

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BMW OF NORTH AMERICA, LLC,

Petitioner

v.

Stragent, LLC,

Patent Owner

Case IPR2017-00676

U.S. Patent 8,209,705

STRAGENT, LLC'S PATENT OWNER RESPONSE

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<u>Exhibit</u>	<u>Title</u>
2001	Declaration of Jeffrey A. Miller, Ph.D.
2002	Curriculum Vitae of Jeffrey A. Miller, Ph.D.
2003	Merriam-Webster's Collegiate Dictionary, 10 th Edition (2002)
2004	Microsoft Computer Dictionary, 3d Edition (1997)
2005	Webster's New World Computer Dictionary, 10 th Edition (2003)
2006	Declaration of Thomas H. Kramer, Esq.

I. INTRODUCTION

The Board should not cancel any of the challenged claims of this *inter partes* review of U.S. Patent No. 8,209,705 (“the ’705 patent”) because Petitioner did not establish by a preponderance of the evidence any of the challenged claims are unpatentable, by failing to show that one or more of the limitations required by the challenged claims would not have been taught or suggested by the prior art to one of ordinary skill in the art. *Infra* §§ VIII, IX, X, XI.

The asserted combination of references does not teach a system capable of “in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol” as required by claim 1 and similarly required by claim 20. *Infra* §§ VIII.A, IX.A, X.A, XI. For example, at no point does Staiger actually teach sharing information with a second network having a different protocol from the first network protocol; instead, Petitioner simply points to where Staiger teaches the well-known concept of multiplexing. *Infra* §VIII.A. Correctly, Petitioner does not even assert that Wong or Millsap teaches this element. *Infra* §§ IX.A, XI. The OSEK/VDX disclosure similarly misses the mark, as the process to which Petitioner asserts to be “sharing” between networks is actually nothing more than transmission of data between nodes in a logical ring on a single network. *Infra* §§ X.A, XI.

Nor do the asserted combination of references teach “a first interface portion for interfacing with the first network, the first interface portion including a first interface-related first layer part for receiving first interface-related first layer messages and a first interface-related second layer part, the first interface-related first layer messages being processed after which first interface-related second layer messages are provided, where the first network is at least one of a Controller Area Network, a Flexray network, or a Local Interconnect Network” as required by claim 1 and similarly required by claim 20. *Infra* §§ VIII.A, IX.A, X.A, XI. Even accepting the majority of Petitioner’s assertions regarding this element, Staiger only discloses the processing of information in order to convey the information by way of the multiplexer - Staiger does not process the information to provide “second layer messages” as required. *Infra* §VIII.A. Petitioner’s reliance on Wong is completely misplaced, as Wong simply discloses a very high-level diagram, with no details of how the system works. *Infra* §IX.A. Petitioner attempts to assert that Millsap’s digital-to-analog converter satisfies this limitation; this fails because a digital-to-analog converter does not provide a first interface-related second layer message as required. *Id.*

For similar reasons, the asserted combination of references also does not teach “and a second interface portion for interfacing with the second network, the second interface portion including a second interface-related first layer part for

receiving second interface-related first layer messages and a second interface-related second layer part, the second interface-related first layer messages being processed after which second interface-related second layer messages are provided, where the second network is different from the first network and is at least one of the Controller Area Network, the Flexray network, or the Local Interconnect Network” as required by claim 1 and similarly required by claim 20.

For the reasons mentioned above, and as explained more fully below, the Petitioner failed to demonstrate by a preponderance of the evidence that any of the challenged claims of the ‘705 patent are unpatentable.

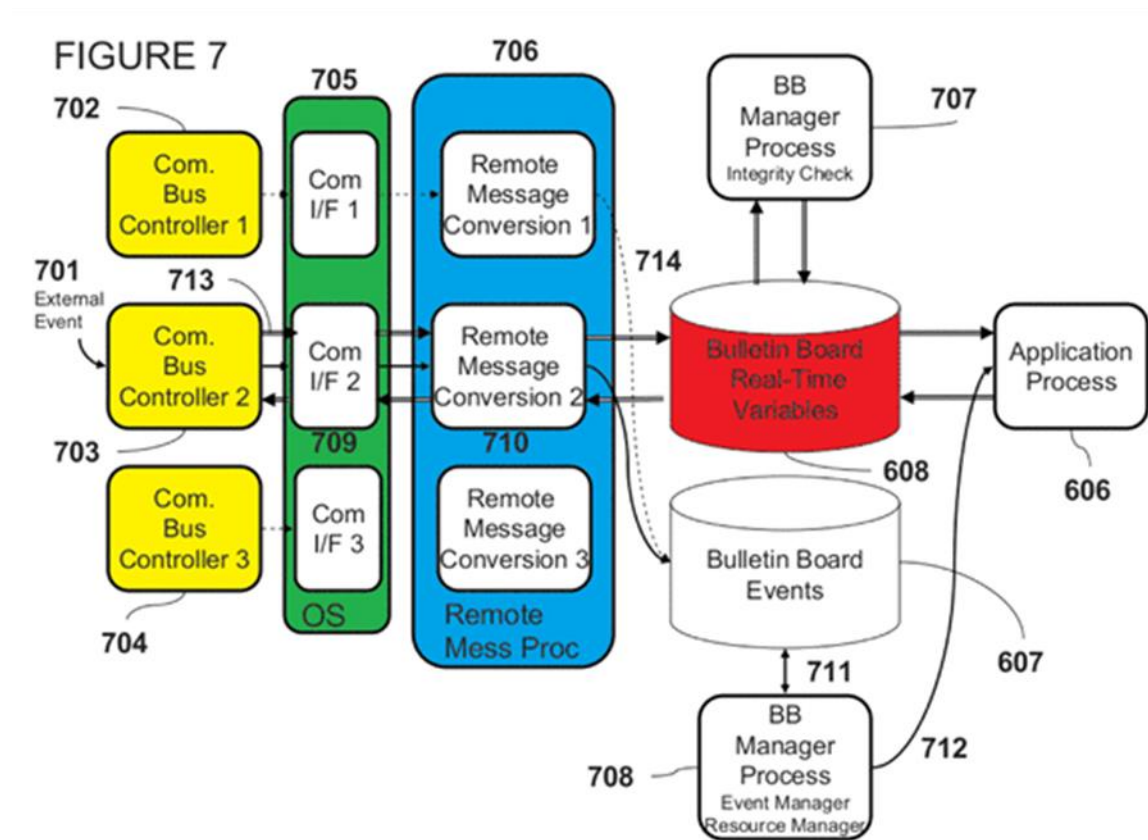
II. THE ‘705 PATENT

A. Technology Background

The ‘705 patent is generally directed towards sharing information in real-time between distributed systems, and specifically distributed control and monitoring systems. *See* Pet. Ex. 1001, Abstract. Such systems can be utilized in a multitude of industries, including “vehicle communication and control systems, real-time monitoring systems, industrial automation and control systems, as well as any other desired system.” Pet. Ex. 1001, col. 1, ll. 22-25.

The disclosed system includes two or more networks, each of which is a Controller Area Network (CAN), a FlexRay Network, or a Local Interconnect Network (LIN). Pet. Ex. 1001, col. 3, ll. 24-33; col. 12, ll. 39-62. Data between

each network is shared using a common “bulletin board” memory. This is illustrated in annotated Figure 7, below, the system involves multiple networks communicating through different network controllers (shown in yellow), associated Operating System interfaces (shown in green), and associated remote message communication processes (shown in blue) in order to interact with a bulletin board (shown in red) that is not hosted on components in either of the networks. See Pet. Ex. 1001, col. 6, l. 33 – col. 7, l. 3.



Each of the multiple networks communicates with the bulletin board through its own interface. The interface includes at least two parts or components. The first

part or component receives data from the associated network, and can include an operating system interface. *See* Pet. Ex. 1001, col. 12, ll. 39-62; *see also* green portion in annotated Figure 7. The second part or component processes that data, and can include the remote message conversion. *See* Pet. Ex. 1001, col. 12, ll. 39-62; *see also* blue portion in annotated Figure 7 (“The associated remote message conversion method 2 (710) extracts the data (e.g. real time variables) from the message PDU and stores the data in the bulletin board (608)”).

This arrangement allows the ‘705 patent to provide real-time sharing of information. “In use, the information is shared, in real-time, among a plurality of heterogeneous processes.” Pet. Ex. 1001, col. 1, ll. 31-34. That is, information from the bulletin board can be delivered to a component on one of the networks, in real-time. As acknowledged by the Petitioner, the ‘705 patent expressly defines “real-time” as “includ[ing] any response time that may be measured in milli- or microseconds, and/or is less than one second.” Pet. at 13; Pet. Ex. 1001, col. 3, ll. 35-38. Thus, the sharing in real-time as described by the ‘705 patent requires the sharing itself, and not simply the computational efforts that are required for the sharing of information to occur, to be accomplished in less than a second, when measuring time in milli- or microseconds has relevance.¹

¹ Patent Owner acknowledges that it is possible to define any length of time in terms of milli- or microseconds. However, just as it is not relevant to describe a

III. SUMMARY OF THE PETITIONER’S PROPOSED GROUNDS FOR REVIEW

For the Board’s convenience, below is a summary of the proposed grounds of review:

Ground 1: Claims 1-6 and 20 are anticipated under §102(a) by U.S. Patent Application Publication No. 2002/0073243 (“Staiger”).

