United States Court of Appeals for the Federal Circuit

TELCORDIA TECHNOLOGIES, INC.,
Plaintiff-Appellant,

v.

CISCO SYSTEMS, INC.,
Defendant-Cross Appellant.

2009-1175, -1184

Appeals from the United States District Court for the District of Delaware in case no. 04-CV-876, Chief Judge Gregory M. Sleet.

Decided: July 6, 2010

DONALD R. DUNNER, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., of Washington, DC, argued for plaintiff-appellant. With him on the brief were DON O. BURLEY, DARREL C. KARL, and JOHN M. WILLIAMSON.

EDWARD R. REINES, Weil, Gotshal & Manges LLP, of Redwood Shores, California, argued for defendant-cross appellant. With him on the brief was SONAL N. MEHTA.

Before RADER*, *Chief Judge*, LOURIE and PROST, *Circuit Judges*.

Opinion for the court filed by *Chief Judge* RADER. Opinion dissenting in part filed by *Circuit Judge* PROST.

RADER, *Chief Judge*.

Telcordia Technologies, Inc. ("Telcordia") initiated this suit against Cisco Systems, Inc. ("Cisco") alleging infringement of U.S. Patent Nos. 4,893,306 ("'306 patent"); 4,835,763 ("'763 patent"); and RE 36,633 ("'633 patent"). The United States District Court for the District of Delaware granted summary judgment of non-infringement of the '306 patent. *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 514 F. Supp. 2d 598, 603-07 (D. Del. 2007). At trial, the jury found that Cisco willfully infringed the '763 and '633 patents and upheld the validity of all three asserted patents. The jury awarded $6.5 million in damages. Following trial, the district court denied Cisco's motion for judgment as a matter of law ("JMOL") that the '306 patent was anticipated and that the '763 patent was invalid as indefinite. *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 592 F. Supp. 2d 727, 738-40, 743-44 (D. Del. 2009). The district court awarded prejudgment interest on the $6.5 million damages award. *Id.* at 748-50. Further, the district court awarded an accounting for interim sales from January 31, 2007 to the date of the judgment. *Id.* at 748-50. In addition, the district court ordered the parties to negotiate the terms of a royalty that would apply to the accounting and to post-judgment sales. *Id.*

On appeal, Telcordia challenges the district court's claim construction with respect to the '306 patent. Cisco cross-appeals the district court's holding that the asserted

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* Randall R. Rader assumed the position of Chief Judge on June 1, 2010.

claims of the '306 and '763 patents are not invalid. Cisco also contests the district court's award of an accounting and pre-judgment interest, and its order requiring the parties to negotiate the royalty.

Because the district court erroneously construed the only term on which it based its denial of Cisco's JMOL motion on invalidity of the '306 patent, this court vacates that decision and remands for determination of the validity issue. This court also remands to provide the parties an opportunity to negotiate the terms of the royalty. In all other respects, this court affirms.

I.

Telcordia owns by assignment the '306 patent, the '763 patent, and the '633 patent. The patents relate to transmission of data in telecommunications networks. The '306 patent—"Method and Apparatus for Multiplexing Circuit and Packet Traffic"—issued on January 9, 1990, based on a November 10, 1987 application. The '763 patent—"Survivable Ring Network"—issued on May 30, 1989, based on a February 4, 1988 application. The '633 patent—"Synchronous Residual Time Stamp for Timing Recovery in a Broadband Network"—issued on March 28, 2000, as a reissue of U.S. Patent No. 5,260,978.

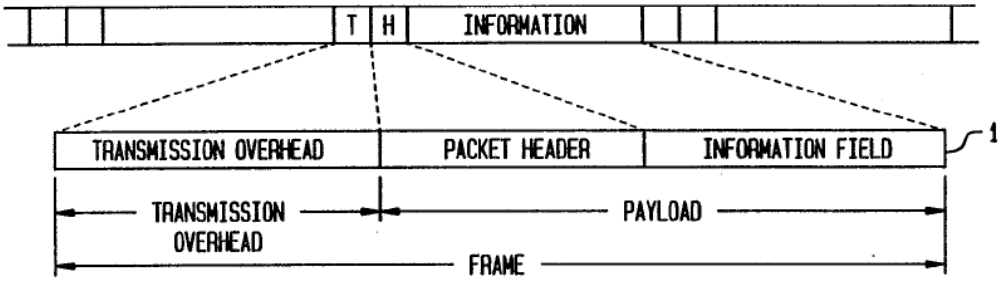
A.

