

**United States Court of Appeals  
for the Federal Circuit**

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**HILL-ROM SERVICES, INC., HILL-ROM  
COMPANY, INC., AND HILL-ROM  
MANUFACTURING, INC.,**  
*Plaintiffs-Appellants,*

v.

**STRYKER CORPORATION (doing business as  
Stryker Medical) AND STRYKER SALES  
CORPORATION,**  
*Defendants-Appellees.*

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2013-1450

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Appeal from the United States District Court for the  
Southern District of Indiana in No. 11-CV-1120, Judge  
Jane Magnus-Stinson.

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Decided: June 27, 2014

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DAVID K. CALLAHAN<sup>1</sup>, Kirkland & Ellis, LLP, of Chi-  
cago, Illinois, argued for plaintiffs-appellants. With him  
on the brief were MARY E. ZAUG and JOSHUA M. REED.

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<sup>1</sup> Mr. Callahan subsequently withdrew from the  
case.

STEVEN E. DERRINGER, Bartlit Beck Herman Palenchar & Scott LLP, of Chicago, Illinois, argued for defendants-appellees. With him on the brief were CHRISTOPHER J. LIND and BRIAN C. SWANSON.

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Before MOORE, SCHALL, and REYNA, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* MOORE.

Dissenting opinion filed by *Circuit Judge* REYNA.

MOORE, *Circuit Judge*.

Hill-Rom Services, Inc., Hill-Rom Company, Inc., and Hill-Rom Manufacturing, Inc. (collectively, Hill-Rom) appeal from the district court's grant of summary judgment that Stryker Corporation and Stryker Sales Corporation (collectively, Stryker) do not infringe asserted claims of U.S. Patent Nos. 5,699,038 ('038 patent), 6,147,592 ('592 patent), and 7,538,659 ('659 patent). Because the district court's judgment of non-infringement was premised on erroneous claim constructions, we *reverse* and *remand*.

#### BACKGROUND

The patents-in-suit, which claim priority to the same parent application,<sup>2</sup> are directed to systems and methods for enabling hospital personnel to remotely monitor the status of hospital beds. '038 patent col. 1 l. 61–col. 2 l. 38. The patents-in-suit disclose hospital beds equipped with sensors that monitor bed parameters, such as the patient's presence in the bed and the bed height. *Id.* col. 2 ll. 6–9, col. 5 l. 63–col. 6 l. 23. These systems send data about the status of a hospital bed to a remote location for monitoring by hospital personnel. *Id.* col. 2 ll. 59–65.

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<sup>2</sup> The '592 and the '659 patents are continuations of the '038 patent.

Claim 1 of the '038 patent, from which asserted claim 13 depends, contains three of the four disputed claim limitations and is treated by the parties as representative:

A bed status information system . . . comprising:

at least one bed condition input signal generator . . . ;

an *interface board including a processor* . . . said interface board operable for receiving said bed condition input signal and processing said input signal to create *bed condition messages* indicating the status of the monitored condition;

a processing station remote from the bed and coupled with said interface board by a *datalink*, the processing station operable for receiving said *bed condition messages* over the *datalink* and processing said messages . . . such that the status of the monitored condition of the patient bed is indicated to attending personnel at a location remote from the bed.

'038 patent claim 1 (emphases added). Claim 17 of the '592 patent includes the fourth disputed claim term and recites: "The patient monitoring system . . . wherein the message includes *message validation information*." '592 patent claim 17 (emphasis added).

Hill-Rom brought suit against Stryker alleging infringement of various claims. The parties stipulated to non-infringement based on the court's construction of the claim terms "datalink," "interface board including a processor," "message validation information," and "bed condition message." Hill-Rom appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

## DISCUSSION

We review claim construction *de novo*. *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272, 1276–77 (Fed. Cir. 2014) (en banc). Claim terms are generally given their plain and ordinary meanings to one of skill in the art when read in the context of the specification and prosecution history. *See 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 the claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

## A. “datalink”

The district court construed the term “datalink” to mean “a cable connected to the bed that carries data.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, No. 1:11-CV-1120, 2013 WL 364568, at \*8 (S.D. Ind. Jan. 30, 2013) (*District Court Decision*). Hill-Rom argues that the district court erred by limiting “datalink” to a “cable,” *i.e.*, a wired datalink. It argues that “datalink” should be given its plain and ordinary meaning, which is a link that carries data and encompasses both wired and wireless connections. Stryker argues that the district court was correct that the plain and ordinary meaning of “datalink” is limited by the specification to a wired connection. We agree with Hill-Rom.

While we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904 (Fed. Cir. 2004). We depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal. *Thorner*, 669 F.3d at 1365. The standards for finding lexicography and

disavowal are exacting. “To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning” and must “clearly express an intent to redefine the term.” *Id.* at 1365 (quotations omitted).

“[T]his court has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” *Liebel-Flarsheim*, 358 F.3d at 906 (listing cases rejecting attempts to import limitations from the specification into the claims). The court continued, “[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using ‘words or expressions of manifest exclusion or restriction.’” *Id.* (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1327 (Fed. Cir. 2002)).