Ground 2: Claims 1-6 and 20 are obvious under §103(a) over Staiger in view of Millsap and Wong.

Ground 3²: [Not instituted] Claims 1-6 and 20 are anticipated under §102(b) over OSEK/VDX version SB3 (“OSEK/VDX”).

Ground 4: Claims 1-6 and 20 are obvious under §103(a) over OSEK/VDX.

Ground 5: Claims 1-6 and 20 are obvious under §103(a) over OSEK/VDX in view of Millsap and Wong.

IV. THE SCOPE AND CONTENT OF THE PRIOR ART

person’s annual salary as a certain quantity of nickels, there is no relevance to describing periods of time longer than a second in terms of milli- or microseconds.

² In its Decision to Institute the PTAB found “that OSEK Binding, OSEK COM, OSEK FTCom, and OSEK NM [were] not collectively a “single prior art reference,” and therefore conclude[d] that Petitioner ha[d] not demonstrated a reasonable likelihood of prevailing on its anticipation challenge of claims 1–6 and 20 over OSEK/VDX.” Institution Decision, Paper 8 at 24.

The Board instituted the *inter partes* review utilizing Petitioner's proposed anticipation and obviousness challenges based upon Staiger, Millsap, Wong, and OSEK/VDX (a combination of OSEK Binding, OSEK COM, OSEK FTCom, and OSEK NM references), all of which are summarized below.

A. Staiger (Ex. 1004).

Staiger discloses “a method for communicating with remote units over at least one data network with at least one dedicated CPU.” Ex. 1004, Abstract. Rather than disclose a layered system and method by which information can be shared by multiple ECUs operating under different protocols and on different networks, Staiger provides only communication between remote units where an ECU receives a message, processes the message and then presents the result for forwarding to a destination unit. Staiger does not “share” information between different ECUs operating on different protocols. Instead, Staiger discloses a central message processing device that only receives, processes and distributes messages. This receiving, processing, and distributing is illustrated in annotated Fig. 2, below. As described by Staiger, the initialization process execution unit 226 (shown in green, below) receives the message and performs some basic steps during the initialization process. The dynamic process execution unit 239 (shown in yellow, below), and specifically the execution tag registry 238 (shown in red, below) for processing the messages during the dynamic process. And finally the

results are sent to the presentation process execution unit 230 (shown in blue, below) to distribute the message.

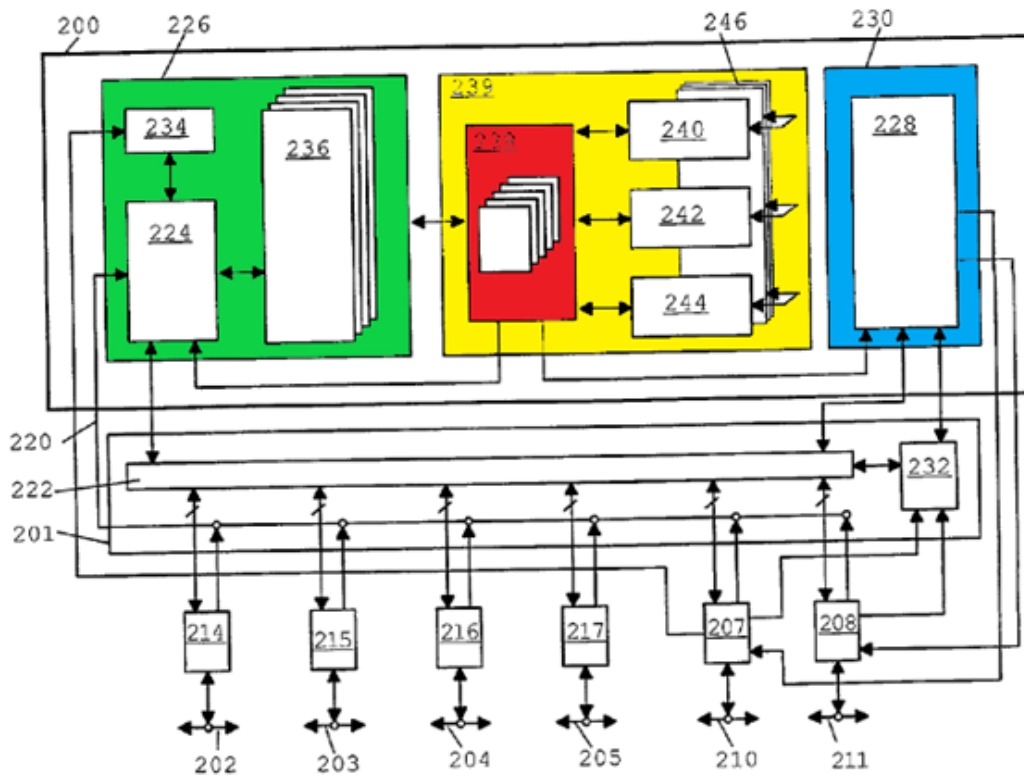


FIG. 2

Thus, Staiger does not disclose receiving data or other information from one network, and then processing that message so that it can be stored and shared with a second network utilizing a second network protocol associated with the second network as required by claim 51. For example, Staiger discloses the concept that the central device can receive CAN messages via CAN-C or CAN-B busses and physical layers, process and distribute them to a final destination. However,

information received via a CAN-B bus, in a CAN-B format using a CAN-B protocol in Staiger cannot be made available as required by the claims to a destination via a CAN-C format using a CAN-C protocol.

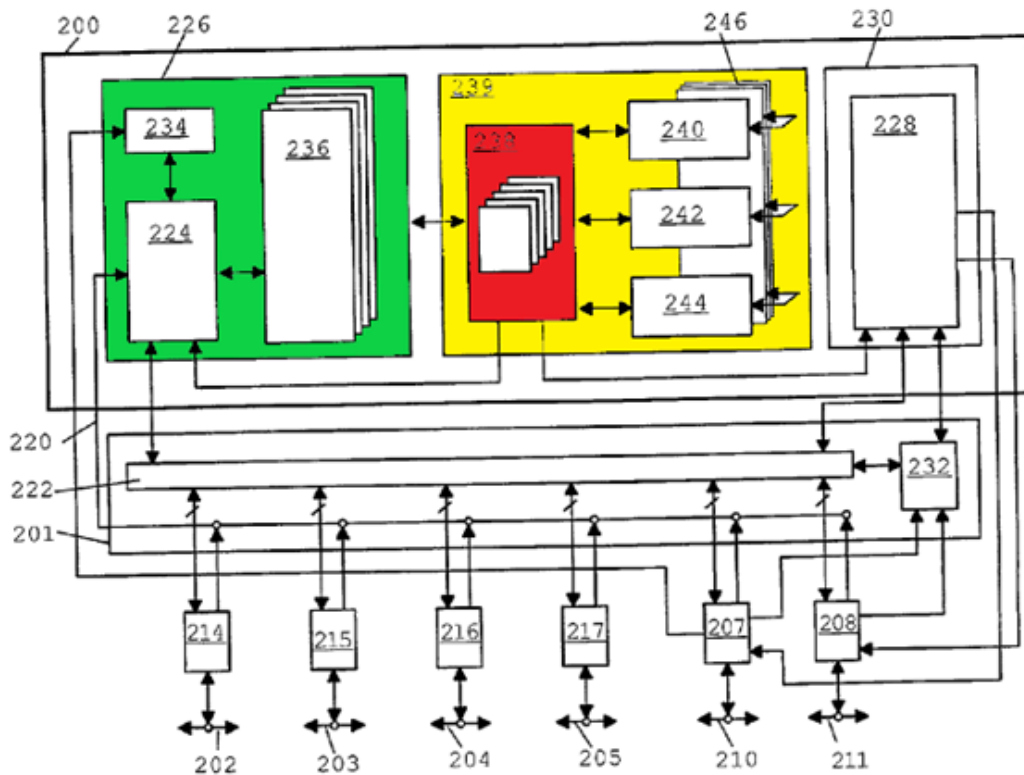


FIG. 2

B. Millsap (Ex. 1015).

Millsap discloses a method for activating ECUs in virtual networks connected via a vehicle bus to “carry[] out a particular control task, such as controlling power windows or automatic headlights.” Ex. 1015, Abstract, col. 2, ll. 37-46. The invention provides the benefit of allowing the network to be in standby