The '306 patent describes a data transmission technique called Dynamic Time Division Multiplexing ("DTDM"). DTDM is compatible with both the circuit transmission format and the packet transmission format. In the late 1980's, the public telephone network began shifting from the circuit transmission format to the packet transmission format. The "commonly-held view as to how to introduce packet technology into the public network [was] to deploy a packet overlay network." '306 patent

col.3 ll.3-18. This migration strategy required building a packet transmission network on top of a circuit transmission network. The patented invention aimed to provide an alternate migration strategy between the two different transmission formats.

A system implementing DTDM allocates discrete segments, or "frames," of a single transmission line to several sources (e.g., voice, video, and data). A frame is the basic unit of transmission:

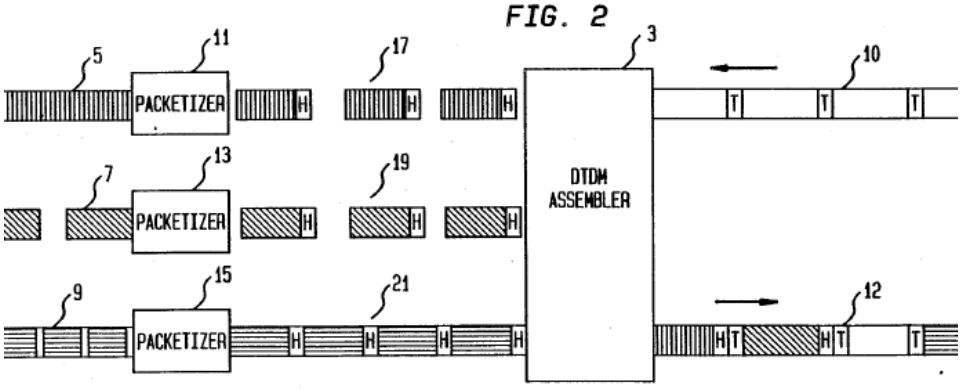
FIG. 1



Id. at fig.1. Each frame has two fixed-length fields: a transmission overhead ("T") and a payload. The transmission overhead has, for example, frame timing information and the empty/full status of the frame. The payload field has a header field ("H") for storing the sender's and recipient's addresses, and an information field for storing the actual data for transmission. Rather than pre-assign the frames to each information source, the DTDM system dynamically allocates the frames to each source based on the source's priority level and data availability.

Figure 2 illustrates how a multiplexer called a "DTDM Assembler" (3) merges traffic from three different information sources (5, 7, 9) into a single DTDM bit stream (12).

FIG. 2



Id. at fig.2. The system generates a train of DTDM frames (10) with occupied transmission overhead fields and empty payload fields. *Id.* at col.4 l.65-col.5 l.2. This train has "a bit rate which defines a basic backbone transmission rate" for the system. *Id.* at col.5 ll.2-4. The information sources transmit, for example, voice (5), video (7), and data (9), over their data lines or "tributaries." The incoming data segments may be in the circuit transmission format or the packet transmission format. Packetizers (11, 13, 15) put the incoming data segment into a packet structure by adding a packet header ("H") at the beginning of each data segment. The DTDM assembler inserts the packets into the empty payload fields of the DTDM frames. If the DTDM assembler simultaneously receives packets from multiple information sources, the DTDM assembler selects the packet with the highest priority level. The resulting DTDM bit stream (12) contains packets from multiple information sources.

Telcordia alleges that Cisco infringes claims 1, 3, and 4 of the '306 patent. Claims 1 and 3 are method claims. Claim 4 is an apparatus claim. Each is stated below (important phrases underlined):

> 1. A method for simultaneously transmitting data from sources having different bit rates in a telecommunication network comprising the steps of:
>
> generating a bit stream comprising a sequence of frames, each of said frames including a transmission overhead field containing frame timing information and an *empty payload field*, and
>
> filling the empty payload fields in said frames with data in packetized format from a plurality of sources which have access to the bit stream including circuit or packet sources, *such that data in packetized format from any of said sources is written into any available empty payload field* of any of said frames for transmitting data from each of said sources at its own desired bit rate via said bit stream and for transmitting data from said plurality of sources simultaneously via said bit stream.

Id. at col.17 ll.44-61 (emphases added).

> 3. A method for generating a bit stream capable of transporting data originating from both circuit transmission and packet sources comprising
>
> generating a bit stream comprising a sequence of frames, each of said frames including a transmission overhead field containing frame timing information and an *empty payload field*,
>
> packetizing data from a plurality of sources having different bit rates and which have access to said bit stream including circuit transmission sources or customer premises equipment to produce data packets, and

> inserting said packets from said sources into the empty payload fields of said frames *such that a packet from any of said sources is inserted into any available empty payload field* of any of said frames for transmitting data from each of said sources at its own desired bit rate via said bit stream and for transmitting data from said plurality of sources simultaneously using said bit stream.