Disavowal requires that “the specification [or prosecution history] make[] clear that the invention does not include a particular feature,” *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001), or is clearly limited to a particular form of the invention, *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1330 (Fed. Cir. 2009) (“[W]hen the preferred embodiment is described in the specification as the invention itself, the claims are not necessarily entitled to a scope broader than that embodiment.”) (quotation omitted). For example, we have held that disclaimer applies when the patentee makes statements such as “the present invention requires . . .” or “the present invention is . . .” or “all embodiments of the present invention are . . .” See *Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013); *Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1316–19 (Fed. Cir. 2006); *SciMed*, 242 F.3d at 1343–44; *Astrazeneca AB v. Hanmi USA, Inc.*, 554 F. App’x 912, 915 (Fed. Cir. 2013)

(nonprecedential). We have also found disclaimer when the specification indicated that for “successful manufacture” a particular step was “require[d].” *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1367 (Fed. Cir. 2007) (“Those statements are not descriptions of particular embodiments, but are characterizations directed to the invention as a whole.”). We found disclaimer when the specification indicated that the invention operated by “pushing (as opposed to pulling) forces,” and then characterized the “pushing forces” as “an important feature of the present invention.” *SafeTCare Mfg., Inc. v. Tele-Made, Inc.*, 497 F.3d 1262, 1269–70 (Fed. Cir. 2007). We found disclaimer when the patent repeatedly disparaged an embodiment as “antiquated,” having “inherent inadequacies,” and then detailed the “deficiencies [that] make it difficult” to use. *Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 677 F.3d 1361, 1372 (Fed. Cir. 2012) (“[T]he specification goes well beyond expressing the patentee’s preference . . . and its repeated derogatory statements about [a particular embodiment] reasonably may be viewed as a disavowal . . .”). Likewise, we found disclaimer limiting a claim element to a feature of the preferred embodiment when the specification described that feature as a “very important feature . . . in an aspect of the present invention” and disparaged alternatives to that feature. *Inpro II Licensing, S.A.R.L. v. T-Mobile USA Inc.*, 450 F.3d 1350, 1354–55 (Fed. Cir. 2006).

There is no such disclaimer or lexicography here. There are no words of manifest exclusion or restriction. The patents-in-suit do not describe the invention as limited to a wired datalink. There is no disclosure that, for example, the present invention “is,” “includes,” or “refers to” a wired datalink and there is nothing expressing the advantages, importance, or essentiality of using a wired as opposed to wireless datalink. Nor is there language of limitation or restriction of the datalink. Nothing in the specification or prosecution history makes clear

that the invention is limited to use of a cable as a datalink. Absent such language, we do not import limitations from the specification into the claims.

It is true that the specifications of the patents-in-suit use the terms “datalink 39,” “cable 39,” and “serial datalink 39” to describe the same component of the preferred embodiment. ’038 patent col. 12 ll. 61–64, col. 6 ll. 29–33, 47–50. However, those terms are used synonymously *only* in describing a particular numbered component in the figure depicting the preferred embodiment, and never in describing the datalink of the invention generally. *See id.* This disclosed embodiment undisputedly uses a cable to convey data, and the patent does not disclose an alternative embodiment that uses a wireless datalink. However, absent some language in the specification or prosecution history suggesting that the wired connection is important, essential, necessary, or the “present invention,” there is no basis to narrow the plain and ordinary meaning of the term datalink to one type of datalink—a cable. There are no magic words that must be used, but to deviate from the plain and ordinary meaning of a claim term to one of skill in the art, the patentee must, with some language, indicate a clear intent to do so in the patent. And there is no such language here.

In fact, this specification states that the figures depicting the use of a wired datalink merely “illustrate embodiments of the invention.” ’038 patent col. 4 ll. 59–65; *see also id.* col. 5 ll. 30–31 (“DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS”); *id.* col. 22 ll. 20–31 (the “description of various embodiments” is not intended “to restrict or in any way limit the scope of the appended claims to such detail”). Nothing in the language of the specification suggests that datalink should be limited to the cable used in the preferred embodiment. Therefore, we see no basis for deviating from the plain and ordinary meaning.

An examiner's statement during prosecution of later unrelated U.S. Patent Application No. 13/336,044 ('044 application) that the '038 patent does "not teach . . . the bed having a wireless receiver" does not convince us that one of skill in the art at the time of filing (i.e., the effective filing date of the patents-in-suit) would understand "datalink" to be limited to wired connections. The examiner stated only that the '038 patent specification does "not teach" a wireless receiver, and he expressed no views on the meaning of the term "datalink." No doubt the patentee would agree with the examiner that the specification does not contain an embodiment that teaches use of a wireless receiver. However, a patent specification need not disclose or teach what is known in the art. *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012) ("It is well-established . . . that a specification need not disclose what is well-known in the art."); *see also Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986). The absence of an embodiment teaching a wireless receiver does not prevent the claimed datalink from being given its plain and ordinary meaning at the relevant time. Holding that the plain meaning of datalink at the time of the filing included both wired and wireless connections for carrying data is not inconsistent with the examiner's statement that the '038 patent does not teach a wireless receiver. We do not interpret the examiner's statement about the teachings of the specification as one about his understanding of the meaning of the term "datalink" to one of skill in the art at the time of filing.

Indeed, the only evidence in the record of how one of ordinary skill in the art at the time of filing would understand the term "datalink" is from Hill-Rom's expert. He testified that as of the effective filing date of the patents-in-suit, "a person of ordinary skill would understand that 'datalink' does not refer solely to physical connection" and



“can be established over wired, wireless, optical, or other connection.” J.A. 454, 472.

Stryker does not dispute that wireless datalinks were known at the time the patent was filed, nor does it suggest that the plain meaning of datalink at the relevant time was a cable. Instead, Stryker insists that “datalink” ought to be given its plain and ordinary meaning in the context of the specification. We agree. This is not, however, a license to read limitations from the embodiments in the specification into the claims. The plain and ordinary meaning of datalink at the relevant time is a connection that carries data. And neither the specification nor the prosecution history gives reason to limit the term to a wired connection.