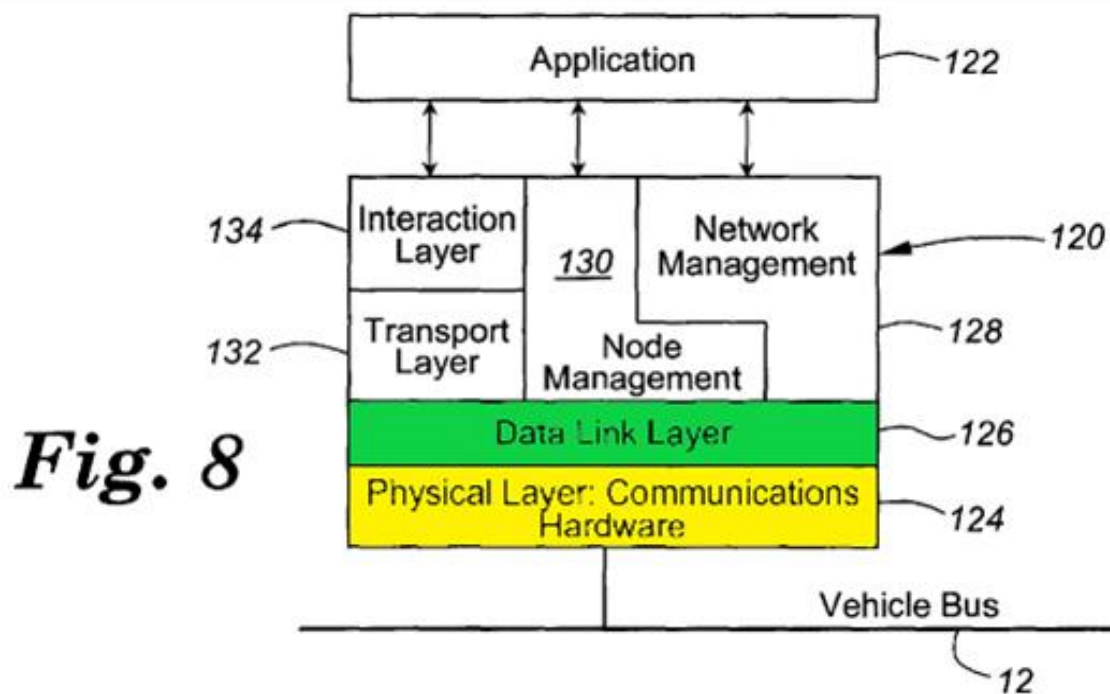
mode and allowing an ECU to activate necessary ECUs for a particular task via “a message identifying the virtual network.” Ex. 1015, Abstract.

Significantly, Millsap does not disclose any CAN, Flexray or LIN network, and, does not disclose any concept of networks operating under different protocols. Specifically, Millsap does not disclose the concept of information utilizing a first network protocol being shared utilizing a second network protocol, where the second network protocol is different than the first network protocol as required by claim 51.

Even in the section from Millsap cited by Petitioner, this concept is not disclosed. Instead, Millsap merely discloses that

FIG. 8 depicts a conceptual layout of a communication kernel 120 that can be used by each of the ECUs in communicating with its respective bus. This communication kernel provides a standardized interface between the bus and the application process 122 being executed by the ECU. It includes both software and physical layers. More specifically, the communication kernel 120 includes a physical layer 124 that provides a conversion of the digital data symbols (1's and 0's) generated by the data link layer 126 into electrical signals transmitted on the bus. The physical layer 124 includes such things as bus transceivers, filtering, and the physical wiring to connect the ECU to the bus.

Exhibit 1015, col. 12, ll. 42-53. An annotated Fig. 8 is shown below, with the physical layer 124 shown in yellow and the data link layer shown in green. The above quote merely discloses a digital-to-analog conversion. Nothing in the above quote, or in the remainder of Millsap, suggests the concept of information utilizing a first network protocol being shared utilizing a second network protocol, where the second network protocol is different than the first network protocol.



C. OSEK/VDX version SB3 (Exs. 1007, 1008, 1009, 1010).

OSEK/VDX is a description of a standard for an open-ended architecture for distributed control units in vehicles. The standard is described, in part, by the disclosures in Exhibits 1007, 1008, 1009, and 1010. This standard was intended to

allow ECUs from different manufacturers to communicate with each other – as noted by Petitioner, “[t]here is an increasing tendency for [ECUs] made by different manufacturers to be networked within vehicles by serial data communication links. Therefore, [standardization] of basic and non-competitive infrastructure in ECUs aims at avoiding the design of unnecessary variants and saving development time. In the scope of the OSEK/VDX co-operation, the Network Management system (NM) provides [standardized] features which ensure the functionality of inter-networking by [standardized] interfaces. The essential task of NM is to ensure the safety and the reliability of a communication network for ECUs.” Petition, p. 18 (citing Ex. 1009, p. 4).

Significantly, OSEK/VDX does not disclose “issuing a storage resource request in connection with a storage resource and determining whether the storage resource is available.” As shown in annotated Fig. 2, below, the standard utilizes a logical ring scheme (shown in red). See Ex. 1009, p. 9. As disclosed, the logical ring arbitration scheme only requires that the nodes just transmit and receive status messages, rather than issuing storage requests.

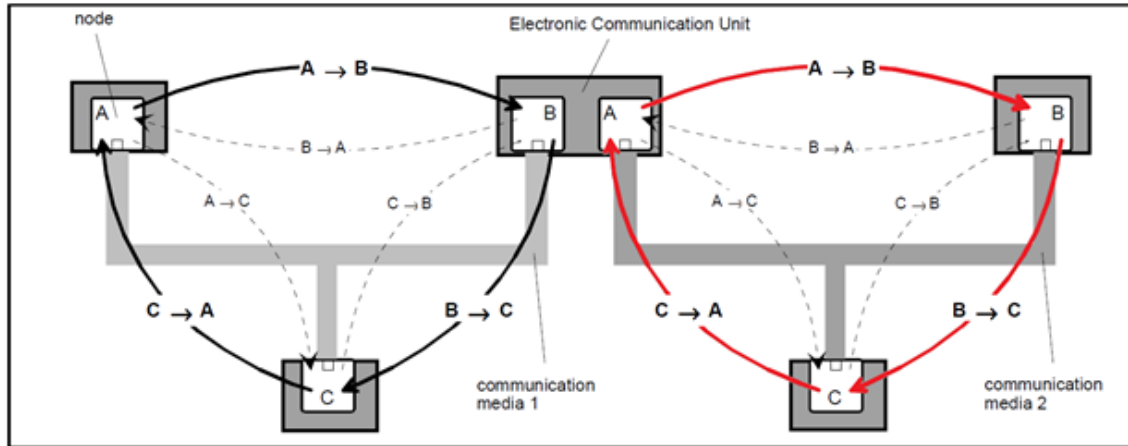


Figure 2 Infrastructure of the NM (logical ring), example with two busses

D. Wong (Ex. 1012).

Wong provides a review of the state of the art in vehicle-based networks as of January 2001, and predictions for the future state. Wong indicates that different networks may co-exist within a vehicle. However, while the claimed system in the ‘705 patent requires the interface between the networks to perform a significant number of functions when sharing information between different networks, Wong merely notes, “one or more gateways will link various network segments.” Ex. 1012, p. 5.

V. CLAIM CONSTRUCTION

A. The Governing Claim Construction Standard.

The broadest reasonable interpretation standard applies in an *inter partes* review of a patent that, like the ‘705 Patent, will not expire prior to the issuance of the Final Written Decision. 37 C.F.R. § 100(b); *Office Patent Trial Practice*

Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).³ Applying the broadest reasonable interpretation, claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of the record. *See, e.g., Wowza Media Sys., LLC v. Adobe Systems Inc.*, IPR2013-00054, Paper No. 12 at 5 (P.T.A.B. Apr. 8, 2013); *Intellectual Ventures Mgmt, LLC, v. Xilinx, Inc.*, IPR2012-00019, Paper No. 33 at 9 (P.T.A.B. February 10, 2014); *see also Hill-Rom Services, Inc. v. Stryker Corporation*, 755 F.3d 1367, 1371 (Fed. Cir. 2014); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313-1317 (Fed. Cir. 2005) (en banc).

“The terms used in the claims bear a heavy presumption that they mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art.” *Texas Digital System, Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202 (Fed. Cir. 2002) (emphasis added) (internal quotation marks omitted) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1362-63 (Fed. Cir. 1999);

³ The question of whether the broadest reasonable interpretation standard is improperly in conflict with traditional principles of claim construction is now before the Supreme Court. Brief for the Petitioner at 26-28, *Oil States Energy Svcs., LLC v. Greene’s Energy Group, LLC*, No. 16-712 (U.S. 2017).

Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 989 (Fed. Cir. 1999); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 986 (Fed. Cir. 1988)). As such, “the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Phillips*, 415 F.3d at 1314 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996); *see also ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003)). In addition, the specification is often “the single best source for claim interpretation.” *Phillips*, 415 F.3d at 1315. Claim terms are to be given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *Id.* at 1313; *Research in Motion v. Wi-Lan*, IPR2013-00126, Paper No. 10 at 7 (P.T.A.B. June 20, 2013). The “appropriate context” to read a claim term includes both the specification and the claim language itself. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). The customary meaning applies unless the specification reveals a special definition given to the claim term by the patentee, in which case the inventor’s lexicography governs. *See Phillips*, 415 F.3d at 1316 (“[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning that it would otherwise possess. In such cases, the inventor’s lexicography governs.”). When the specification sets forth an explicit definition of a term, that definition governs. *Jack Guttman, Inc. v. Kopykake Enterprises, Inc.*, 302 F.3d 1352, 1359-61 (Fed.