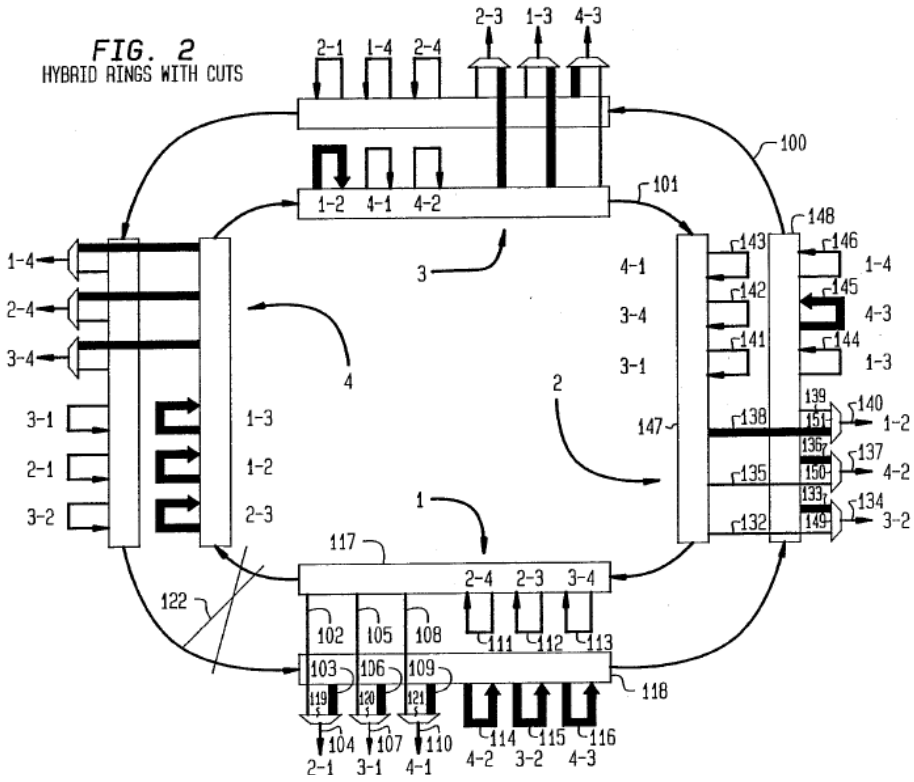
Id. at col.18 ll.1-20 (emphases added).

> 4. An apparatus for assembling a dynamic time division multiplexing bit stream comprising,
>
> generating means for generating a train of frames wherein each frame includes a transmission overhead field containing timing information and an *empty payload field*,
>
> processing means for processing data from a plurality of sources into packet format, and
>
> *inserting means for receiving said train of frames and for inserting each of said packets comprised of data from one of said plurality of sources into any empty payload field* of any of said frames available to said inserting means to form said bit stream so that data from each of said sources can be transmitted at its own desired bit rate via said bit stream and so that data from said plurality of sources can be transmitted simultaneously via said bit stream.

Id. at col.18 ll.21-37 (emphases added).

B.

The '763 patent claims a survivable or self-healing ring network that can withstand a cut line or failed node. Figure 2 illustrates the invention:



'763 patent fig.2.

The invention consists of two rings carrying identical multiplexed node-to-node communications in opposite directions. A node (1), for example, has controllers (117, 118) and selectors (119-121). Each node can detect a break (122) in either ring by monitoring the arriving signals for defects. If an arriving signal is defective, the controller in the node inserts an error signal on the specific channels that were lost due to the break. When

these error-containing channels reach their destination node, the selector in the node will detect the error signal and select the identical, error-free channels from the other ring.

Monitoring of errors in the arriving signals is essential to the invention. The asserted independent claims 1 and 7 both claim this functionality via the "monitoring means" requirement. Claim 1 is illustrative (important phrase underlined):

> 1. In a communications network having a plurality of nodes interconnected in a ring configuration by a first ring which conveys multiplexed subrate communications around the first ring from node to node in one direction and a second ring which conveys multiplexed subrate communications around the second ring from node to node in the other direction, each node including subrate transmitters with associated multiplexers and demultiplexers with associated subrate receivers, an improved node comprising
>
> *monitoring means, associated with the first ring and the second ring, for evaluating the integrity of the multiplexed subrate communications on the first ring and the second ring, respectively*, and
>
> insertion means, associated with the demultiplexers and said monitoring means, for inserting an error signal on designated ones of the subrate communications in response to said monitoring means detecting a lack of integrity on the multiplexed subrate communications on the first ring or the second ring or both the first ring and the second ring.

Id. at col.4 l.53-col.5 l.5 (emphasis added).

C.

