix and Perkins, with or without Spencer.

G. Obviousness of Claims 7, 15, and 21 over Obelix and Leong, With or Without Spencer

1. Overview

Petitioner contends that claims 7, 15, and 21 of the '687 patent are unpatentable under 35 U.S.C. § 103 as obvious over Obelix and Leong, with or without Spencer. Pet. 54–57. For reasons discussed below, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 7 and 15 would have been obvious over Obelix and Leong, with or without Spencer. *See id.* We determine Petitioner has not demonstrated by a preponderance of the evidence that claim 21 would have been obvious over Obelix and Leong, with or without Spencer.

2. Leong (Ex. 1009)

Leong is directed to "[a] high-performance implementation of the International Data Encryption Algorithm (IDEA)," wherein a bit-serial architecture achieves "a system clock rate of 125MHz on a Xilinx Virtex XCV300-6." Ex. 1009, Abstract. Leong discloses using reconfigurable computing engines to implement IDEA. *Id.* at 122, 126.

3. Analysis

a. Claims 7 and 15

Claim 7 depends from claim 6, and recites "decrypting said N encrypted data elements." As discussed above, Petitioner asserts that claims 6 and 7 would have been obvious over Obelix alone. *See supra* Section II.D; Pet. 43–44. Claim 15 recites similar subject matter as claim 7.

Petitioner argues Leong discloses decrypting on "'Xilinx Virtex XCV300-6' reconfigurable hardware." Pet. 55 (citing Ex. 1009, Abstract). Petitioner argues that Leong's process "operates on three input data signals, delayed with respect to each other in time, and input to a pipelined encryption unit in a parallel manner." *Id.* (citing Ex. 1009. Figs. 8, 9). Petitioner asserts that a skilled artisan would understand that the decryption units would operate with substantially the same pipelining as the encryption units. *Id.* (citing Ex. 1009, 123; Ex. 1003 ¶ 210).

Petitioner asserts that the combination of Obelix and Leong would result in a system that would "receive encrypted data over the Internet and implement the decryption techniques of Leong in the VCC Hot II boards of Obelix." *Id.* Petitioner asserts one of ordinary skill in the art would have made such a combination "because it was known, for example, how to decrypt data elements simultaneously using reconfigurable hardware . . . and that the VCC Boards could be used to operate on different data elements simultaneously." *Id.* at 56 (citing Ex. 1005; Ex. 1009; Ex. 1003 ¶ 211). Petitioner further asserts Obelix and Leong are analogous art to the '687 patent because each is in the field of computer architectures incorporating multiple processing elements and are reasonably pertinent to the problem of "providing accelerated web site access and processing that the inventors of the 687 Patent were trying to solve." *Id.* (citing Ex. 1001, 1:26–34, 2:6–9; Ex. 1005, 1, 2; Ex. 1009, 123, 126; Ex. 1003 ¶ 212).

Petitioner also argues that a person with ordinary skill in the art would have been motivated to combine the known elements of decrypting encrypted data, as disclosed by Leong, and processing the elements using reconfigurable VCC Boards, as disclosed by Obelix, in order to provide

accelerated secure internet search processing. *Id.* at 57 (citing Ex. 1003 ¶ 214). Further, Petitioner asserts Leong's decryption in Obelix "would have been an arrangement of old elements . . . with each performing the same function it had been known to perform (acceleration of processing utilizing reconfigurable hardware) and yielding no more than what one would expect from such an arrangement." *Id.* at 56–57 (citing Ex. 1003 ¶ 213).

Patent Owner argues that Leong is flawed in a number of respects, but does not present any arguments towards the limitations Petitioner alleges Leong discloses, or towards Petitioner's asserted rationales to combine Obelix with Leong. *See* PO Resp. 55–56 ("Leong discloses a PCI bus connection with only a theoretical 33MHz bus speed, and the I/O transfer rate would be degraded due to large operating system overhead," "Leong's algorithm already occupied 91.18% of the board's entire capacity, and any additional code . . . would have easily exceeded the total available storage," "Leong also does not discuss its algorithm in the context of internet applications or real-time processing for a website, and it does not otherwise indicate any capability to meet the real-time processing demands"). Petitioner's asserted rationales for combining the teachings of the two references are consistent with the disclosures of the references themselves and supported by the testimony of Dr. Stone, which we credit.