Cir. 2002). In addition, a claim preamble may be construed as limiting “if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002), quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999).

Any term not construed below should be given its ordinary and customary meaning as would be understood by one of ordinary skill in the art.

B. Constructions of Claim Terms

1. “real-time”

The term “real time” means “any response time that may be measured in milli- or microseconds, and/or is less than 1 second.” This is the definition of “real-time” provided by the ‘705 Patent.

2. “in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol”

The term “in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol” has three aspects to it. First, the term “sharing” should generally be given its ordinary meaning. The typical dictionary meaning of “sharing” is “to partake of, use, experience, occupy, or enjoy with others; to have in common.” See Merriam-Webster Dictionary,

Exhibit 2003. *See also* Microsoft Computer Dictionary, 3d Edition (1997), Exhibit 2004. In the context of the claims of the '705 Patent, the term has three aspects that are pertinent. First, the plain language of claim 1 requires that the method must be configured for processed first messages to be delivered to the ultimate destination, i.e., the bulletin board or the storage area from which the information can be partaken of, used, experienced or occupied (that is "shared") by the second network. Second, the apparatus must be configured so that the first messages must be "shared" (partaken of, used, experienced or occupied) by the second network. Third, the delivery and the sharing of the first data units must occur within real-time, as "real-time" has been defined above. The limitation "in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol" can only mean that the method has received a first message in a "first network protocol associated with a first network" (element 1.1), has then delivered that "first network message" to storage, where the "first network message" is partaken of, used, experienced or occupied (that is "shared") with a second network by way of a second network protocol which is different from the first network protocol, and that the entire process is conducted "in milli- or microseconds, and/or is less than 1 second."

The above construction is inherent in the plain language of the claim. Pet.

Ex. 1001, col. 12, ll. 33-35. The above construction is also supported by the specification. For example, the specification notes that

- a. “In use, the information is shared, in real-time, among a plurality of heterogeneous processes” (‘705 Patent Col. 1 ll. 30-33).
- b. “ECUs (102) typically share information with devices that are connected on the same physical multiplexing system. This method of information sharing is called horizontal information sharing in a hierarchical system. Gateways (101,103,104) link multiple physical multiplexing systems together. In the context of the present description, such information may include data, a signal, and/or anything else capable of being stored and shared” (‘705 Patent Col. 3 ll. 51-59);
- c. “By placing local information in a shared memory (local bulletin board), it can be used by multiple processes on this processor node. A group bulletin board allows devices on a sub-network to share information with a minimum of network traffic” (‘705 Patent Col. 6, ll. 27-31.

- d. “The approach uses a common, or shared storage system that is connected to all of the system networks through network interfaces” (‘705 Patent Col. 6, ll. 27-31).
- e. “The information sharing mechanism relies on a bulletin board that may include a small database operating under hard real-time conditions with minimal delays, communication latency, and jitter. The embedded database or bulletin board isolates a real-time application in a Electronic Control Unit (ECU) from various other real time applications and from input output signals in the same module (local information sharing), from event-triggered communications with applications in other modules, and from time-triggered communications with applications in other modules” (‘705 Patent Col. 10 line 67- Col 11 line 9).
- f. “The present embodiment addresses the shortcomings of traditional computer networks with following enhancements: *** The bulletin board is a multi-mode storage that can be thought of an extension to shared memory that can be accessed by local and remote processes at attached networks. *** The concept of a direct-access bulletin board that does not require a network layer translation of messages on each node of the network. Even though this approach restricts the reach of

each node to only adjacent nodes and the next gateway, this still allows cross-network variable sharing though vertical real-time replication of data. *** If the network is booted in the normal operating mode, all processors execute the existing code and only allow data sharing through the bulletin boards” (‘705 Patent Col. 11, ll. 20-58).

3. “storage resource manager”

The term “storage resource manager” means a “hardware or software that controls storage of information in accordance with the algorithm of Figure 10.” The term “storage resource manager” does not have any recognized meaning in the field, and, thus, a skilled artisan would look to the specification for the proper construction. The specification states that “FIG. 10 describes the bulletin board store procedure (804) in more detail. Before new data can be stored in the bulletin board, the procedure has to request the access right to the common resource, a section of the non-volatile or volatile memory, from the operating system (1001). This is called explicit resource management.” (‘705 Patent at 8:13-18).

The above construction comports with the preceding limitations 1.1 through 1.5, because all the elements of limitations 1.1 through 1.5 are reflected in the Figure 10 algorithm.

Petitioner has asserted that “Consistent with its broadest reasonable interpretation, the ’705 patent describes this term as hardware or software that controls interaction with the storage resource. See Ex. 1001, 6:11-21; Ex. 1003, ¶58.”

Petitioner’s view is incorrect. Petitioner cites an excerpt from the ’705 Patent that discusses various communication processes and “the bulletin manager (602),” but does not actually say what is “the bulletin manager (602)” and does not refer to a “storage resource manager.” Figure 10, on the other hand, is specifically entitled “Bulletin Board **Store** Mechanism,” and thus directly corresponds to the claim term “storage resource manager.”

4. “schedule”

The term “schedule” is a common term that the Patent appears to use in its ordinary form. Petitioner states:

Sharing information “according to a schedule” should be given its broadest reasonable interpretation. Merriam-Webster’s Collegiate Dictionary defines “schedule” in the context of a program as “a procedural plan that indicates ***the time and sequence of each operation.***” Ex. 1016, 5 (emphasis added). Thus, consistent with its broadest reasonable interpretation, the term should be construed as “according to a time and sequence of operation,” which would include “periodically or at set times.” Ex. 1003, ¶59.

Petition at p. 14. The term “schedule” is properly defined here as “a procedural plan that indicates the time and sequence of each operation.” That should be the construction.

After properly stating the ordinary meaning of the term “schedule,” however, Petitioner thereafter states that “schedule” means “according to a time and sequence of operation, which would include periodically or at set times.” *Id.* Petitioner’s addition appears consistent with the dictionary definition proposed by Petitioner, but it is preferable to retain the accepted dictionary definition and not create alternative non-standard definitions, particularly when they are not supported by the patent specification or any other authority.

“Schedule” should be construed as “a procedural plan that indicates the time and sequence of each operation,” which is exactly the dictionary definition provided by Petitioner, and which is consistent with specification.

VI. THE PERSON OF ORDINARY SKILL IN THE ART

Considering the types of problems encountered in the art, the prior art solutions to those problems and the high sophistication of the technology, a person of ordinary skill in the art of the ‘705 Patent at the time of the invention would have had at least the qualifications of or equivalent to either a master’s degree in electrical engineering, computer science, or computer engineering with course work or research in embedded networking technologies or an undergraduate degree

in electrical engineering, computer science, or computer engineering with at least two years of relevant work experience in industry.

VII. LEGAL STANDARDS

A. ANTICIPATION

The Federal Circuit has held that unless a reference discloses within the four corners of the document not only all the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot anticipate under 35 U.S.C. § 102 (pre-AIA). *Net Money, Inc., v. Verisign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008); *see also Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). Not only must the allegedly anticipating disclosure be *arranged as in the claim*, it must also be *clear and precise*. As the Federal Circuit recently explained, “it has long been understood that ambiguous references do not, as a matter of law, anticipate a claim.” *Wasica Fin. GmbH v. Cont'l Auto. Sys.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017).

Inherent anticipation exists where the prior art reference does not expressly describe an element of the claim, but that element would be inherent in what is explicitly disclosed. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999).

“Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not

sufficient.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (emphasis added) (citations omitted).

B. NON-OBVIOUSNESS

As set forth by the Supreme Court, the question of non-obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 399 (2007) (“While the sequence of these questions might be reordered in any particular case, the [Graham] factors define the controlling inquiry.”). A petitioner seeking to invalidate a patent as obvious must demonstrate that a “skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *OSRAM Sylvania, Inc. v. Am. Induction Techs., Inc.*, 701 F.3d 698, 706 (Fed. Cir. 2012). The Petition’s evidence must also address every limitation of every challenged claim.

“The obviousness inquiry entails consideration of whether a person of ordinary skill in the art ‘would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and ... would have had a

reasonable expectation of success in doing so.” *Insite Vision Inc. v. Sandoz, Inc.*, 783 F.3d 853, 859 (Fed. Cir. 2015) (citing and quoting *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009), which quotes *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)).

“In considering motivation in the obviousness analysis, the problem examined is not the specific problem solved by the invention. Defining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness. ... [A]n overly narrow “statement of the problem can represent a form of prohibited reliance on hindsight, because often the inventive contribution lies in defining the problem in a new revelatory way.” *Insite Vision* at 859 (citing and quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 881 (Fed. Cir. 1998); *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1377 (Fed. Cir. 2012)).

“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 2016 WL 3344093 at *6 (Fed. Cir. 2016) (quoting *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994)); see also *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 1359 (Fed. Cir. 1998).

