

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

RAYTHEON COMPANY,

v.

CRAY, INC.

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CASE NO. 2:15-CV-1554-JRG

**SUPPLEMENTAL CLAIM CONSTRUCTION**  
**MEMORANDUM AND ORDER**

The Court previously held a claim construction hearing and entered a Claim Construction Memorandum and Order. (*See* Dkt. Nos. 78 & 263.) At a hearing on July 12, 2017, on Plaintiff’s Motion for Leave to Amend its Infringement Contentions (Dkt. No. 230), the Court ordered supplemental claim construction briefing to address an apparent claim construction dispute. (*See* Dkt. No. 302, July 12, 2017 Hr’g Tr.) Now before the Court are Plaintiff Raytheon Company’s (“Plaintiff’s” or “Raytheon’s”) Brief Regarding “Motherboard” and “Card” (Dkt. No. 306) and Defendant Cray, Inc.’s (“Defendant’s” or “Cray’s”) response (Dkt. No. 307).

**I. BACKGROUND**

Plaintiff has alleged infringement of United States Patents No. 7,475,274 (“the ’274 Patent”), 8,190,714, 8,335,909 (“the ’909 Patent”), and 9,037,833 (“the ’833 Patent”), which Plaintiff submits “relate to high performance computing (‘HPC’) technology, i.e., supercomputers.” (Dkt. No. 57 at 1.)

The ’274 Patent, titled “Fault Tolerance and Recovery in a High-Performance Computing (HPC) System,” issued on January 6, 2009, and bears a filing date of November 17, 2004. The Abstract of the ’274 Patent states:

In one embodiment, a method for fault tolerance and recovery in a high-performance computing (HPC) system includes monitoring a currently running

node in an HPC system including multiple nodes. A fabric coupling the multiple nodes to each other and coupling the multiple nodes to storage accessible to each of the multiple nodes and capable of storing multiple hosts that are each executable at any of the multiple nodes. The method includes, if a fault occurs at the currently running node, discontinuing operation of the currently running node and booting the host at a free node in the HPC system from the storage.

The '909 Patent, titled "Coupling Processors to Each Other for High Performance Computing (HPC)," issued on December 18, 2012, and bears a filing date of April 15, 2004. The '833 Patent is a continuation of the '909 Patent. The Abstract of the '909 Patent states:

A High Performance Computing (HPC) node comprises a motherboard, a switch comprising eight or more ports integrated on the motherboard, and at least two processors operable to execute an HPC job, with each processor communicably coupled to the integrated switch and integrated on the motherboard.

## **II. LEGAL PRINCIPLES**

It is understood that "[a] claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is clearly an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970–71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

"In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015) (citation omitted). "In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the 'evidentiary underpinnings' of claim construction

that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.” *Id.* (citing 517 U.S. 370).

To ascertain the meaning of claims, courts look to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent’s claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* “One purpose for examining the specification is to determine if the patentee has limited the scope of the claims.” *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee’s invention. Otherwise, there would be no need for claims. *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This Court’s claim construction analysis is substantially guided by the Federal Circuit’s decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that “the claims of a patent define the invention to which the

patentee is entitled the right to exclude.” 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term “is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to, and intended to be read by, others skilled in the particular art. *Id.*

Despite the importance of claim terms, *Phillips* made clear that “the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of “a fully integrated written instrument.” *Id.* at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314–17. As the Supreme Court stated long ago, “in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims.” *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim

language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

*Phillips*, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the United States Patent and Trademark Office (“PTO”) understood the patent. *Id.* at 1317. Because the file history, however, “represents an ongoing negotiation between the PTO and the applicant,” it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*; see *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that “a patentee’s statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation”).

*Phillips* rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319–24. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of “focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent.” *Id.* at 1321.

*Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.*

*Phillips* does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323–25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

### **III. CONSTRUCTION OF DISPUTED TERMS**

The parties have submitted supplemental claim construction briefing regarding “motherboard,” which appears in claims of the ’909 and ’833 Patents, and “card,” which appears in claims of the ’274 Patent.

Plaintiff argues that “motherboard” and “card” are not limited to a single printed circuit board. (Dkt. No. 306, at 1.) Defendant responds that “Raytheon appears to argue both that the ‘motherboard’ and ‘card’ need not be a single board/card,” and “[b]y doing so, Raytheon vitiates critical claim elements relied on during prosecution to distinguish the prior art.” (Dkt. No. 307, at 1.)