Patent Owner further argues that Obelix and Spencer do not disclose the other limitations that Petitioner alleges, and that Leong fails to remedy those alleged deficiencies. *Id.* That is, Patent Owner reiterates its same arguments as presented above, and does not present any separate arguments towards the obviousness of claims 7 and 15 over the combination of Obelix

and Leong, with or without Spencer. Accordingly, we are not persuaded by Patent Owner's arguments.

b. Claim 21

As discussed above, Petitioner has not demonstrated that Obelix anticipates independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent claim 21 incorporates these limitations by reference. Petitioner does not set forth an analysis demonstrating that these limitations would have been obvious over the combination of Obelix and Leong, with or without Spencer. *See* Pet. 54–57. Accordingly, we determine that claim 21 has not been shown to be unpatentable over the combination of Obelix and Leong, with or without Spencer, for the same reasons discussed above. *See supra* Section II.C.3.b.

4. Conclusion

We are persuaded by Petitioner's arguments as to claims 7 and 15, as they are supported by the cited evidence, notwithstanding Patent Owner's arguments addressed above. Having considered the *Graham* factors, including the scope and content of the prior art, the differences between the prior art and the challenged claims, and the objective evidence of nonobviousness (*see supra* Section II.D.2.e), we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 7 and 15 are unpatentable based on Obelix and Leong, with or without Spencer. We determine that Petitioner has not demonstrated by a preponderance of the

evidence that claim 21 are unpatentable based on Obelix and Leong, with or without Spencer.

H. Obviousness of Claims 2–4, 13, and 25 over Obelix and Skillen, With or Without Spencer

1. Overview

Petitioner contends that claims 2–4, 13, and 25 of the '687 patent are unpatentable under 35 U.S.C. § 103 as obvious over Obelix and Skillen, with or without Spencer. Pet. 64–70. For reasons discussed below, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 2–4 and 13 would have been obvious over Obelix and Skillen, with or without Spencer. *See id.* We determine Petitioner has not demonstrated by a preponderance of the evidence that claim 25 would have been obvious over Obelix and Skillen, with or without Spencer.

2. Skillen (Ex. 1012)

Skillen is directed to an improved associative search methodology for retrieving related information. Ex. 1012, 1:34–36. Specifically, Skillen is directed to "a method of providing advertisements to a user searching for desired information within a data network." *Id.* at 1:37–39. Skillen's process includes a user submitting a search request and a search engine searching the Internet and passing an argument and search results to an associative search engine that looks for a product data match in a database. *Id.* at 4:26–35. The associative search engine selects a probable best product for an advertisement window to be displayed with the search results and passes the data for the selected product to the search engine, which provides the search results and the initial product advertisement to a device for displaying to the user. *Id.* at 4:35–45. Skillen further discloses that user

profile data can be accessed by the associate search engine for selecting a best fit product advertisement. *Id.* at 5:7–12.

3. Analysis

a. Claims 2–4 and 13

As discussed above, Petitioner has demonstrated that Obelix anticipates independent claims 1 and 11. *See supra* Section II.C. We also determined that Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18.

Claim 2 recites the limitations of claim 1, and further recites "selecting a content of said site in response to processed N data elements." Claim 3 recites the limitations of claim 2, and further recites "transmitting said content to said remote computer." Claim 4 recites the limitations of claim 3, and further recites "displaying said content at said remote computer." Claim 13 recites similar limitations to claims 2 and 3.

Petitioner contends that "Obelix discloses that the performed actions of a user associated with particular URLs are used by the search engine to re-rank web page results from the search." Pet. 29 (citing Ex. 1005, 1, 2, 7–8; Ex. 1003 ¶ 160). Petitioner further contends that Skillen discloses advertisements transmitted to a user with search results, and the advertisements are selected based on the query terms included in the search. *Id.* at 65 (citing Ex. 1012, 4:29–45, 5:7–12, 6:4–8, 4:51–55; Ex. 1003 ¶ 167). Petitioner argues that Skillen discloses advertisements transmitted to the user and displayed on the user's computer in an "end user search results

advertisement window" that is continually updated. *Id.* (citing Ex. 1012, 4:56–63).