The accused products are Cisco routers and switches that transmit asynchronous transfer mode ("ATM") cells and other types of packets over synchronous optical network ("SONET"). SONET is an industry standard for optical transmission. ATM is a protocol for dividing data from multiple sources into small segments called "cells" and intermixing those cells for transmission across a network. The accused routers and switches purportedly have SONET framers that multiplex the ATM cells into a frame called a Synchronous Transport Signal One.

D.

Telcordia sued Cisco for infringement of the '306, '633, and '763 patents. On June 22, 2006, the district court issued a claim construction order. Telcordia conceded that it could not establish infringement of the '306 patent based on the district court's claim construction. Specifically, Telcordia could not prove that the accused Cisco products met the following limitations: (1) the "empty payload fields" limitations of claims 1, 3, and 4; and (2) the "having access" limitations of claims 1 and 3. The district court, however, denied Telcordia's Rule 54(b) motion to have a judgment of non-infringement of the '306 patent entered against it.

Cisco then moved for a summary judgment of non-infringement of the '306 patent. Cisco argued that the accused products lacked not only the two claim limitations that Telcordia had conceded were missing but four additional claim limitations. The district court granted Cisco's motion "on all grounds raised by [Cisco]." *Telcordia*, 514 F. Supp. 2d at 603-07.

In April to May 2007, the district court held a trial on infringement of the '633 and '763 patents and validity of

all three patents. On May 10, 2007, the jury returned a unanimous verdict for Telcordia on all claims. The jury found that Cisco willfully infringed all asserted claims of the '633 and '763 patents. The jury also upheld the validity of the '306, '633, and '763 patents. On May 16, 2007, the district court entered a judgment on the verdict.

On January 6, 2009, the district court granted Telcordia's motion for an award of prejudgment interest and an accounting of Cisco's infringing sales from January 31, 2007 to the date of the judgment. *Telcordia*, 592 F. Supp. 2d at 748-50. The district court ordered the parties to negotiate the terms of the royalty. *Id.* The district court denied Cisco's JMOL motion that the asserted claims of the '306 patent claims are invalid as anticipated. *Id.* at 743-44. The district court also denied Cisco's JMOL motion that the asserted claims of the '763 patent are invalid as indefinite. *Id.* at 738-40.

On appeal, Telcordia challenges the district court's claim construction and summary judgment of non-infringement of the '306 patent. Cisco cross-appeals the district court's denial of its JMOL motions on validity of the '306 and '763 patents. Cisco also appeals the district court's damages awards. This court has jurisdiction under 28 U.S.C. § 1295(a)(1).

III.

Telcordia challenges the district court's construction of six terms in the '306 patent, all of which formed independent grounds for the district court's summary judgment of non-infringement. This court first construes the term "empty payload field" in claims 1, 3, and 4, as the definition affects other construed terms. Because this court agrees with the district court's construction of the term "such that . . . [a packet is inserted into] any available empty payload field" in claims 1 and 3, and the term

"inserting means" in claim 4, this court affirms the judgment of non-infringement of the '306 patent.

A.

Claim construction is an issue of law that this court reviews without deference. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1455-56 (Fed. Cir. 1998) (en banc). The claim terms "are generally given their ordinary and customary meaning." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quotation omitted). "[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314. Also, a patent's specification "is always highly relevant to the claim construction analysis." *Id.* at 1315 (quotation omitted). Courts should also consider prosecution history of the asserted patents. *Id.* at 1317. However, because prosecution history represents an ongoing negotiation between the United States Patent and Trademark Office and the inventor, "it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.*

B.

As noted, claims 1, 3, and 4 of the '306 patent claim "a transmission overhead field containing frame timing information and an empty payload field." The district court construed the term "empty payload field" to mean "a payload field that is empty of source data, but including bit signals of some kind, i.e. garbage bits." *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, No. 04-cv-876, slip. op. at 6 (D. Del. June 22, 2006) ("*Claim Construction Order*"). The parties dispute whether the claim construction includes the explanatory phrase "i.e. garbage bits," which, according to the parties, limits the "bit signals of some kind" to "bits that serve no purpose other than place-holding."

The empty payload fields are "empty" of data packets and therefore have non-source bit signals only. The specification explains that "a train of DTDM frames with empty payload fields . . . has a bit rate which defines a basic backbone transmission rate for the DTDM system." '306 patent col.7 ll.27-30. Therefore, the bit signals help the DTDM system maintain a bit stream even when it is not transmitting data from an information source. The specification does not specify where in the frame the "bit rate" is stored nor does it specify the type of non-source bits used to maintain the bit rate. Therefore, nothing in the '306 patent restricts the bit signals in the empty payload field to ones that serve no purpose other than place-holding.