Figures 3B and 3C of the ’909 Patent illustrate a “blade 315” that may include, for example, a “daughter board,” and the specification discloses that “blade 315 may be a standard Xeon64™ motherboard, a standard PCI-Express Opteron™ motherboard, or any other suitable computing card.” ’909 Patent at 7:54–56 (emphasis added). These disclosures suggests, to at

least some degree, that the patentee used the term “motherboard” to encompass structures with potentially more than one physical board.

Defendants have cited prosecution history that the Court addressed in its June 12, 2017 Memorandum and Order on Claim Construction (Dkt. No. 263) in relation to other disputed terms. (Dkt. No. 263, at 10–15.)

In particular, Defendant has cited prosecution history of the ’909 Patent in which the patentee argued as follows regarding the “Osten” reference, United States Patent No. 6,735,660:

To reject independent Claim 1, the Examiner asserts that the CPUs and the switch in *Osten* are all “utilized on one motherboard” and all “reside on the same board.” Applicants respectfully disagree with the Examiner. *Osten* merely discloses one or more CPUs [(central processing units)] connected to a switch via a host interconnect, a memory controller, and an HCA [(host channel adapter)]. Nowhere does *Osten* describe or illustrate the CPUs, the switch, and the devices connecting them to each other as being “utilized on one motherboard” or “resid[ing] on the same board.” Instead, *Osten* teaches away from any such arrangement. In *Osten*, the CPUs and the HCA are components of devices that are distinct and separate from each other: a processor/memory complex includes the CPUs and an I/O subsystem includes the HCA. Moreover, the I/O subsystem in *Osten* provides *external* input and output functionality for the processor/memory complex. The HCA is external to the processor/memory complex. Furthermore, *Osten* describes “motherboards, daughterboards, etc.” as being “other components” relative to the backplane in *Osten*, which appears to include the switch in *Osten*. . . . Therefore, even assuming for the sake of argument that “utilized on one motherboard” or “resid[ing] on the same board” could be properly considered *integrated on the motherboard*, as recited in independent Claim 1, *Osten* would still fail to disclose, teach, or suggest the CPUs and the switch in *Osten* all being *integrated on the motherboard*, as recited in independent Claim 1.

The Examiner states, “It is clear that the system in Fig. 1 [of *Osten*] is intended to be utilized on one motherboard. It would be extremely uncommon for one of ordinary skill in the art to implement each unit on a separate board as it would require an incredible amount of area to house.” Applicants respectfully disagree with the Examiner. Contrary to any such intent, *Osten* discloses that the system illustrated in Figure 1 includes more than one board. The TCAs [(target channel adapters)] in *Osten* each include a circuit board substrate inserted into a slot on the backplane in *Osten*.

(Dkt. No. 307, Ex. F, Dec. 5, 2006 Response Under 37 C.F.R. § 1.111, at 13-14.)

In this discussion of Osten, the patentee addressed the limitation of “the switch *integrated on* the motherboard,” emphasizing that the host channel adapter in Osten was “external to the processor/memory complex.” (*Id.*, at 13.) The patentee thus did not address the meaning of “motherboard” itself.

Later, during the same prosecution, the patentee argued that in the “Karpoff” reference, United States Patent Application Publication No. 2001/0049740, “the CPUs and the switch reside on opposite sides of a server boundary, which clearly teaches away from the CPUs and the switch in *Karpoff* being *integrated on the same motherboard*, as independent Claim 1 recites.” (Dkt. No. 307, Ex. H, May 29, 2007 Response Under 37 C.F.R. § 1.111, at 7.) The patentee thus again addressed the limitations of “integrated on” or “integrated with” (*see id.* at 2–3 & 5; *see also id.*, Ex. S, May 28, 2009 Response to Office Communication, at 11 (discussing “integrated onto”)) rather than the meaning of the term “motherboard” itself.