Petitioner argues that a person with ordinary skill in the art would have been motivated to combine Obelix and Skillen because Skillen teaches a method of providing unobtrusive, related, and useful data to an end user who is searching for information, thereby increasing advertising revenue by more effectively advertising. *Id.* at 68 (citing Ex. 1003 ¶ 176). Petitioner further contends that Obelix and Skillen are analogous art to the '687 patent and the combination of Obelix and Skillen "would have been [an] arrangement of old elements (the Obelix search server with the Skillen associate search engine functionality) with each performing the same function it had been known to perform (ranking of search results based on action data; selection of user-specific advertisements based on query terms, action data and user profiles) and without creating any unpredictable results." *Id.* at 67–68 (citing Ex. 1003 ¶ 174).

We agree with Petitioner. Skillen disclose an "improved associative search methodology for retrieving related information." Ex. 1002, 1:34–36. Skillen discloses that an end user submits a search request; the search engine generates results and passes the results to the associative search engine; the associative search engine "looks for a match in the product data" and "selects a probable best product"; and the results are transmitted to the end user device for display. Ex. 1012, 4:26–45. Skillen and Obelix are similar in their structure of combining the search results with an additional result from a second server. *See id.*; Ex. 1005, 1–2, 7–8. Petitioner's asserted rationales for combining the teachings of the two references are consistent

with the disclosures of the references themselves and supported by the testimony of Dr. Stone, which we credit.

Patent Owner argues that Obelix and Spencer do not disclose the limitations that Petitioner alleges, and that Skillen fails to remedy those alleged deficiencies. PO Resp. 53–54. That is, Patent Owner reiterates its same arguments as presented above, and does not present any separate arguments towards the obviousness of claims 2–4 and 13 over the combination of Obelix and Skillen, with or without Spencer. Accordingly, we are not persuaded by Patent Owner's arguments for the same reasons discussed above.

b. Claim 25

As discussed above, Petitioner has not demonstrated that Obelix anticipates independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent claim 25 incorporates these limitations by reference. Petitioner does not set forth an analysis demonstrating that these limitations would have been obvious over the combination of Obelix and Skillen, with or without Spencer. *See* Pet. 64–70. Although dependent claims 2–4 and 13 recite somewhat similar subject matter as independent claim 18, the claims are not identical, and Petitioner does not challenge independent claim 18 as unpatentable over the combination of Obelix and Skillen, with or without Spencer. *See* Pet. 64–70. Accordingly, we determine that Petitioner has not shown claim 25 to be unpatentable as obvious over the combination of Obelix and Skillen, with or without Spencer.

4. Conclusion

We are persuaded by Petitioner's arguments as to claims 2–4 and 13, as they are supported by the cited evidence, notwithstanding Patent Owner's arguments addressed above. Having considered the *Graham* factors, including the scope and content of the prior art, the differences between the prior art and the challenged claims, and the objective evidence of nonobviousness (*see supra* Section II.D.2.e), we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 2–4 and 13 are unpatentable based on Obelix and Skillen, with or without Spencer. We determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 25 are unpatentable based on Obelix and Skillen, with or without Spencer.

I. Additional Grounds

As discussed above, Petitioner has not demonstrated that Obelix anticipates independent claim 18. *See supra* Section II.C.3.b. Specifically, Petitioner has not shown that Obelix discloses "selecting a content of said internet site in response to said N data elements" and "transmitting said content to said remote computer," as recited by independent 18. Dependent claims 22–24 incorporate these limitations by reference. Petitioner challenges claims 22 and 23 as unpatentable over Obelix and Curtis, with or without Spencer, and challenges claim 24 as unpatentable over Obelix and Davis, with or without Spencer. Pet. 57–64. Petitioner does not rely on either Curtis, Davis, or Spencer as teaching the missing limitations of claim 18. *Id.* Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claims 22–24 are unpatentable based on these grounds.