This construction—a datalink is a link that carries data and can be wired or wireless—is supported by the claims of the patent. The ’659 patent contains several dependent claims that expressly recite the requirement of a wired datalink, and they depend from independent claims that do not contain such a requirement. Claim 2, which depends from claim 1, recites “[t]he system of claim 1, wherein the datalink comprises a wired datalink.” ’659 patent claim 2. The only distinction between claim 1 and claim 2 is the limitation that the “datalink” is a wired datalink. *See also id.* claims 10, 18. “[T]he presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim.” *Liebel-Flarsheim*, 358 F.3d at 910. This presumption is especially strong where the limitation in dispute is the only meaningful difference between an independent and dependent claim. *Id.* Of course, claim differentiation is not a hard and fast rule, and the presumption can be overcome by a contrary construction required by the specification or prosecution history. *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005). However, nothing in this specification or prosecution history rebuts the presump-

tion established by the doctrine of claim differentiation.

The district court explained that if datalink was not limited to a wired link, and in particular, if the term were construed to “include wireless communication,” the claim would not be enabled. *District Court Decision* at \*7. Enablement concerns do not justify departing from the plain and ordinary meaning of “datalink.” Where the meaning of a claim term is clear, as it is here, we do not rewrite the claim to preserve its validity. *Liebel-Flarsheim*, 358 F.3d at 911. Moreover, the parties point to no evidence in this record that establishes an enablement problem and the district court did not cite to any. *Id.* Courts should be cautious not to allow claim construction to morph into a mini-trial on validity. Claim terms should be given their plain and ordinary meaning to one of skill in the art at the relevant time and cannot be rewritten by the courts to save their validity. We hold that “datalink” in the claims at issue is any link over which data is transferred and can be wired or wireless.

The dissent argues that our construction is incorrect because it defines “datalink” in functional terms. But, as we have previously explained, defining a particular claim term by its function is not improper and “is not sufficient to convert a claim element containing that term into a ‘means for performing a specified function’ within the meaning of [35 U.S.C. § 112(6)].” *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996). Indeed, “[m]any devices take their names from the functions they perform. The examples are innumerable, such as ‘filter,’ ‘brake,’ ‘clamp,’ ‘screwdriver,’ or ‘lock.’” *Id.* There is nothing improper about defining “datalink” as a link that conveys data. If one of skill in the art at the relevant time would understand that datalinks can be both wired and wireless, then the patentee is entitled to

the full range of that claim term.<sup>3</sup>

Next, the dissent contends that a person of ordinary skill could not have understood “datalink” to include wireless connections because there is no evidence that wireless connections were known to persons of ordinary skill in the art at the relevant time. To the contrary, the record evidence establishes that wireless connections were known and used by persons of ordinary skill during the relevant time frame. The Background of the Invention of the patents-in-suit describes a prior art patent disclosing a “personnel locating system” using “infrared transmitters,” *i.e.*, wireless transmitters, to transmit a “pulse-coded signal which corresponds to the identity of the wearer.” ’038 patent col. 1 ll. 42–46 (describing U.S. Patent No. 4,275,385). This is an unequivocal disclosure, in the patent itself, of wireless datalinks. Furthermore, Hill-Rom’s expert testified that at the time of the patent’s filing, a person of ordinary skill would have understood “datalink” to include a wireless connection. J.A. 454, 472. Even Stryker does not dispute that, at the relevant time period, data could be carried through a wired or wireless connection. We hold that, consistent with the record evidence, the plain and ordinary meaning of datalink at the time of the patent filing would be a link that carries data in a wired or wireless fashion.

B. “interface board including a processor”

The district court construed “interface board including a processor” as “a board that processes an input signal to

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<sup>3</sup> The dissent also raises a concern that our construction of “datalink” could theoretically cover unknown technologies created in the future. Dissent at 2. Such unknown technologies are not at issue here, however, and we see no persuasive reason to depart from the plain and ordinary meaning of a term based on such unknowns.

create bed condition messages and sends those messages to a remote location via the wall interface unit.” *District Court Decision* at \*9. The court noted that “[i]t can also receive messages through the wall interface unit.” *Id.* Hill-Rom argues that the “interface board including a processor” should be given its plain and ordinary meaning, which is the interface between the bed components and the off-bed components that processes the bed condition input signals into bed condition messages. First, Hill-Rom argues that the district court improperly imported “the wall interface unit” limitation into “interface board including a processor.” Second, it contends that the district court erred by requiring the “interface board including a processor” to receive messages from a remote location.

Stryker responds that the district court’s inclusion of the “wall interface” unit in its construction is supported by the specification, and argues further that the construction should require “a board that includes the electronics that control the sending of messages to, and the receiving of messages from, a remote location.” It argues that the patents-in-suit describe the invention as including an interface board that is capable of sending and receiving messages from a remote location through the wall interface unit. *See* ’038 patent col. 3 ll. 53–56; col. 4 ll. 18–21; col. 19 ll. 4–17. Moreover, Stryker argues that several dependent claims describe sending messages to the interface board, suggesting that the interface board must be capable of receiving messages from a remote location. *See id.* claims 9, 13, 14, 15, 24.