VIII. GROUND 1: PETITIONER FAILS TO SHOW THAT CLAIMS 1-6 AND 20 ARE ANTICIPATED BY STAIGER.

Petitioner's challenge to claims 1-6 and 20 of the '705 Patent, alleging anticipation of the claims by Staiger, should be denied entirely. To establish anticipation of a patent claim, Petitioner must first demonstrate that a reference discloses all the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim. As will be detailed below, the Staiger reference fails to disclose at least one critical element of the '705 Patent claims, and this element is required by every claim challenged in Ground 1. Thus, Petitioner's challenge on Ground 1 to claims 1-6 and 20 of the '705 Patent fails entirely.

It is useful to generally point out that the distinction between the prior art and the claimed invention is not a mere matter of some obvious minor improvement being missing or, at least, undisclosed in the prior art. There is a huge gap between Petitioner's key reference, Staiger, and the claimed invention. The invention provided a layered system and method for automotive electronic control units (ECUs) by which data units or other information can be shared by multiple ECUs operating under different protocols and on different networks, by the architecture of standardized interfaces that share information produced by different protocols on different networks.

Staiger does not disclose such an architecture. Rather, Staiger provides only communication between remote units over one or more data networks, where an ECU receives a message, processes the message and then presents the result of the message processing for forwarding to a destination unit. The word “sharing” or its derivatives is entirely missing from Staiger, because Staiger does not “share” information between different ECUs operating on different protocols. Staiger only distributes information, but does not convert the message to a format that can be recognized and used by different ECUs using different protocols. Thus, Staiger discloses a central message processing device which has a first unit to receive a message from a network and determine the kind of treatment to be performed with the received message, a second unit for performing the determined treatment, and a third unit for “presenting the result of the message processing to be forwarded to a destination unit.” Staiger’s central device acts merely to receive, process and distribute messages. Staiger does not disclose the heart of the claimed invention, which is to receive data or other information from one network, and then process that message so that it can be shared with a second network utilizing a second network protocol associated with the second network. Thus, for example, Staiger discloses the concept that the central device can receive CAN messages via CAN-C or CAN-B busses and physical layers, process and distribute them to a final destination. However, information received via a CAN-B bus, using a CAN-B

protocol in Staiger cannot be made available to a destination via a CAN-C protocol. Claim 1 is directed specifically to providing a solution that a message using a CAN-B protocol can be made available to a node regardless of the format or protocol of the devices.

A. Claim 1

Patent Owner's arguments are first directed to Petitioner's challenge of the representative independent claim 1, the elements of which are listed below:

1.0	A method for sharing information, the method comprising:
1.1	allowing receipt of information associated with a message, utilizing a first network protocol associated with a first network;
1.2	causing a determination as to whether a storage resource is available;
1.3	in the event the storage resource is not available, determining whether a timeout has been reached and causing a re-request in connection with the storage resource if the timeout has not been reached;
1.4	in the event the timeout has been reached, causing an error notification to be sent;
1.5	in the event the storage resource is available, causing storage of the information utilizing the storage resource; and
1.6	causing the information to be shared by:
1.7	in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol;
1.8	wherein the method is associated with an electronic control unit with at least one gateway function, and a plurality of interface portions including:
1.9	a first interface portion for interfacing with the first network, the first interface portion including a first interface-related first layer part for receiving first interface-related first layer messages and a first interface-related second layer part, the first interface-related first layer messages being processed after which

	first interface-related second layer messages are provided, where the first network is at least one of a Controller Area Network, a Flexray network, or a Local Interconnect Network;
1.10	and a second interface portion for interfacing with the second network, the second interface portion including a second interface-related first layer part for receiving second interface-related first layer messages and a second interface-related second layer part, the second interface-related first layer messages being processed after which second interface-related second layer messages are provided, where the second network is different from the first network and is at least one of the Controller Area Network, the Flexray network, or the Local Interconnect Network.

Element 1.7: in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol...

Staiger does not disclose limitation 1.7. Indeed, Petitioner has not pointed to anything in Staiger that corresponds to the claim term. Petitioner's sole reference in attempting to show correspondence of Staiger to limitation 1.7 is that:

Staiger discloses receiving messages from "one of the CPUs 207 and 208" and broadcasting the message "to several CAN busses 202 to 205 identically." Id., ¶51.

Petition at p. 35. Thus, Petitioner has quoted the limitation and asserted that ¶51 of Staiger discloses that limitation. The paragraph to which Petitioner cites, however, does not correspond to the limitation. Rather, ¶51 of Staiger refers to multiplexing, and states:

[0051] The switchboard 201 is a multiplexing scheme controlled either by one of the CPUs 207 and 208 or the intercommunication preprocessor 200. This allows the CPUs 207 and 208 to use the functionality of the intercommunication preprocessor 200. For example, a message generated by one of the CPUs 207 and 208 has to be broadcasted to several CAN busses 202 to 205 identically. In this case, the message is multiplexed by the switchboard 201 to the intercommunication preprocessor 200, then, the intercommunication preprocessor 200 processes the message and initiates immediate distribution. This procedure significantly saves time, since the intercommunication preprocessor 200, specialized to operate this tasks *{sic}*, will require only a fraction of processing time in comparison to a master CPU formed by one of the CPUs 207 and 208. Furthermore, the master CPU only has to execute one single message operation, in case the message needs to be computed before forwarding, which saves processing time as well.

Pet. Ex. 1001, ¶51.

The concept of “multiplexing” is well known in computing. In telecommunications and computer networks, multiplexing means that multiple signals are transmitted simultaneously over a single channel, or vice versa. *See, e.g.,* Microsoft Computer Dictionary, 3d Edition (1997), Exhibit 2004; *see also*

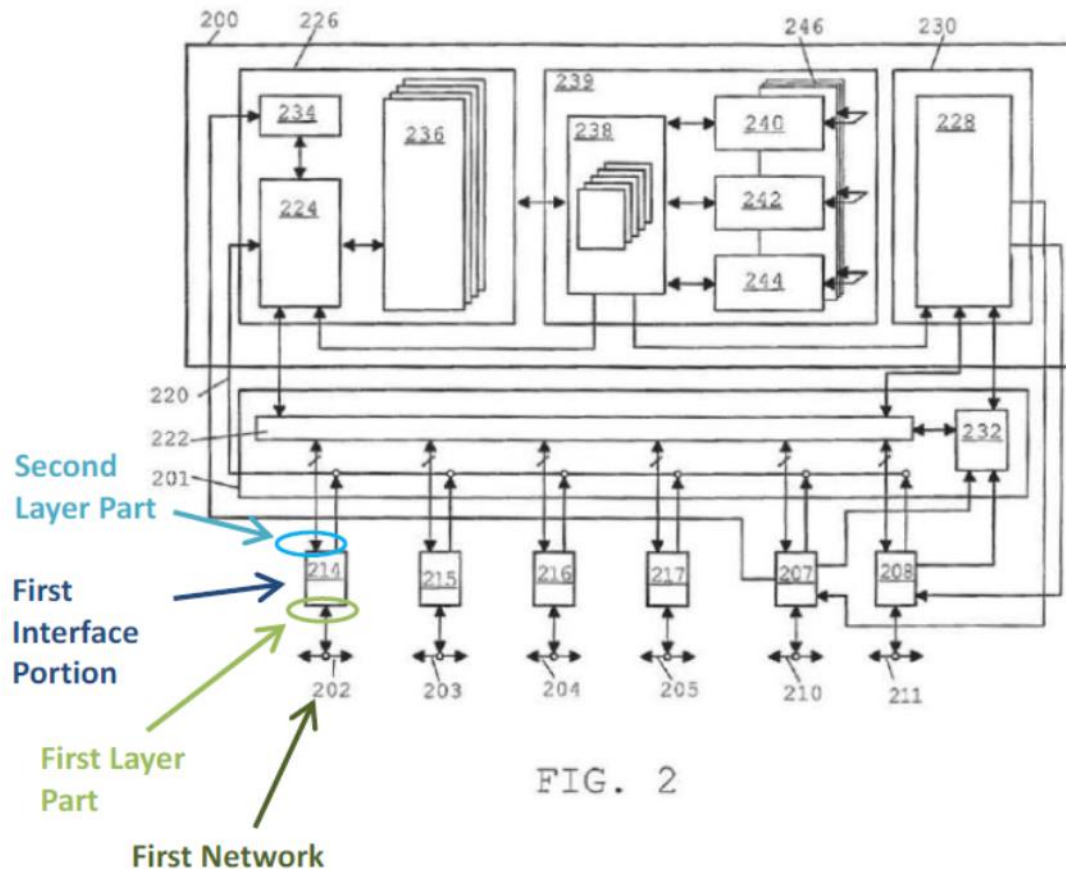
Webster's New World Computer dictionary, 10th Edition (2003), Exhibit 2005.

The description in Staiger 51 is a type of multiplexing – where the switchboard (201) is a multiplexer for selecting multiple outputs from a single input. Ex. 2001, ¶¶39-40.

Staiger ¶51 does not relate to limitation 1.7. It will be recalled that the Claim starts with “receipt of information associated with a message, utilizing a first network protocol associated with a first network” (limitation 1.1). Only after that, the method requires “causing storage of the information utilizing the storage resource” (limitation 1.5). It is then that the method further requires that “the information” be shared by “utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol” (limitation 1.7). Petitioner has not pointed to anything in Staiger that discloses a method where first information stored in a first format in the storage resource is shared by a message protocol that is different than the first protocol. Ex. 2001, ¶¶41-42.