Petitioner also challenges claims 8, 9, 16, and 17 as unpatentable over Obelix and Curtis, with or without Spencer, and challenges claims 10–17 as unpatentable over Obelix and Davis, with or without Spencer. *Id.* Petitioner has proven by a preponderance of the evidence that these claims are unpatentable on other grounds. *See supra* Sections II.C–H. As such, we need not address Petitioner's alternative grounds of unpatentability as to claims 8–17.

J. Motions to Exclude

The party moving to exclude evidence bears the burden of proof to establish that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence. *See* 37 C.F.R. §§ 42.20(c), 42.62(a). For the reasons discussed below, Petitioner's Motion is denied-in-part and dismissed-in-part, and Patent Owner's Motion is denied.

1. Petitioner's Motion to Exclude

a. Exhibits 2084, 2058, 2060, and 2076

Petitioner moves to exclude Mr. Huppenthal's declaration (Exhibit 2084) "in its entirety as not being relevant to any issue on which trial has been instituted, and for lacking foundation, containing hearsay, and/or causing undue prejudice." Pet. Mot. at 3–6. Petitioner moves to exclude portions of "Mr. Huppenthal's declaration (Ex. 2084 ¶¶ 80, 82–86) due to his refusal to answer questions concerning those portions of the declaration." *Id.* at 1–3 (citing Paper 48, 7–8).

Petitioner also moves to exclude three transcripts (Exs. 2058, 2060, 2076) of depositions of Petitioner's declarants from other *inter partes* reviews as "not being relevant to any issue on which trial has been instituted,

for containing hearsay, and/or causing undue prejudice." *Id.* at 6–7. Petitioner argues that allowing the transcripts in the record would be "highly prejudicial as they present themselves with the indicia of expert testimony while being totally devoid from the necessary context of the matters from which they originate." *Id.* at 6. Patent Owner cites Exhibits 2058 and 2060 in its Response, but does not cite Exhibit 2076 in its Response or Sur-Reply.

Petitioner's Motion is dismissed as moot, as we do not rely on the testimony in a manner adverse to Petitioner in this Decision. As explained above, even if the testimony is considered, we are not persuaded by Patent Owner's arguments regarding the state of the art or alleged nonobviousness of the challenged claims, and Patent Owner has not shown proof of secondary considerations that would support a conclusion of nonobviousness. *See supra* Sections II.D–II.I.

b. Exhibit 2095

Petitioner moves to exclude paragraphs 41, 56, 60, 72, 77, 100, 148, and 238 of the declaration of Dr. Homayoun, which refer to Exhibits 2058, 2084, and 2052. Because we do not exclude those exhibits, we also dismiss as moot Petitioner's Motion with respect to Exhibit 2095.

c. Exhibits 2049–2057, 2059, 2061–2083, 2085–2087, 2089–2094, 2096–2122, 2124–2135, 2142, and 2147

Petitioner moves to exclude a number of exhibits as "not being relevant to any issues on which trial has been instituted, lacking foundation, and/or causing undue prejudice" because the exhibits were not discussed or cited in Patent Owner's Response and Sur-Reply. Pet. Mot. 7–8. Petitioner's Motion is dismissed as moot, as we do not rely on the exhibits in a manner adverse to Petitioner in this Decision. We note, however, that in

evaluating Petitioner's asserted grounds of unpatentability, we only consider substantive arguments made by the parties in their papers during trial (i.e., the Petition, Response, Reply, and Sur-Reply). To the extent a document is filed in the record but never discussed in a paper, there is no substantive argument pertaining to that document that can be considered.

d. Patent Owner's Response

Petitioner moves to exclude portions of Patent Owner's Response referring to the exhibits that Petitioner seeks to exclude. Pet. Mot. 9. Patent Owner's Response is a paper with attorney arguments, not evidence that may be excluded.[16] Further, we do not exclude any of the exhibits referred to in the identified portions of the Response. Petitioner's Motion is denied as to Patent Owner's Response.