We hold that the “interface board including a processor” is the interface between the bed components and the off-bed components that processes the bed condition input signals. An interface is a point of interaction. Interface devices are sometimes capable of both sending and receiving data and sometimes limited to sending data. Claim 1 of the ’038 patent articulates with specificity the functions

that the claimed interface board must perform: the interface board must “receiv[e] . . . bed condition input signal[s],” “process[] said input signal to create bed condition messages,” and send “bed condition messages over the datalink” to “the [remote] processing station.” ’038 patent claim 1. That is all this claim requires in terms of the functionality of the interface board. Thus the “interface board including a processor” must receive bed condition inputs, create the bed condition message, and send it to the remote processing station. Asserted claim 13 adds the limitation that the interface board must include a “network port electrically coupled to the operating network *for receiving said network data message*, the interface board operable to process said data message and create a bed condition message.” While the plain meaning of claim 1 does not require that the interface board be capable of receiving messages from the remote processing station, claim 13 adds this functional requirement. Dependent claims 9, 13, 14, 15, and 24 each add, among other requirements, the functional requirement that the interface board *receive* messages from a remote location. ’038 patent claims 9, 13, 14, 15, 24. Under the principles of claim differentiation, the independent claims are presumed to be broader. *Liebel-Flarsheim*, 358 F.3d at 910.

The asserted claims of the ’038 patent are 13, 20, and 26. The district court is correct that the interface board of claim 13 must be capable of both sending and receiving messages from a remote location because the claim expressly includes these limitations. Claim 20, in contrast, does not require the interface board to receive messages from a remote location. Claim 20 depends from independent claim 19. Claim 19, like claim 1, only requires that the interface board receive bed condition inputs, create the bed condition message, and send it to the remote processing station. Claim 20 only adds a limitation regarding a data field in the bed condition message that will allow the processing station to determine the identity

of the patient bed that generated the message. Claim 20 does not include any limitation that would require the interface board to receive messages from a remote station. Therefore, claim 20 is not so limited. In fact, claim 24 adds this limitation to claim 19 and under principles of claim differentiation, claim 20 is presumed not to include it. Finally, claim 26 is an independent claim that, like independent claims 1 and 19, requires only that the interface board receive bed condition inputs, create the bed condition message, and send it to the remote processing station. The interface board of claim 26 is not required to be capable of receiving messages from a remote location.

To be clear, the plain meaning of interface could include one-way or two-way communication. The claims of this patent expressly define the requirements of the interface board. Some of the claims require the interface board to be able to send messages to a remote location and other claims require it be capable of both sending and receiving messages from a remote location.

There is no disavowal or lexicography in this specification that causes us to import the receiving from a remote location limitation into the claims in which it does not appear. The specification discloses embodiments in which the interface board receives messages from a remote location. '038 patent col. 3 ll. 56–59, col. 18 ll. 27–44. But there is nothing in the specification that requires that the interface board include this functionality. There is no language that extolls the virtues of interfaces that both send and receive messages or language that disparages interfaces that only send messages. There is no language in this patent that an interface board capable of both sending and receiving is an important, essential, or critical part of the present invention. The “interface board including a processor” in claim 20 and 26 is a board with a processor that is capable of receiving bed condition

inputs, creating the bed condition message and sending it to the remote processing station.

Finally, the “interface board including a processor” in the asserted claims is not required to send messages to a remote location through a wall interface unit. While it is true that the specification discloses embodiments in which the interface board sends the message to a wall interface unit, which then sends it to a remote location, such a disclosure does not cause the importation of this structure into the claims at issue. *See, e.g., id.* col. 3 ll. 34–44. The specification states: “In one embodiment of the invention . . . [t]he LON messages would be received by an appropriate line transceiver 160 from lines 159 and processed by microprocessor 140 and sent to the wall interface unit 40 in accordance with the present invention.” *Id.* col. 12 ll. 41–54. The fact that the specification indicates that in one embodiment, messages are sent to the wall interface unit “in accordance with the present invention,” does not mean that a wall interface unit must be present in all embodiments of the invention. The specification contains no discussion of the importance, essentiality, or criticality of the wall unit to the present invention. In fact, the specification discloses an embodiment in which the interface board sends information to a remote location without using a wall interface unit intermediary. *Id.* col. 2 ll. 49–52. The claims at issue do not require, or even mention, a wall interface unit. There is no lexicography or disavowal that would support importing this structural limitation from the specification into the claims. Finally, there are dependent claims that expressly add this structure. *See id.* claims 7, 23 (adding an “interface unit electrically coupled between said interface board and said processing station”). Under principles of claim differentiation, we presume that the claims without this limitation do not require it. *Liebel-Flarsheim*, 358 F.3d at 910. To the extent that the district court required the “interface board including a

processor” of the claims at issue to send messages to a remote location via a wall interface unit, it erred.

### C. “message validation information”

The term “message validation information” appears only in asserted claim 17 of the ’592 patent, which recites that “the message includes message validation information.” ’592 patent claim 17. The district court construed “message validation information” as “a data field within a message that is used to verify that the message was received exactly the same as it was sent.” *District Court Decision* at \*13. Relevant to this conclusion is the district court’s undisputed construction of “message” as “[a] plurality of data fields of appropriate length assembled into a defined structure.” *Id.* at \*9.

Hill-Rom contends that the term should be given its plain and ordinary meaning: “information that validates a message.” It argues that the specification describes message verification as simply a status message that indicates that a bed condition message “was received properly or was not received properly.” ’592 patent col. 14 ll. 12–13. It argues that the message verification embodiment disclosed in the specification detects the presence of certain errors, but cannot evaluate all aspects of a received message to confirm that it is exactly the same as the sent message. *See id.* col. 18 ll. 20–35. It argues that the district court’s construction would exclude this embodiment, and is therefore presumptively incorrect.