1.9 a first interface portion for interfacing with the first network, the first interface portion including a first interface-related first layer part for receiving first interface-related first layer messages and a first interface-related second layer part, the first interface-related first layer messages being processed after which first interface-related second layer messages are provided ...;

Staiger does not meet limitation 1.9. Petitioner's argument is based on the annotated version of Staiger Figure 2:



Petitioner then argues that Staiger's CAN bus adapters 214-217 constitute a "first interface portion for interfacing with the first network." Pet. at 36. It is correct that CAN bus adapters 214-217 can be considered "a first interface portion for interfacing with the first network, the first interface portion including a first

interface-related first layer part for receiving first interface-related first layer messages.” Ex. 2001, ¶45.

However, limitation 1.9 also still requires “a first interface-related second layer part, the first interface-related first layer messages being processed after which first interface-related second layer messages are provided.” Petitioners then argue that this limitation is met, because

[b]us adapters 214-217 also interface to multiplexer 222, which forms part of switchboard 201 (i.e., “first interface-related second layer part”). *Id.*, ¶¶38, 50. Switchboard 201, including multiplexer 222, provides connections to control engine 224 of the IPP for the messages. *Id.*, ¶39. That is, the bus messages from the physical layer network (i.e., “first interface-related first layer messages”) are received and sent through multiplexer 222 to control engine 224 of the IPP (i.e., “processed after which first interface-related second layer messages are provided”). *Id.*, ¶38; Ex. 1003, ¶114.

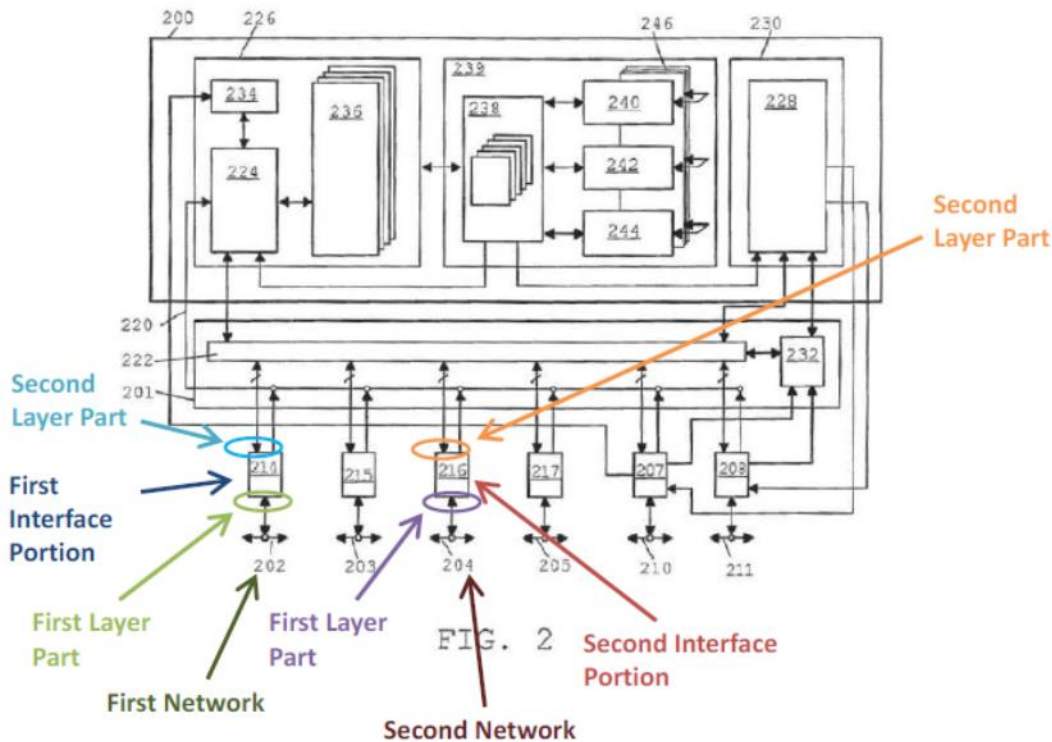
Pet. at 37.

Accepting Petitioner’s argument, Petitioner still has not pointed to anything that shows a “second layer part,” where the first layer messages are “processed” to provide “second layer messages.” Staiger does process information, but it is only to convey the information by way of the multiplexer. Staiger does not process the information to provide “second layer messages.” Ex. 2001, ¶48.

Moreover, the “second layer messages are, of course, the messages that have to comport with limitation 1.7 – i.e., messages providing “the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol.” Thus, even if Staiger somehow “processed” the first layer messages, Staiger certainly does not process the messages to comport with limitation 1.7. Ex. 2001, ¶48.

1.10 and a second interface portion for interfacing with the second network, the second interface portion including a second interface-related first layer part for receiving second interface-related first layer messages and a second interface-related second layer part, the second interface-related first layer messages being processed after which second interface-related second layer messages are provided, where the second network is different from the first

Staiger does not meet limitation 1.10. Petitioner’s argument is based on another annotated version of Staiger Figure 2:



Petitioner then repeats its argument of limitation 1.9, but substituting a “second interface” for the “first interface.” Petitioner’s argument fails for the same reason as it failed as to limitation 1.9. Even if we assume that CAN-B is a different protocol than CAN-C, as argued by Petitioner, Petitioner still has not pointed to anything that shows a “second layer part,” where the first layer messages are “processed” to provide “second interface-related first layer messages” “processed after which second interface-related second layer messages are provided.” Rather, as was true with respect to limitation 1.9, Staiger’s purported “second interface-related first layer messages” are never “processed” and do not provide “second interface-related second layer messages.” Again,

Staiger does process information, but it is only to convey the information by way of the multiplexer. Staiger does not process the information to provide “second layer messages.” Ex. 2001, ¶52.

It is stressed that these are critical distinctions, because without the processing of the first-layer messages to provide the second-layer messages, it is not possible to share the messages between systems using different protocols, which is a critical point of the patented invention. Ex. 2001, ¶53.

B. Claims 2-6

Claims 2-6 are dependent from claim 1, and require an addition of various other elements. Petitioner has not demonstrated that Staiger meets the limitations of claim 1, and, thus, claims 2-6 are not rendered unpatentable.

C. Claim 20

Petitioner states that “Claim 20 is very similar to claim 1,” and that the “only differences are that the preamble recites a ‘system’ that includes a ‘processor’ and ‘memory’ that stores ‘logic’ for performing the same method as claim 1.” Pet. at 44.

The same distinctions drawn between Staiger and the limitations of claim 1 apply here.

IX. GROUND 2: PETITIONER FAILS TO SHOW THAT CLAIMS 1-6 AND 20 ARE OBVIOUS OVER STAIGER IN VIEW OF MILLSAP AND WONG

Petitioner's challenge to claims 1-6 and 20 of the '705 Patent, alleging obviousness of the claims over Staiger, Millsap, and Wong should be denied. To establish a *prima facie* case of obviousness, Petitioner must first demonstrate that every element of a challenged patent claim is disclosed in the proffered prior art. Claims 1–6 and 20 are not unpatentable over Staiger, Millsap, and Wong on grounds of obviousness. Petitioner relies entirely on Petitioner's analysis of Staiger, which was discussed above. Petitioner relies on Millsap and Wong to disclose automobile gateway ECUs connected to multiple networks for allegedly passing messages to disparate networks.

A. Claims 1 and 20

Petitioner discusses Independent Claims 1 and 20 simultaneously, owing to their similarity. The following argument applies to both Claims 1 and 20. As demonstrated below, the limitations that are missing in Staiger are not found in Millsap or Wong.

Element 1.7: in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol...

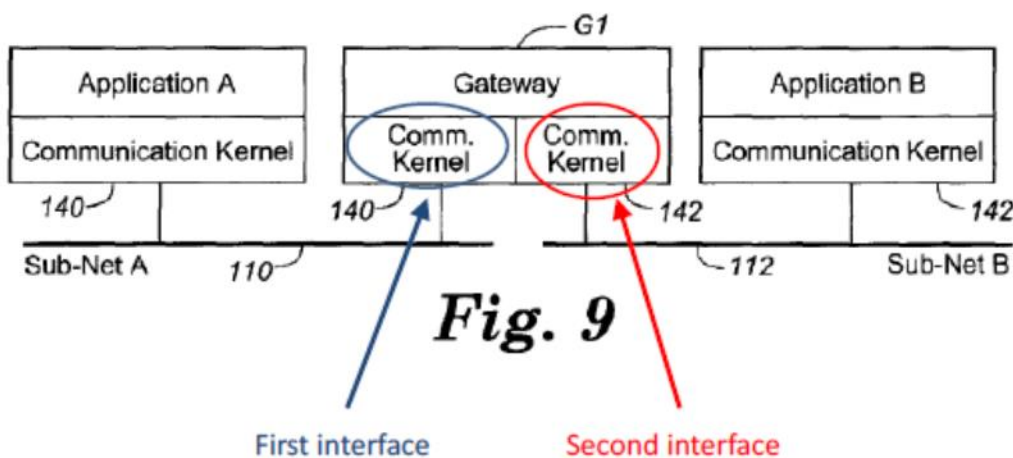
Neither Millsap nor Wong discloses limitation 1.7, which is missing in Staiger. Indeed, Petitioner has not discussed Millsap or Wong with respect to

limitation 1.7. Therefore, the prior art asserted under Ground 2 fails to show unpatentability.