2. Patent Owner's Motion to Exclude

Patent Owner moves to exclude Exhibits 1052–1057, 1059, and 1060 because none of the exhibits "are cited, discussed, or relied upon by any expert witness or fact witness." PO Mot. 5. We see no basis to exclude the exhibits for that reason, but note that in evaluating Petitioner's asserted grounds of unpatentability, we only consider substantive arguments made by the parties in their papers during trial (i.e., the Petition, Response, Reply, and Sur-Reply). To the extent a document is filed in the record but never discussed in a paper, there is no substantive argument pertaining to that

[16] Petitioner did not seek authorization to file a motion to strike Patent Owner's Response. *See* Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019), 80–81, *available at* https://www.uspto.gov/TrialPracticeGuideConsolidated.

document that can be considered. Accordingly, we deny Patent Owner's Motion to Exclude.

Patent Owner further moves to exclude Exhibits 1054–1057, 1059, and 1060 as unauthenticated under Federal Rule of Evidence 901. PO Mot. 5–6. "To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is." Fed. R. Evid. 901(a). Certain evidence, though, is "self-authenticating" and "require[s] no extrinsic evidence of authenticity in order to be admitted." Fed. R. Evid. 902.

Petitioner argues that "Patent Owner identifies nothing about the documents themselves that brings into question their authenticity," and "Patent Owner bears the burden as movant to demonstrate these documents are not authentic." Pet. Opp. Mot. 2. Petitioner further asserts that Exhibits 1055, 1057, and 1060 are IEEE publications and Exhibit 1059 includes a "Microsoft trade inscription, copyright symbol, and ISBN," and, therefore, these documents self-authenticate. *Id.* at 2–4. Petitioner also argues that Exhibits 1055, 1057, 1059, and 1060 are ancient documents because each document is over 20 years old and meets the requirements of Federal Rule of Evidence 901(b)(8). *Id.* at 6–7. We agree with Petitioner that Patent Owner has not set forth sufficient argument and evidence to exclude Exhibits 1055, 1057, 1059, and 1060 as unauthenticated, and we further agree that Exhibits 1055, 1057, 1059, and 1060 are self-authenticating and ancient documents for the reasons stated by Petitioner. Accordingly, we deny Patent Owner's Motion to Exclude Exhibits 1055, 1057, 1059, and 1060.

Petitioner argues Patent Owner has also failed to demonstrate that Exhibits 1054 and 1056 are not authentic. *Id.* at 5. Petitioner further argues that Exhibits 1054 and 1056 are authentic under Federal Rule of Evidence 901(b) because they include markings that are consistent with papers appearing in other proceedings, as they have, for example, "a title, the authors, [and] contact information including email addresses," and "conclude[] with a listing of references." *Id.* at 5–6. We agree with Petitioner that that Patent Owner has not set forth sufficient argument and evidence to exclude Exhibits 1054 and 1056 as unauthenticated. Accordingly, we deny Patent Owner's Motion to Exclude Exhibits 1054 and 1056.

Patent Owner moves to exclude Exhibits 1052–1057, 1059, and 1060 as containing inadmissible hearsay under Federal Rule of Evidence 802. PO Mot. 6. Patent Owner states that Petitioner in its Reply "cites each of these documents to prove the truth of technical matters allegedly asserted in such documents, *i.e.* to support Petitioner's specific factual assertions regarding a technical issue." *Id.* We are not persuaded. Patent Owner does not identify any particular "statement" in any of the exhibits that is being offered "to prove the truth of the matter asserted in the statement," and thus fails to meet its burden to prove inadmissibility as hearsay. *See* Fed. R. Evid. 801(c); 37 C.F.R. § 42.20(c). Even if Patent Owner had done so, Petitioner offers cites to the exhibits to show what a person of ordinary skill in the art would have known at the time of the '687 patent about the technical features and developments in the pertinent art. Pet. Opp. Mot. 8–9 (citing Pet. Reply 2, 4, 8, 9). The exhibits are not being offered for the truth

of any particular matter discussed in the references. Accordingly, we deny Patent Owner's Motion to Exclude Exhibits 1052–1057, 1059, and 1060.