The district court apparently took the explanatory phrase from an ad lib comment made during an oral hearing at the Federal Circuit. In *Bell Communications Research, Inc. v. FORE Systems, Inc.*, Nos. 02-1083, 02-1084, 2003 WL 1720080 (Fed. Cir. Mar. 27, 2003), Bell Communications Research, Inc., now known as Telcordia, asserted the '306 patent against another defendant. This court reviewed a district court's construction of the term "empty payload field" in the '306 patent. *Id.* In that case, the district court had explained that "a frame's payload has zero data in it." *Id.* at *6. During oral hearing, Bell Communications agreed with Circuit Judge Bryson's characterization of bits in the "empty payload fields" as "garbage:"

> Judge Clevenger: Can we come back to the empty payload field? "Empty" seems to me . . . the common meaning of the word "empty" means there is nothing there. So, you are saying that there is something in the written description that tells me what empty means?

> Bell Communications's Counsel: I am saying . . . .
>
> Judge Clevenger: Where in the written description?
>
> Bell Communications' Counsel: A144, column 7, lines 29-35. And, what you will see there at that point . . . .
>
> Judge Clevenger: There is a bit rate.
>
> Bell Communications's Counsel: It says, "this train." It is talking about empty payload field. "This train 10 has a bit rate." In other words, it's empty, but it has a bit rate. Because in order to have . . . sometimes there won't be a packet ready. The stream must continue. There must be a bit in the stream. *It just won't be a data bit, it won't be a source data bit. It will be a bit. And it will have information in it, but it won't be source information.*
>
> Judge Bryson: It would just be *garbage*, I take it. I mean it will just be *1's and 0's that have no relationship to the stream of any information that's coming in from the source.*
>
> Bell Communications's Counsel: Exactly, Your Honor.

The issue on appeal, at least initially, seemed to be whether the district court actually meant "no bit signals of any kind" when it said "zero data." *Id.* At oral hearing, however, Fore Systems, Inc. stated its understanding that "'zero data' encompasse[d] various bit signals that might maintain the stated transmission rate of a bit stream, including 'placeholders' or 'garbage bits.'" *Bell Commc'ns*, 2003 WL 1720080, at *6. Because the parties' agreement on this broader interpretation of "zero data" rendered the

claim construction issue moot, this court declined to refine the district court's construction. *Id.*

The claim construction issue on appeal in the present case—whether the empty payload field only has bits that act as placeholders—is different from the one in *Bell Communications*—whether the empty payload field has any bits at all. Circuit Judge Bryson's comments, therefore, are not directly relevant to the specific issue in the present case. The district court erred by limiting the claim scope based on the ad lib comment from the bench.

In addition, contrary to Cisco's assertion, Telcordia has not changed its proposed claim construction of "empty payload field." In *Bell Communications*, Telcordia agreed that the empty payload fields only have "garbage bits" because it understood the phrase "garbage bits" to mean bits with "no relationship to the stream of any information that's coming in from the source." In the present case, Telcordia disputes the claim construction with the phrase "garbage bits" because the district court apparently meant "non-source bit signals that serve no purpose other than place-holding." Thus, Telcordia is not precluded from making the claim construction arguments that it makes now.

Accordingly, "empty payload field" means "a payload field that is empty of source data, but includes bit signals of some kind."

C.

As noted, claim 1 of the '306 patent claims "such that data in packetized format from any of said sources is written into any available empty payload field of any of said frames." Claim 3 recites "such that a packet from any of said sources is inserted into any available empty payload field of any of said frames." Claim 4 recites

"inserting each of said packets comprised of data from one of said plurality of sources into any empty payload field of any of said frames available to said inserting means." The district court construed all three claim elements to require that the "packets are only put into frames which are empty." *Claim Construction Order* at 6-7. The district court further clarified that the claims encompass only one packet per frame. *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 514 F. Supp. 2d 598, 606 (D. Del. 2007). Each SONET frame in the accused products carries multiple ATM cells or packets. *Id.* Telcordia therefore concedes on appeal that it cannot prove infringement if the asserted claims encompass only one packet per frame.

This court agrees with the district court's construction that each frame in the DTDM bit stream can carry only one data packet. The specification clearly limits the disclosed mechanism to one packet per frame.

Figure 2, which "illustrates *the* formation of a DTDM bit stream," '306 patent col.7 ll.14-15 (emphasis added), shows a DTDM assembler inserting one packet into each empty payload field. Also, the DTDM assembler's structure only allows it to insert one packet per frame. The DTDM assembler reads data from a FIFO queue of data packets if two conditions are met. The first condition is that at least one full packet is stored in the FIFO queue. The second condition is that "the incoming DTDM frame . . . is not already occupied by a valid packet, i.e. the incoming DTDM frame is empty." *Id.* at col. 9 ll.38-41. Thus, an "empty" frame is one that "is not already occupied by *a* valid packet." *Id.* at col.9 ll.38-41 (emphasis added). If the presence of one packet makes a payload field not "empty," the next packet, which must be inserted into an empty DTDM frame, must wait for the next available frame. Therefore, the DTDM assembler cannot insert more than one data packet into a frame.