As an initial matter, we see no reason that “message validation information” must be limited to a single data field. There is nothing in the plain meaning of the term or in the specification that requires all message validation information to be contained to a single data field. The district court is correct that “message validation information” must be limited to data fields because, based on the claim language, “message validation information” is part of a message, and the parties do not dispute that a



message is limited to “a plurality of data fields.” *Id.* claim 17. The summary of the invention states that the message includes “a field for verifying that the message was received by a node exactly the same as it was sent by the sending node.” *Id.* col. 3 ll. 55–57. The preferred embodiment also discloses using a CHECKSUM for the verification field. *Id.* col. 13 ll. 47–51. These references are not sufficient to limit the structure of the message validation information to a single field. There is no suggestion that utilizing only a single field is important, essential, critical, or valuable to the present invention. There are no words of manifest exclusion. We conclude that “message validation information” is limited to data fields within the message, but is not limited to a single data field.

The parties also dispute what it means to validate the message. And more particularly, whether the claimed “message validation information” must verify that the message is properly received or received exactly, bit by bit, as sent. To what level of accuracy or detail must the verification process confirm the message? The plain meaning of message validation is to ensure that the message is valid, *i.e.*, that it confirms the message, that it ensures that the message fulfills its intended purpose, that the message conveys the intended information. The specification is consistent with this understanding of message validation. The patent explains that the bed message data “includes a plurality of data fields which indicate the type of message being sent, (*i.e.*, status message or bed data message), the length of the message being sent, the actual data of the message (such as status data or bed data), and a field *for verifying that the message was received by a node exactly the same as it was sent by the sending node* such as the bed interface board.” *Id.* col. 3 ll. 51–57 (emphasis added). This suggests that the verification should determine whether exactly the same message was sent. However, the only disclosed embodiment for message verification is a parity checking routine

that uses a CHECKSUM field to determine whether a “message was received properly or was not received properly and should be resent.” *Id.* col. 14 ll. 11–13. “[T]he CHECKSUM byte [is] equal to the inverted sum of the other nine message bytes plus one (1). Then, when the message is received by the receiving mode, the nine message bytes are added to the CHECKSUM byte . . .” *Id.* col. 18 ll. 26–30. As the specification acknowledges, the disclosed CHECKSUM is a primitive, coarse verification filter. *Id.* col. 18 ll. 25, 33 (“simple routine”). It sums up nine bytes each with eight bits. If any two bytes contain opposite and inaccurate data in the same bit, the CHECKSUM may not catch the error. For example, if data field 1 contains a 1 in the first bit (but should have contained a 0) and data field 2 contains a 0 in the first bit (but should have contained a 1), the CHECKSUM would add these up and conclude that the message was properly sent even though two fields had errors. The specification acknowledges that errors could also occur in the scenario the message sent begins with zeros. *Id.* col. 18 ll. 33–35.

If, therefore, the “message validation information” is required to accurately validate that the message sent is exactly bit-by-bit the same as the message received 100% of the time, then the only disclosed embodiment, the simple CHECKSUM, might not be covered by the claim language. A construction that would exclude the preferred embodiment “is rarely, if ever, correct and would require highly persuasive evidentiary support.” *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). That, however, is not the case here. The patentee’s own disclosure contemplates an acceptable rate of error in the verification process in which the CHECKSUM embodiment can often, but not always, verify the message was received exactly as sent. Thus, the claimed validation need not be flawless to meet the claimed message validation information limitation—an issue to be resolved in an infringement analysis.

As such, we construe “message validation information” as one or more data fields within a message that is used to verify that the message was received exactly the same as it was sent.

#### D. “bed condition message”

The district court construed “bed condition message” as “a message not generated in response to any user request that contains the status of all conditions the bed is capable of monitoring.” *District Court Decision* at \*12. As an initial matter, there is nothing in the plain and ordinary meaning of “bed condition message” that would require either that the message not be generated by a user request or that the message is required to contain the status of all conditions (and cannot be a subset of the data). The plain and ordinary meaning of “bed condition message” is a message that indicates the status of a monitored bed. There is no lexicography or disavowal that has been argued to support the additional limitations the court imposed. There is no mention in the specification of the “bed condition message” including all status conditions. Likewise, there is no discussion of user requests. The specification does disclose an embodiment that periodically polls: “In a preferred embodiment . . . the bed interface board 35 polls every 250 milliseconds . . . [a]t each poll, a message is sent.” See ’038 patent col 13 ll. 39–col. 14 ll. 13. This disclosure of periodic polling in one embodiment does not justify reading periodic polling into the claim. There is no argument that one of skill in the art would read this specification or its associated prosecution history as incorporating these limitations.

The court’s construction was based entirely upon its conclusion that judicial estoppel prevented Hill-Rom from any broader construction. The district court explained that there are three factors that ought to be considered in determining whether to apply judicial estoppel: 1) a

party's position must be clearly inconsistent with an earlier position taken; 2) the party must have prevailed on the basis of the earlier position; and, 3) the party asserting the inconsistent position would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped. *District Court Decision* at \*11. The court concluded that all three factors in this case weighed in favor of applying judicial estoppel.

In this case, during prosecution of a later, unrelated patent, U.S. Patent No. 8,121,856 ('856 patent), the examiner rejected claims as obvious over three references. One of the prior art references cited was U.S. Patent Application Publication No. 2002/0151990 (the Ulrich reference), which has the same specification as the '038 patent. Hill-Rom argued that the examiner "relies on Ulrich as teaching" "transmissions of subsets of data of features of a bed frame and air mattress." J.A. 390. In response, Hill-Rom added a limitation that the monitoring device receives a user request for a specific subset of data and that the specific subset of data be transmitted without transmitting the other available data. Hill-Rom argued that adding this limitation overcame the obviousness rejection because this added limitation was not disclosed in the Ulrich reference:

Neither Sievenpiper nor Haller nor Ulrich have any disclosure of a monitoring device from which such a user request can be made for subsets of data and those subsets of data are transmitted without transmitting other subsets of available data. The undersigned is quite familiar with the Ulrich reference because it is assigned to the assignee as the present application. In Ulrich's systems, user[s] cannot request specific subsets of data be transmitted without transmitting other available data subsets. The data transmissions in Ulrich's system happen in response to periodic pro-

grammed polling by individual electronic devices of the system, not in response to any user request.