As to extrinsic evidence, Defendant has not submitted any dictionaries or technical treatises to demonstrate that Defendant’s proposed interpretation is the well-established meaning of “motherboard” in the field of supercomputing. Instead, Defendant has cited deposition testimony of named inventor Gary Early. Mr. Early testified that “motherboard usually means a combination of components to make it stand alone to do some amount of work all by itself,” and Mr. Early agreed that “daughterboards” that are “linked together” are not a motherboard if each daughterboard “had to be plugged into a motherboard to be operational.” (Dkt. No. 307, Ex. L, Sept. 22, 2016 Early dep., at 123:2–4 & 123:14–16; *see id.*, at 120:23–125:17.) Inventor testimony, however, is of little if any significance in these claim construction proceedings. *See Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1346–47 (Fed. Cir. 2008) (noting that inventor testimony is “limited by the fact that an inventor understands the



invention but may not understand the claims, which are typically drafted by the attorney prosecuting the patent application”).

Substantially the same analysis applies as to the term “card” in the ’274 Patent as is discussed above regarding the term “motherboard” in the ’909 and ’833 Patents. Indeed, Defendant appears to urge that these two terms should be treated in the same manner. (*See* Dkt. No. 307, at 5 (“Although the ’274 patent specification does not use the word ‘card,’ Raytheon used the term interchangeably with ‘motherboard’ in the ’909 patent.”).) Defendant relies primarily on the opinion of its expert, Dr. Alan Smith:

25. In my opinion, like the term “motherboard,” the term “card” refers to a single printed circuit board and not a collection of multiple printed circuit boards.

26. I have reviewed the ’274 patent and its prosecution history. The term “card” does not appear in the specification of the ’274 patent.

27. I also reviewed the deposition testimony of Shannon Davidson, the first-named inventor of the ’274 patent. During his deposition, Davidson testified that a “card” as referred to in the claims “could be a motherboard, or it could be a – a daughterboard. It could be a – it – it could be an independent plug-in card.” [Dkt. No. 307,] Ex. O[, Oct. 11, 2016 Davidson dep.] at 148:23–149:5. All of these examples provided by Davidson are examples of single printed circuit boards. Davidson’s understanding of the term “card” is thus consistent with mine.

(Dkt. No. 307, Ex. T, July 13, 2017 Smith Decl., at ¶¶ 25–27.) Defendant’s expert thus relies on inventor deposition testimony, but as noted above, such testimony is of little if any weight in these claim construction proceedings. *See Howmedica*, 540 F.3d at 1346–47. Defendant’s expert provides no other substantive explanation as to the meaning of “card” in the patents-in-suit specifically or even in the field of supercomputing generally. *See Phillips*, 415 F.3d at 1318 (“conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court”).

Finally, the prosecution history cited by Defendant contains an amendment that includes the word “card” but sets forth no discussion of the meaning of the word “card.” (*See* Dkt. No. 307, at 5–6 (citing *id.*, Ex. R, June 20, 2008 Response Under 37 C.F.R. § 1.111, at 2).)

Based on the foregoing, Defendant has failed to demonstrate that the terms “motherboard” and “card” must each be a single printed circuit board. No such meaning is evident from the above-discussed intrinsic evidence cited by Defendant, and Defendant has not demonstrated that these terms have any well-established meaning to this effect in the field of supercomputing.

The Court therefore hereby expressly rejects Defendant’s proposal that “the terms ‘motherboard’ and ‘card’ refer to a single printed circuit board.” (Dkt. No. 307, at 6.) No further construction is necessary. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *see also U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.”); *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”); *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) (“Unlike *O2 Micro*, where the court failed to resolve the parties’ quarrel, the district court rejected Defendants’ construction.”); *ActiveVideo Networks, Inc. v. Verizon Commcn’s, Inc.*, 694 F.3d 1312, 1326 (Fed. Cir. 2012); *Summit 6, LLC v. Samsung Elecs. Co., Ltd.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015).


The Court accordingly hereby construes “**motherboard**” and “**card**” to have their **plain meanings**, each of which is not limited to a single printed circuit board.

#### **IV. CONCLUSION**

The Court adopts the constructions set forth in this opinion for the disputed terms of the patent-in-suit, and in reaching conclusions the Court has considered and relied upon extrinsic evidence. The Court’s constructions thus include subsidiary findings of fact based upon the extrinsic evidence presented by the parties in these claim construction proceedings. *See Teva*, 135 S. Ct. at 841.

The parties are ordered that they may not refer, directly or indirectly, to each other’s claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

**So ORDERED and SIGNED this 18th day of July, 2017.**

  
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RODNEY GILSTRAP  
UNITED STATES DISTRICT JUDGE