Patent Owner further moves to exclude Exhibits 1052–1057, 1059, and 1060 as being irrelevant. PO Mot. 7–10. Patent Owner argues that the term "floating point" does not appear in the substantive portions of Exhibits 1052, 1053, and 1054; the terms "search" and "internet" do not appear in Exhibits 1055, 1056, and 1057; and Exhibits 1059 and 1060 only "pertain to claim construction issues and are extrinsic evidence at best." *Id.* Petitioner argues that Patent Owner's argument that specific terms do not appear in the disclosures is not relevant. Pet. Opp. Mot. 11–14. Petitioner argues that Exhibits 1052, 1053, and 1054 are relevant as explaining the "use of F[PG]As in web applications"; Exhibits 1055, 1056, and 1057 are relevant as explaining the "use of FPGAs for floating point operations"; and Exhibits 1059 and 1060 are relevant to claim construction. *Id*.

We agree with Petitioner that Patent Owner has not set forth sufficient argument and evidence to exclude Exhibits 1052–1057, 1059, and 1060 as irrelevant. Patent Owner merely focuses on a singular term or concept in its Motion and fails to appreciate the relevance of the submitted documents as discussed in Petitioner's substantive arguments in its papers. Furthermore, there is no basis for excluding Exhibits 1059 and 1060 as merely extrinsic evidence relevant to claim construction. Accordingly, Patent Owner's Motion to Exclude Exhibits 1052–1057, 1059, and 1060 is denied.

K. Constitutionality of the Proceedings

Patent Owner "objects to the entirety of these proceedings based on the Federal Circuit's recent opinion in *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320, (Fed. Cir. 2019)." PO Sur-Reply 23. Patent Owner argues

that "the current structure of the Board violates the Appointments Clause." *Id.* (citing *Arthrex*, 8941 F.3d at 1335). Patent Owner "requests that this proceeding be dismissed in its entirety on the grounds that the panel lacks the constitutional authority to enter a final decision in this case." *Id.* at 24.

However, Patent Owner's constitutional challenge as to this issue—whether the as-constituted panel is constitutional—has been addressed by the Federal Circuit's decision. *See Arthrex*, 941 F.3d at 1337 ("This as-applied severance . . . cures the constitutional violation."). Accordingly, we do not consider this issue any further.

III. CONCLUSION

Based on the information presented, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 1–17 of the '687 patent are unpatentable, but has not shown, by a preponderance of the evidence, that claims 18–25 are unpatentable.[17]

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not shown Unpatentable
1–5, 8–12, 16–19, 22–25	102	Obelix	1, 5, 8–12, 16, 17	2–4, 18, 19, 22–25
1–25	103	Obelix	6, 7, 14, 15	2–4, 13, 18–25

[17] As discussed above, we do not reach Petitioner's challenges to claims 1, 5, 8–12, 16, and 17 as obvious over Obelix alone, claims 8, 9, 16, and 17 as obvious over Obelix in combination with Curtis, with or without Spencer, and claims 10–17 as obvious over Obelix in combination with Davis, with or without Spencer. *See supra* Sections II.D.2.a, II.I.

1–10, 16, 17, 22, 23	103	Obelix, Spencer	1, 5–10, 16, 17	2–4, 22, 23
5, 12, 13, 19	103	Obelix, Perkins, with or without Spencer	5, 12, 13	19
7, 15, 21	103	Obelix, Leong, with or without Spencer	7, 15	21
8, 9, 16, 17, 22, 23	103	Obelix, Curtis, with or without Spencer		22, 23
10–17, 24	103	Obelix, Davis, with or without Spencer		24
2–4, 13, 25	103	Obelix, Skillen, with or without Spencer	2–4, 13	25
Overall Outcome	103		1–17	18–25

IV. ORDER

After due consideration of the record before us, and for the foregoing reasons, it is:

ORDERED that claims 1–17 of the '687 patent are held unpatentable and claims 18–25 of the '687 patent have not been shown to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 60) is *denied-in-part* and *dismissed-in-part*;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 61) is *denied*; and

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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