Moreover, the specification further explains that when the FIFO queue has a packet ready, it "triggers an enable signal . . . to be asserted for the whole frame transmission period allowing *the* data packet to be moved from the FIFO through the framer and into the DTDM bit stream." *Id.* at col.9 ll.42-47 (emphasis added). Only one data packet can move from the FIFO queue to the DTDM bit stream during "the whole frame transmission period," indicating that each frame can store only up to one packet. By repeatedly describing the inventive DTDM mechanism as one that only allows one packet per frame, "the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest execution or restriction." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 905 (Fed. Cir. 2004) (internal quotation omitted).

This court recognizes that during the prosecution of the '306 patent, the applicant made statements suggesting that a frame may be able to store more than one packet:

> [A]n empty payload field of each frame may be filled with a data packet including a header. […] In certain cases, it may be possible for a payload field of a frame to have the capacity for more than one packet.

Although this statement suggests that "it may be possible for a payload field" to contain multiple data packets, the specification does not disclose any mechanisms that would allow more than one packet per frame. These prosecution history comments cannot trump the plain language of the claims and the direct teaching of the specification. *See Biogen Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132, 1140 (Fed. Cir. 2003) ("Representations during prosecution cannot enlarge the content of the specification . . . .").

Accordingly, the '306 patent discloses a DTDM mechanism in which each frame can store only one data packet. This court agrees with the district court's claim constructions of the "such that" limitation in claims 1 and 3, and the "inserting means" limitation in claim 4. Because Telcordia concedes that it cannot prove infringement based on these claim constructions, this court affirms the district court's grant of summary judgment of non-infringement.

IV.

"A party seeking a declaratory judgment of invalidity presents a claim independent of the patentee's charge of infringement." *Cardinal Chem. Co. v. Morton Int'l*, 508 U.S. 83, 96 (1993). Therefore, this court's affirmance of the district court's non-infringement findings as to the '306 patent does not moot Cisco's invalidity counterclaim on cross-appeal. *See Old Town Canoe Co. v. Confluence Holdings Corp.*, 448 F.3d 1309, 1318 (Fed. Cir. 2006). This court reaches Cisco's argument that the asserted claims of the '306 patent are invalid as independently anticipated by two prior art publications: (1) Description of FasNet by Limb et al. ("FasNet"); and (2) "A packet/circuit switch" by Budrikis et al. ("Budrikis").

The district court denied Cisco's JMOL motion on invalidity of the '306 patent solely on the basis that a reasonable jury could conclude that "the bits used in FasNet and Budrikis were intentionally placed with some purpose, and thus, were not garbage bits." *Telcordia*, 592 F. Supp. 2d at 744. As noted, this court agrees with Telcordia that the "garbage bits" limitation improperly limits the scope of the asserted claims. Because the sole basis on which the district court based its decision is no longer valid, this court remands to the district court for recon-

sideration of Cisco's invalidity counterclaim under the revised claim construction.

V.

Title 35 provides that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. For a means-plus function claim to satisfy the definiteness requirement, the written description must clearly link or associate structure to the claimed function. *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). Whether the written description adequately sets forth the structure corresponding to the claimed function must be considered from the perspective of a person skilled in the art. *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1365-66 (Fed. Cir. 2003). "The question is not whether one of skill in the art would be capable of implementing a structure to perform the function, but whether that person would understand the written description itself to disclose such a structure." *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008). "While corresponding structure need not include all things necessary to enable the claimed invention to work, it must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as a construer of patent claims." *Personalized Media Commc'ns, L.L.C. v. Int'l Trade Comm'n*, 161 F.3d 696, 705 (Fed. Cir. 1998).

The district court determined that the term "monitoring means" was a means-plus function term pursuant to 35 U.S.C. § 112, ¶ 6. The district court identified the

function of the "monitoring means" to be "evaluating the integrity of the multiplexed subrate communications on the first ring and the second ring," and the corresponding structure for that function to be "the circuitry at a controller that determines if a defect exists with the multiplexed subrate communications," and all equivalents thereof. *Claim Construction Order* at 2-3.