1.9 a first interface portion for interfacing with the first network, the first interface portion including a first interface-related first layer part for receiving first interface-related first layer messages and a first interface-related second layer part, the first interface-related first layer messages being processed after which first interface-related second layer messages are provided ...;

Neither Millsap nor Wong discloses limitation 1.9, which is missing in Staiger.

Petitioner's argument is based on the annotated version of Millsap's Figure 9:



Petitioner then argues that “The gateway transfers messages between the busses using communication kernels,” and that “each communication kernel comprises software and hardware layers.” Pet. at 50. Petitioner further argues that

When transmitting, “physical layer 124 . . . provides . . . conversion of the digital data symbols (1’s and 0’s) generated by the data link layer 126 into electrical signals transmitted on the bus.” *Id.*, 12:48-51.

Therefore, physical layer 124 processes the digital data before passing it to the data link layer when receiving a message. Ex. 1003, ¶144.

Thus, Millsap teaches “first interface-related first layer messages being processed after which first interface-related second layer messages are provided.” *Id.*

Pet. at 51.

Preliminarily, Millsap is entirely unrelated to the invention claimed in the Patent. Millsap’s Abstract states that Millsap discloses a solution for activating the specific virtual ECU networks in a vehicle “used in carrying out a particular control task, such as controlling power windows or automatic headlights.” The system also allows such networks to be placed in quiescent standby or active modes. “An ECU can activate one of the virtual networks by transmitting a wake-up signal followed by a message identifying the virtual network.” Millsap does not disclose any CAN, Flexray or LIN network, and, does not disclose any concept of networks operating under different protocols. Ex. 2001, ¶63.

Millsap does not disclose limitation 1.9, because Millsap does not disclose “a first interface-related second layer part, the first interface-related first layer messages being processed after which first interface-related second layer messages are provided.” Ex. 2001, ¶64.

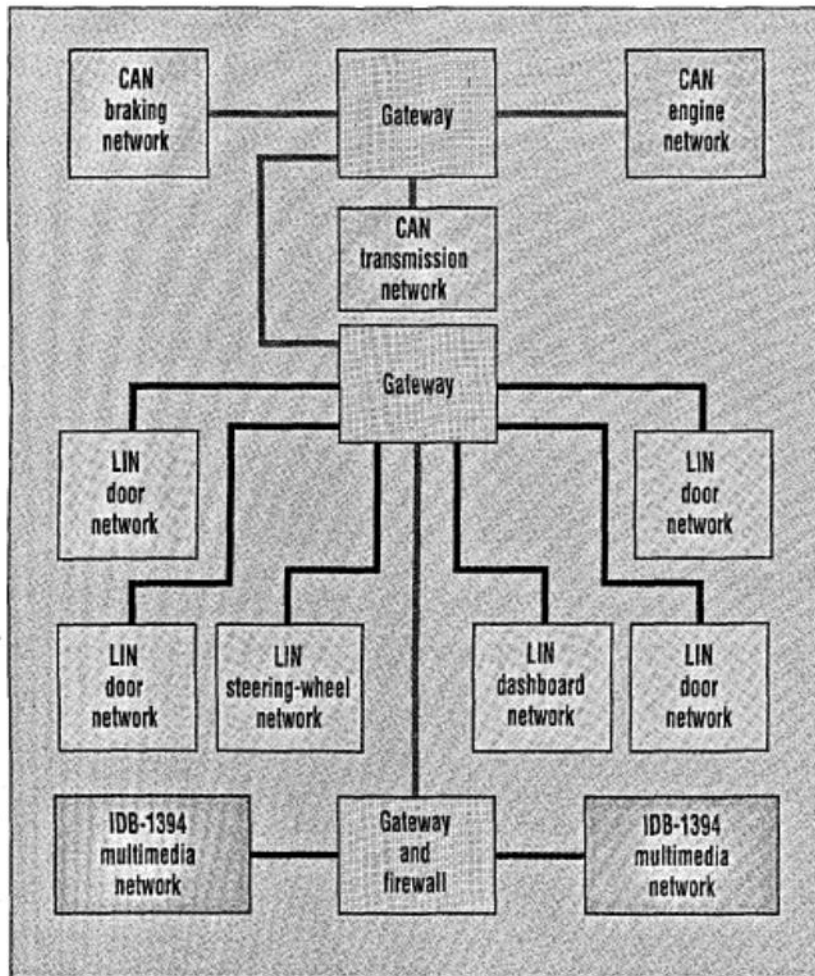
Petitioner argues that Millsap meets this limitation because Millsap discloses a typical digital-to-analog converter: “When transmitting, physical layer 124 . . . provides . . . conversion of the digital data symbols (1’s and 0’s) generated by the data link layer 126 into electrical signals transmitted on the bus.” Pet. at 51. Petitioner’s argument fails, because a digital-to-analog converter does not provide a first interface-related second layer message. Ex. 2001, ¶65.

Moreover, even if one accepted that a digital-to-analog converter provides a first interface-related second layer message⁴, Petitioner still has not shown the message comports with limitation 1.7 -- i.e., that the messages provide “the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol.” Thus, even if Millsap somehow “processed” the first layer

⁴ Merely converting data to voltage levels, which represent 0s and 1s, cannot possibly be considered a different type of message. If that’s the case, the ‘705 patent actually has a third layer of messaging since the data must obviously be converted to analog format for transmitting across the wire.

messages, Millsap fails, as did Staiger, to demonstrate that the messages comport with limitation 1.7. Ex. 2001, ¶66.

Petitioner cites Wong, Pet.Ex. 1012, because “Wong discloses the use of CAN, LIN, and FlexRay with automotive ECUs.” Pet. at pp. 15, 25, 52-53. Wong is not an enabling disclosure. Wong is nothing more than a general discussion, lacking any technical analyses, about what car companies are planning for the future. Ex. 2001, ¶67. Thus, Petitioner points to Wong’s Figure 1:



1. The vehicle of the future will contain a variety of networks tied together primarily for management and diagnostic support. Some network segments will interact with each other for a particular application like braking. One or more gateways will link various network segments. Firewalls will be needed between critical and noncritical network segments.

However, that Figure 1 is nothing more than boxes linked by lines, without any technical discussion, and which is captioned as a hypothetical future concept.

Moreover, even as a hypothetical future concept, Wong, like Staiger and Millsap, fails to disclose what is the heart of the claimed invention of the Patent, which is that information can be provided in one format or protocol, and then the

information can be made available to ECUs that are operating under a different format or protocol. Accepting Petitioner's arguments, even if the prior art was enabling, would show only that an ECU can include a gateway that that may include a CAN, LIN and/or Flexray. The prior art does not even contemplate having the different networks share the information that those networks convey as required by limitation 1.7. See Ex. 2001, ¶68.

1.10 and a second interface portion for interfacing with the second network, the second interface portion including a second interface-related first layer part for receiving second interface-related first layer messages and a second interface-related second layer part, the second interface-related first layer messages being processed after which second interface-related second layer messages are provided, where the second network is different from the first

Neither Millsap nor Wong discloses limitation 1.10, which is missing in Staiger. Petitioner then repeats its argument of limitation 1.9. Petitioner's argument fails for the same reason as it failed as to limitation 1.9. See Ex. 2001, ¶¶69-70.

B. Claims 2-6

Claims 2-6 are dependent from claim 1, and requires an addition of various other elements. Petitioner has not demonstrated that the combination of Staiger,

Millsap and Wong meets the limitations of claim 1, and, thus, claims 2-6 are not rendered unpatentable. Ex. 2001, ¶71.

X. GROUND 4: PETITIONER FAILS TO SHOW THAT CLAIMS 1-6 AND 20 ARE OBVIOUS OVER OSEK/VDX

Claims 1-6 and 20 are not unpatentable for obviousness over OSEK Binding, OSEK COM, OSEK FTCom, and OSEK NM (“Ground 3”). As demonstrated below, the combination of OSEK Binding, OSEK COM, OSEK FTCom, and OSEK NM does not disclose all the limitations of Claim 1 and its dependent claims.

Petitioner argues that the OSEK Network Management (NM) structure, which uses a “logical ring” communication sequence, is analogous to the invention of the ‘705 Patent and discloses in particular several memory-related limitations. However, Petitioner’s application of the OSEK NM to the invention of the ‘705 Patent is awkward and ultimately unworkable. The claimed invention of the ‘705 Patent are directed to a “bulletin board” shared memory located on an ECU which contains two or more network interfaces. The OSEK references, on the other hand, describe nodes on a network which transmit and receive periodic status messages in sequence. Each node contains a data buffer incidentally necessary to the receipt and transmission of messages, which Petitioner analogizes to the shared memory of the ‘705 Patent. But, as further explained below, the status messages are not “storage requests,” and the alleged “shared memory” is not located in the same

ECU that generates the alleged “request.” Moreover, the “storage resource” to which Petitioner points is located wholly within a single network, so its contents are not “shared” with a second network. Ex. 2001, ¶74.