J.A. 391. Based on this statement, the district court found judicial estoppel was warranted and that “bed condition message” should be limited to “a message not generated in response to any user request that contains the status of all conditions the bed is capable of monitoring.” *District Court Decision* at \*12.

We conclude that there are several errors in this analysis. As an initial matter, we decided this issue in *Pfizer, Inc. v. Ranbaxy Laboratories, Inc.*, 457 F.3d 1284, 1290 (Fed. Cir. 2006), and are bound to follow *Pfizer*. In *Pfizer*, claim 1 of the patent at issue (the ’893 patent) was directed to a particular compound and depicted the R-trans isomer. The patentee argued that claim 1 covered the R-trans isomer by itself and was not limited to a mixture of isomers. The defendant argued that prosecution history estoppel or, alternatively, judicial estoppel should bar the patentee from advancing this construction because, during the prosecution of the unrelated ’995 patent, the patentee repeatedly stated that the ’893 patent was not directed to isolated enantiomers but rather was limited to a mixture of enantiomers. The defendant argued that the ’893 claims should thus be limited to mixtures, and should not cover the isolated R-trans isomer. We held that “statements made during prosecution of the later, unrelated ’995 patent cannot be used to interpret claims of the ’893 patent.” *Id.* at 1290. We went on to hold that “insofar as Ranbaxy restates the same argument under the guise of judicial estoppel, we are not persuaded.” *Id.*

If we accept as true Stryker’s argument that Hill-Rom’s prosecution statements are inconsistent with the construction of “bed condition message” Hill-Rom now seeks, there would be no distinction between this case and *Pfizer*. Stryker acknowledged as much in its brief. It

never argued that *Pfizer* did not govern this case or was distinguishable from the present case, but rather that *Pfizer* was wrongly decided. Appellee's Br. at 52–53. We see no reason to question the rule in *Pfizer*, and, in any event, we are bound by prior panel decisions. *Barclay v. United States*, 443 F.3d 1368, 1373 (Fed. Cir. 2006). Thus, statements made during prosecution of a later, unrelated patent cannot form the basis for judicial estoppel.

But there is a second error in the district court's judicial estoppel analysis. For judicial estoppel to apply, a parties' later position must be clearly inconsistent with the earlier position. *New Hampshire v. Maine*, 532 U.S. 742, 749 (2001); see also *United States v. Christian*, 342 F.3d 744, 747 (7th Cir. 2003). Hill-Rom's current position, that "bed condition message" should be given its plain and ordinary meaning, is not clearly inconsistent with its statements during prosecution of the '856 patent. None of the statements Hill-Rom made during the '856 patent's prosecution purport to define "bed condition message." Instead, they generally describe the disclosure of the Ulrich reference or the Ulrich systems. It is undisputed that the Ulrich reference did not teach "transmissions of subsets of data features." The Ulrich reference is completely silent on this point. Ulrich neither requires all bed conditions to be transmitted nor explains that a subset can be transmitted. Acknowledging that Ulrich does not teach transmitting a subset of bed conditions therefore is not a clear limitation of claim scope. A patent is used as prior art in an anticipation or obviousness rejection for what it discloses. By contrast, the scope of the claims is not generally limited to the embodiments disclosed in the patent.

Claim 1 of the '038 patent requires that the "bed condition message" be transmitted to the processing station over the datalink. The claim is silent regarding the trigger for this transmission: whether the transmission

occurs in response to user request or is automatic. The specification gives one example of periodic polling, but does not suggest that the inventor intended this embodiment to limit the invention claimed. Thus, claim 1 covers transmission of the bed condition message regardless of whether the transmission occurs in response to a user request or periodically at some timed interval. That does not mean that the '038 patent discloses or teaches user requests; it undisputedly does not disclose an embodiment where the data is transmitted in response to a user request. Accordingly, we do not agree that the statements made during the unrelated patent's prosecution are clearly inconsistent with the position Hill-Rom takes regarding the meaning of "bed condition message."

Finally, the statement about the Ulrich reference is itself confusing and self-contradictory. Hill-Rom stated that "[t]he data transmissions in Ulrich's system happen in response to periodic programmed polling . . . not in response to any user request," J.A. 391, suggesting that data is not transmitted in response to a user request. The previous sentence, however, stated that "[i]n Ulrich's systems user[s] cannot request specific subsets of data be transmitted without transmitting other available data subsets," *id.*, suggesting that data can be transmitted in response to a user request, but that when a user requests data, all available data is transmitted. These statements are internally inconsistent, and thus Hill-Rom's current argument regarding claim scope is not "clearly inconsistent" with them. We conclude that these facts do not present a case for application of the doctrine of judicial estoppel.

We hold that that a "bed condition message" is a message that indicates the status of a monitored bed condition. The parties do not dispute that this is the plain and ordinary meaning of the term. And the specification provides us with no reason to depart from the plain and ordinary meaning.

## CONCLUSION

We *reverse* the district court's grant of summary judgment of non-infringement and *remand* for further proceedings in view of this opinion.

**REVERSED AND REMANDED**



**United States Court of Appeals  
for the Federal Circuit**

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**HILL-ROM SERVICES, INC., HILL-ROM  
COMPANY, INC., AND HILL-ROM  
MANUFACTURING, INC.,**  
*Plaintiffs-Appellants,*

v.