The written description of the '763 patent adequately discloses the structure for the monitoring means in the node-to-node communication system. Each node has two controllers, which are connected to different communication rings. As each node monitors and evaluates the integrity of the signals arriving at the node, the controllers insert error signals onto the channels when a major line fault occurs:

> Each node continuously monitors and evaluates the integrity of the multiplexed subrate signals arriving at the node. Illustratively, this could be accomplished by detecting the absence of a carrier signal in an analog signal environment, or the lack of any incoming signal in a digital environment. When node 1 recognizes major line fault 122 in ring 100, controller 118 inserts an error signal onto the six subrate channels. This could illustratively be accomplished by inserting a string of 1's on each channel in a digital environment. Node 4 performs the identical activity by similarly placing an error signal on the six subrate channels of ring 101.

'763 patent col.3 ll.4-17. The nodes have controllers and selectors; those selectors cannot recognize any errors in the subrate signals until the signals reach the destined node. Therefore, the controller must monitor the incoming signals for error; otherwise, the controller would not

be able to insert error signals onto the subrate channels. Dr. Prucnal, Telcordia's expert, also testified that controllers 117 and 118 and their circuitry are the structure associated with the function of the monitoring means. Thus, the district court did not err by finding that an ordinary artisan would understand the written description to clearly link or associate the controller with the claimed function.

As Cisco notes, the figures of the '763 patent show the controller's circuit as a black box, i.e., nothing in the figures describes the details of its inner circuitry. "[H]owever, the absence of internal circuitry in the written description does not automatically render the claim indefinite." *Tech. Licensing*, 545 F.3d at 1338. As noted, claim definiteness depends on the skill level of an ordinary artisan. *Intel*, 319 F.3d at 1365-66. Therefore, the specification need only disclose adequate defining structure to render the bounds of the claim understandable to an ordinary artisan. *Id.* (holding that the internal circuitry of an electronic device need not be disclosed in the specification if one of ordinary skill in the art would understand how to build and modify the device). Here, Dr. Prucnal testified that an ordinary artisan would know how to interpret the specification and actually build a circuit. The record shows that an ordinary artisan would have recognized the controller as an electronic device with a known structure. Therefore, the specification along with the figures shows sufficient structure to define the claim terms for an ordinarily artisan in the relevant field.

Cisco faults Telcordia for not presenting sufficient evidence that the patent links the controller with the claimed function of the monitoring means. Cisco, in particular, challenges Dr. Prucnal's testimony that the circuitry in the controller corresponds to the monitoring means. However, patents are presumed to be valid, and

so, Cisco bears the burden of proving that an ordinary artisan would not understand the disclosure. 35 U.S.C. § 282; *see Aero Prods. Int'l, Inc. v. Intex Rec. Corp.*, 466 F.3d 1000, 1015 (Fed. Cir. 2006). The record shows that Cisco did not show that an ordinary artisan would not understand the link between the controller and the monitoring function. Therefore, this court affirms the district court's decision to deny Cisco's JMOL motion that the asserted claims of the '763 patent are indefinite.

VI.

A.

Lastly, this court addresses the district court's damages decisions. In reviewing damages awards in patent cases, this court gives "broad deference to the conclusions reached by the finder of fact." *Monsanto Co. v. McFarling*, 488 F.3d 973, 981 (Fed. Cir. 2007). This court reviews a district court's damages decision for "an erroneous conclusion of law, clearly erroneous factual findings, or a clear error of judgment amounting to an abuse of discretion." *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1372 (Fed. Cir. 2008).

B.

Cisco's challenge to the district court's damages decisions largely stems from its argument that the jury's damages award is a paid-up, lump-sum licensing fee, and that the district court erred by granting Telcordia additional relief beyond the jury verdict.

The verdict form asked:

> If you have found any claim of Telcordia U.S. Patent No. 4,835,763 or U.S. Patent No. Re. 36,633 to be both valid and infringed by Cisco, please iden-

> tify the amount of monetary damages that will compensate Telcordia for Cisco's infringement.

The jury entered "$6,500,000 (6.5 MIL)" on the verdict form. The verdict form is unclear whether the jury compensated Telcordia only for Cisco's past infringement or for both past and ongoing infringement.

During the trial, the parties presented three sets of damages numbers to the jury. Telcordia's damages expert testified that the proper damages award should be based on a running royalty. Cisco's expert testified that the award should be based on a lump-sum, paid-up license. Cisco's expert also applied a running royalty analysis to show the differences between Telcordia's and Cisco's approaches to damages. *Id.* To complicate the matter further, the parties also presented different royalty rates and royalty bases. Therefore, it is unclear whether the jury based its award on a lump-sum, paid-up license, running royalty, some variation or combination of the two, or some other theory.