**STRYKER CORPORATION (doing business as  
Stryker Medical) AND STRYKER SALES  
CORPORATION,**  
*Defendants-Appellees.*

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2013-1450

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Appeal from the United States District Court for the Southern District of Indiana in No. 11-CV-1120, Judge Jane Magnus-Stinson.

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REYNA, *Circuit Judge*, dissenting.

I dissent for three reasons. First, the intrinsic record is devoid of any description of a wireless “datalink” structure. Second, credible extrinsic evidence belies the majority’s conclusion that “datalink” encompasses wireless communications. Third, the majority relies on expert testimony that is conclusory and unreliable.

Despite these determinative criteria, the majority construes “datalink” as covering any way of communi-

cating data, including wireless structures. This construction literally encompasses all data communication technology regardless of whether it existed in 1993 when the patents were filed, whether it was created yesterday, or whether it shall be created in the future. Neither the record before us nor our case law supports such a construction. Because I will not extend the literal scope of the patent beyond what is clearly claimed, I respectfully *dissent*.

### I.

The claim language demonstrates that “datalink” is a meaningful structural limitation. The asserted claims are system claims. They recite that messages are sent “*over a/the datalink*,” “*by a/the datalink*,” and “*via a/the datalink*.” They also indicate that the “datalink” is the structure used to “couple” or “communicatively couple” the remote station and the interface board on the bed. This is clearly indicated by the recited claim language: “coupled . . . by a datalink” and “communicatively coupled . . . by a datalink.” See ’038 patent claim 13; ’659 patent claim 13. Thus, the context in which the “datalink” limitation is recited indicates that “datalink” must be more precise than anything that would “couple” or “communicatively couple” the interface board and the remote station.

Further, the written description does not describe “datalink” as any way of communicating data. To the contrary, the written description emphasizes that a “datalink” is physical structure. First, the written description consistently refers to a “datalink” as a “serial datalink.” See, *e.g.*, ’038 patent col. 20 ll. 27-41. Second, as the majority recognizes, the written description uses “datalink” in a manner synonymous with a cable, which is a physical structure. See, *e.g.*, ’038 patent col. 6 ll. 30-31, 47. This is consistent with the sole depiction of a datalink in figure 1 as a physical cable connecting the interface

board to the wall interface unit. *Id.* fig. 1, col. 6 ll. 29-33. Finally, the patent teaches that the “datalink” serves to “electrically couple” components of the system. *See id.* abstract, col. 6 l. 49. Such an electrical coupling would be impossible without a medium for carrying the electrical signals.

The recitations in other, non-asserted claims further indicate that the patent’s “datalink” must be a physical structure. Claim 12 expressly requires the “datalink” to be “in line” with an “optical isolator electrically connected between said interface board and said processing station.” *Id.* col. 23 ll. 43-47. The only way the “datalink” could also connect the interface board and processing station while being “in line” with the electrically connected “optical isolator” is if it is a physical structure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc), *cert. denied*, 546 U.S. 1170, 126 S. Ct. 1332 (2006) (“the usage of a term in one claim can often illuminate the meaning of the same term in other claims”) (citation omitted).

Put simply, everything within the intrinsic record identifies the claimed “datalink” as a physical structure. There is nothing in the claims, written description, or file history that indicates the claimed “datalink” embraced wireless communications.

## II.

In addition to clear intrinsic evidence, the majority also disregards credible extrinsic evidence regarding the understanding of “datalink” in the context of the patents-in-suit. Specifically, the majority ignores that in 2007, fourteen years after the filing date of the patents-in-suit, Hill-Rom filed Patent Application No. 11/672,367 (“the ’367 application”), which was expressly directed to wireless bed connections. *See* J.A. 344. As originally filed, the only material difference between claim 1 of the ’367 application and the inventions disclosed and claimed in

the patents-in-suit was the explicit use of wireless communication technology:

1. A hospital bed having *wireless communication* circuitry operable to transmit bed status data *wirelessly* to a network and to receive messages *wirelessly* from the network, the bed having a mattress associated therewith and the bed status data including information regarding at least one feature of the mattress.

J.A. 348-49. The '367 application did not claim priority to any of the patents-in-suit. The application further characterized the patents-in-suit as “Background of the Invention,” J.A. 345 ([0003]), and described these background systems as limited to wired systems:

Hospital beds that connect to nurse call systems, typically do so via *a wired connection* established by a nurse call cable that extends between the bed and an interface unit having a jack mounted on a wall or headwall unit in the hospital room in which the bed is situated.

J.A. 345 ([0004]) (emphasis added). Then, in the “Summary of the Invention,” the '367 application contrasted itself against the prior art through the use of wireless connectivity. *E.g.*, J.A. 345 ([0006]). The '367 application expressly differentiated itself from the patents-in-suit in this exact manner by asserting that “according to this disclosure, the standard bed status data is transmitted wirelessly.” J.A. 346 ([0052]). The only reasonable conclusion that can be drawn from the filing of the '367 application, now patented, is that Hill-Rom itself—presumably one of ordinary skill in the art—both recognized and understood the earlier patents-in-suit as lacking a wireless datalink.

Additionally, in 2011, a patent examiner reviewing the patentability of Hill-Rom’s wireless bed patent con-

cluded that the patents-in-suit do not themselves embrace wireless “datalinks.” The examiner stated that the patents-in-suit do “not teach” either “a first transmitter that transmits the first ID wirelessly” or “the bed having a wireless receiver and a second transmitter.” J.A. 354. The examiner further concluded that it was necessary to combine the patents-in-suit with another reference that expressly taught “wireless transmission between a wireless unit associated with a bed, and a remote unit” in order to achieve an overall, combined system that included “wireless communication capabilities.” J.A. 355. The examiner’s remarks do not, as the majority contends, simply confirm that the patents do “not teach . . . the bed having a wireless receiver.” Maj. Op. at 8. Rather, the examiner understood that the patents-in-suit did not include wireless communications, which necessarily means that he did not consider the “datalink” disclosed in the patents-in-suit to reach such wireless technology. The majority fails to acknowledge the full scope of the examiner’s statements, which were made by an uninterested party outside the scope of the present litigation, a material element in the analysis of the evidentiary record.

### III.

Despite the limited scope of the intrinsic and extrinsic record, the majority construes “datalink” as “any link over which data is transferred and can be wired or wireless.”<sup>1</sup>

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<sup>1</sup> The phrase “can be wired or wireless” is permissive and renders itself superfluous. It therefore does not meaningfully add to the majority’s construction. On remand, the full scope of “any link over which data is transferred” must be considered in evaluating both infringement and invalidity. See *Source Search Techs., LLC v. LendingTree, LLC*, 588 F.3d 1063, 1075 (Fed. Cir. 2009) (“[i]t is axiomatic that claims are construed the same way for both invalidity and infringement”) (quoting *Amgen*

Maj. Op. at 10. This construction reaches any and every method of communicating data, which is an expansive functional interpretation—defining the “datalink” structure by what it does rather than what it is. This functional claiming is not only prohibited outside of the context allowed by 35 U.S.C. § 112(f), but is also not supported by the record.

The majority justifies the construction by relying on a single piece of evidence created solely for Hill-Rom’s use in the present litigation. In doing so, the majority states:

Indeed, the only evidence in the record of how one of ordinary skill in the art at the time of filing would understand the term “datalink” is from Hill-Rom’s expert. He testified that as of the effective filing date of the patents-in-suit, “a person of ordinary skill would understand that ‘datalink’ does not refer solely to physical connection” and “can be established over wired, wireless, optical, or other connection.” J.A. 454, 472.

Maj. Op. at 8-9. This testimony from Hill-Rom’s expert, however, does not directly speak to the meaning of the term in 1993 and, at best, is ambiguous on the issue before us.

Importantly, the expert report never expressly states that one of ordinary skill in the art in 1993 would understand that a “datalink” encompassed wireless connections. We have long recognized that, although the understanding of a claim term can evolve over time, the literal scope of a patent claim “cannot have different meanings at different times.” *PC Connector Solutions LLC v. SmartDisk Corp.*, 406 F.3d 1359, 1363 (Fed. Cir. 2005). The literal scope of a claim is fixed by the meaning of its

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*Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003)).

terms in the relevant art as of the effective filing date of the application. *Phillips*, 415 F.3d at 1313 Cir. 2005) (“We have made clear . . . that 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.”). Here, the patents-in-suit claim priority to an application filed in 1993 and, a proper construction of the claims must be tethered to that date.

Hill-Rom’s expert, however, testified before the district court that “datalink” needed no construction and provided explanations that were each phrased in the present tense. J.A. 471-72. Specifically, the expert testified:

Datalinks *are used* by network designers to transfer data from one device to another. Thus, a “datalink” *is used* in many different fields and applications, and *is not* confined solely to the connection to a hospital bed. A person of ordinary skill in the art *would understand* that a datalink can be used in an unlimited number of contexts where digital data is to be transmitted.

*Id.* (emphases added); *see also id.* at 472 (“*would understand* that ‘datalink’ does not refer solely to physical connection” and “a datalink *can be established* over wired, wireless, optical or other connection”) (emphases added). In view of Hill-Rom’s bare attempt to embrace wireless communications under the purported plain meaning of the term “datalink,” the expert testimony does not demonstrate a temporal connection to 1993, as it must.

Beyond ambiguity, the expert’s testimony is also conclusory. There is no documentary evidence—dictionary definition, paper, article, advertisement, product, system, method, etc.—to support his testimony. As such, the reasoning set forth in *SkinMedica, Inc. v. Histogen Inc.*,

727 F.3d 1187 (Fed. Cir. 2013) is applicable to this case. There we recognized that the evidentiary value of conclusory expert testimony in the context of claim construction is suspect and unhelpful:

Expert testimony, in particular, is less reliable because it “is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence.” For that reason, “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court.”

\* \* \*

In whole, [the expert’s] opinions are unhelpful to our analysis here. They are conclusory and incomplete; they lack any substantive explanation tied to the intrinsic record; and they appear to conflict with the plain language of the written description. Without a more detailed explanation of how [the expert] formed his conclusions and why they conflict with the plain language of the specification, we must agree with the district court that [the expert’s] testimony deserves no weight.

*Id.* at 1195, 1210 (citations omitted).

In sum, the record before us does not clearly establish that the claims of the asserted patents encompass wireless datalinks. Where there is no support in the intrinsic record for a proffered construction, a party seeking a purported “plain meaning” construction that is broader than what is supported by the intrinsic record must supply credible extrinsic evidence that sufficiently demonstrates the subject matter embraced by the “plain meaning” was known to one of ordinary skill in the relevant art at the time the patent was filed. Hill-Rom has not made such a showing here.



The majority's conclusion to the contrary is outweighed by reliable record evidence that the majority either miscomprehends or ignores. Under these circumstances, the asserted term is properly limited to a physical connection. Moreover, limiting the claimed "datalink" to a physical connection is entirely consistent with Hill-Rom's claim differentiation arguments, as a physical connection encompasses, but is not limited to, a wired datalink.

For the foregoing reasons, I respectfully *dissent*.