District courts have broad discretion to interpret an ambiguous verdict form, because district courts witness and participate directly in the jury trial process. The district court was in a position to assess whether the verdict figure represented past infringement as well as ongoing infringement. In the absence of an express statement in the verdict, this court cannot determine whether the jury compensated Telcordia for all of Cisco's infringing activities. The $6.5 million award is closer to $5 million proposed by Cisco for past and ongoing infringement than $75 million proposed by Telcordia for past infringement only. However, neither party proposed the exact $6.5 million figure. In any event, this court holds that the district court's finding that the jury's verdict compensates Telcordia only for past infringement

is not clearly erroneous. In the circumstances of this case, this court finds that the district court did not abuse its discretion in interpreting the verdict form.

C.

Title 35 provides for the calculation of damages "together with interest . . . as fixed by the court." 35 U.S.C. § 284. In patent infringement cases, "prejudgment interest should be awarded under § 284 absent some justification for withholding such an award." *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657 (1983). Cisco asserts that the jury's damages award includes prejudgment interest, thereby barring its award under section 284. For the same reasons, the verdict form is ambiguous as to whether the jury's damages award includes prejudgment interest. Because the district court did not clearly err by concluding that the jury's damages award did not include prejudgment interest, the district court's award of interest under section 284 does not constitute an impermissible double recovery.

D.

"Under some circumstances, awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate." *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1314 (Fed. Cir. 2007). If the district court determines that a permanent injunction is not warranted, the district court may, and is encouraged, to allow the parties to negotiate a license. *Id.* at 1315. The district court may step in to assess a reasonably royalty should the parties fail to come to an agreement. *Id.*

In this case, after declining Telcordia's motion for permanent injunction, the district court directed the parties to negotiate a reasonable royalty for ongoing infringement. An award of an ongoing royalty is appro-

priate because the record supports the district court's finding that Telcordia has not been compensated for Cisco's continuing infringement. Therefore, the district court did not abuse its discretion by directing the parties to negotiate the terms of the appropriate royalty.

Accordingly, this court affirms the district court's grant of an accounting and prejudgment interest. As the district court properly instructed the parties to negotiate the royalty, this court remands to the district court so that the parties can complete the royalty negotiation process. If the parties cannot reach an agreement, the district court should step in and assist or calculate on its own the appropriate rate. Telcordia and Cisco will have an opportunity to appeal the royalty set by the district court.

VII.

Accordingly, this court vacates the district court's denial of Cisco's JMOL motion on invalidity of the '306 patent and remands for determination of the validity issue. This court also remands to allow the parties to negotiate the terms of the royalty. In all other respects, this court affirms.

AFFIRMED-IN-PART, VACATED-IN-PART, and REMANDED.

COSTS

No Costs.

United States Court of Appeals for the Federal Circuit

TELCORDIA TECHNOLOGIES, INC.,
Plaintiff-Appellant,

v.

CISCO SYSTEMS, INC.,
Defendant-Cross Appellant.

2009-1175, -1184

Appeal from the United States District Court for the District of Delaware in case no. 04-CV-876, Chief Judge Gregory M. Sleet.

PROST, *Circuit Judge*, dissenting-in-part.

I respectfully dissent on the narrow issue of indefiniteness discussed in Part V of the majority opinion in the case. I do not agree that the patent disclosure here clearly links the structure of the controller with the claimed function of "evaluating the integrity of the multiplexed subrate communications on the first ring and the second ring," to the extent required by this court's precedent.

The patent specification describes the invention as comprising nodes. Each node has a plurality of parts, including a controller and a selector. The disclosure

states that "the node continuously monitors and evaluates the integrity of the multiplexed subrate signals arriving at the node." U.S. Patent No. 4,835,763 ("'763 patent") col.3 ll.4-17. The disclosure only associates the monitoring function with the node as a whole. At no point does the specification reveal that the structure within the node that performs the monitoring task is the circuitry of the controller.

Furthermore, the specification dedicates ample text to describing the function of the controller. The description explains that the controller inserts error signals when the *node* detects a fault in the ring. *Id.* Nowhere does the specification mention that the controller is also the part of the node that monitors and detects the faults when the multiplexed subrate signals arrive. Indeed, by attributing certain functions to the node as a whole and other functions specifically to the controller, the disclosure implies that the node structure associated with the monitoring means is distinct from the controller structure associated with the insertion of error signals.

The majority holds that one of skill in the art would understand that the selector component is not capable of performing the monitoring function, and by process of elimination would deduce that the controller is the structural component of the node associated with the claimed function. Majority Op. at 20-21. It is not enough, in my view, that a skilled artisan can follow the clues in the patent and solve the mystery of what structure must perform the claimed function. *See Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008). Our precedent requires that the specification clearly link a particular structure with a claimed function. *See Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007); *Tech. Licensing*, 545 F.3d at 1338.

Accordingly, I would hold that the term "monitoring means" is indefinite under 35 U.S.C. § 112 for failing to disclose a structure associated with the claimed function, and thus hold the asserted claim of the '763 patent invalid.