A. Claim 1

Element 1.2: causing a determination as to whether a storage resource is available ...

OSEK does not disclose limitation 1.2. Petitioner’s argument that OSEK/VDX discloses claim limitation 1.2 is as follows:

For example, OSEK/VDX describes determining whether nodes in a network are present and able to transfer messages. *Id.*, 9-10 (“A monitoring node is able to distinguish 2 states of a monitored node. [N]ode present . . . node absent.”); see also *id.*, 9 (“Receive ring message[:] Interpretation as transmitter specific alive signal and [synchronization] to initiate transmission of own NM message according to the logical ring algorithm.”). Each node in the network has a “data buffer” (i.e., a “storage resource”), and each node “is actively monitored by every other node in the network” to determine whether another node, and consequently the storage resource, is available.

Petition at pp. 58-59.

In OSEK, transmission of a status message is a signal that the *transmitting node* – not the node receiving the status message—is “alive” on the network. Nodes in the logical ring therefore determine the status of other network nodes based on

messages **received from** them, not **transmitted to** them. Unless there are only two nodes on a given network, in normal operation a “monitoring” node will never receive a response to a network message directly back from a node to which it transmits, because there will be at least one more node present in the ring sequence, interposed in the return path. Ex. 2001, ¶77; see Pet. at 52, Fig. 2:

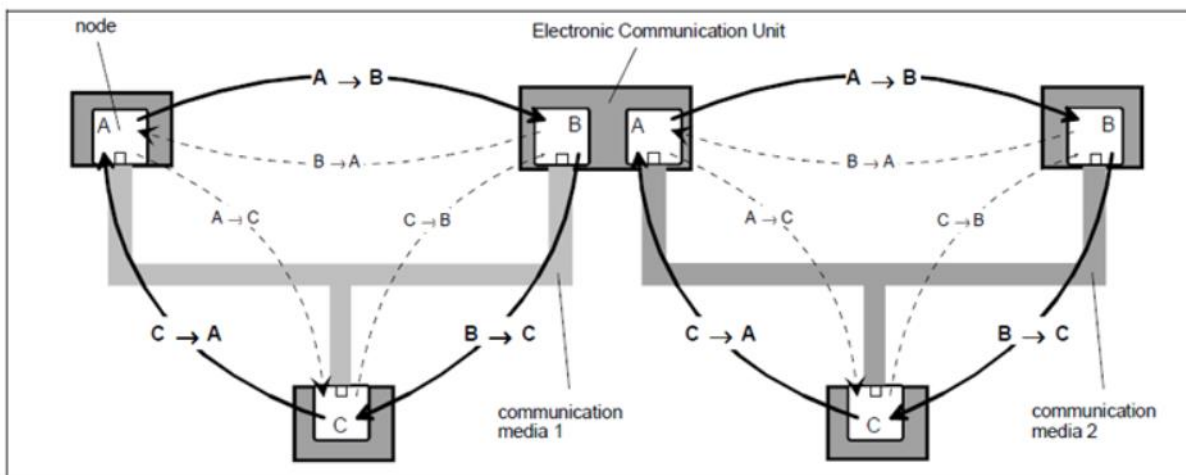


Figure 2 Infrastructure of the NM (logical ring), example with two busses

Thus, any node on the ring does not “cause” a determination as to the availability of any other node; rather, it can only be alerted to the status of another node by that node itself. Moreover, Petitioner acknowledges that the availability of the buffer in a node is not determined explicitly – it is assumed based on the presence of the node as “alive” on the logical ring. OSEK does not disclose “causing a determination as to whether a storage resource is available.” Ex. 2001, ¶77.

Element 1.3: in the event the storage resource is not available, determining whether a timeout has been reached and causing a re-request in connection with the storage resource if the timeout has not been reached ...

OSEK does not disclose limitation 1.3. Petitioner's argument that OSEK/VDX discloses claim limitation 1.3 is as follows:

When operating in normal mode, each node determines that another node (i.e., 'storage resource') is 'alive' and available by receiving any message from another node following the algorithm as shown in OSEK NM FIG. 32." *Id.* (citing Pet. Ex. 1009 at 8-10, 49). Thus "OSEK/VDX discloses receiving periodic messages from nodes on the network indicating that the node is available and able to store data.

Pet. at 60. Petitioner then continues:

When a node does not receive a message from another node within a specified timeframe (e.g., T_{Typ} and/or T_{Max}), the latter is determined to be unavailable. *Id.*, 9-10.

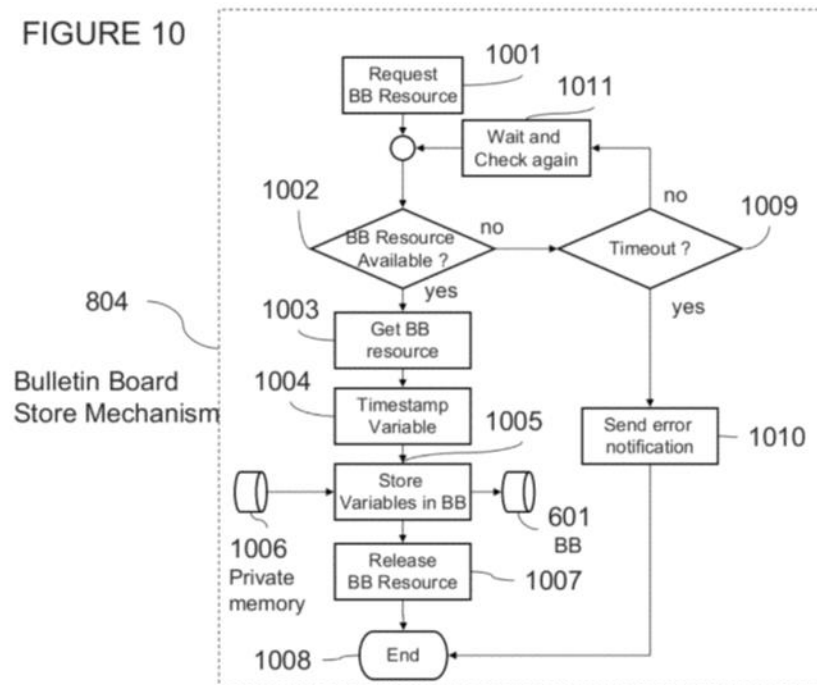
* * *

When a node becomes unavailable (i.e., "in the event the storage resource is not available"), the determining node enters a recovery state, which OSEK NM terms "NMLimpHome," and starts the T_{Error} timer, a cycle time in which a node signals that an error has occurred. *Id.*, 25, 45 (FIG. 29). In "NMLimpHome" mode, a node determines whether T_{Error} has expired (i.e., "determining whether a timeout has been reached"). *Id.*

Pet. at 60-62.

Petitioner thus identifies not one, but two “timeout” determinations: first, when a message is not received from a predecessor node in the expected time (T_{Typ} and/or T_{Max}), and next, the T_{Error} period during which “NMLimpHome” status is maintained. Petitioner identifies testing for expiration of T_{Error} as the “determining whether a timeout has been reached.” But in the context of the ‘705 Patent, both the timeout and storage resource availability are tested repeatedly while waiting for the storage resource to become available. Ex. 2001, ¶81; see Fig. 10, Pet. Ex. 1001:

FIGURE 10



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The T_{Error} mechanism Petitioner describes in OSEK, in contrast, maintains an error state and signals an error while waiting for the time limit to expire: “In NMLimpHome the NM signals its limp home status by a limp home message cyclically with T_{Error} and repetitively until it is able to transmit its own ring message to the bus and until it is able to receive NM messages of other nodes correctly.” Pet. Ex. 1009 at 25. Petitioner has not pointed to a structure that discloses the required element of the claim, ***determining whether a timeout has been reached and causing a re-request***. Ex. 2001, ¶82.

Petitioner tries to invert the process of monitoring the logical ring in OSEK in order to make it look like the invention of the ‘705 Patent. Thus, Petitioner points directly to ***receiving*** a message as evidence for disclosure of “***causing a re-request***.” Receiving a message is the opposite of sending one, which is what is required in order to “cause” a re-request. Ex. 2001, ¶83. Such reading of OSEK is without merit.

It must also be noted that the structures and procedures Petitioner identifies as disclosing elements related to determining the availability of a storage resource, measuring a timeout, and re-requesting are all disclosed only in the context of managing a logical ring within a single network. Nowhere does Petitioner point to an example where the storage resource is located between two networks.

Petitioner has not pointed to a structure that discloses the required elements of the claim. Ex. 2001, ¶84.

Element 1.7: in real-time, sharing the information utilizing at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol...

Petitioner has not pointed to anything in OSEK that corresponds to limitation 1.7. Petitioner first asserts that OSEK “discloses sharing message data that a node receives from a logical predecessor with a logical successor,” and offers Fig. 4 to illustrate. *Id.* at 65.

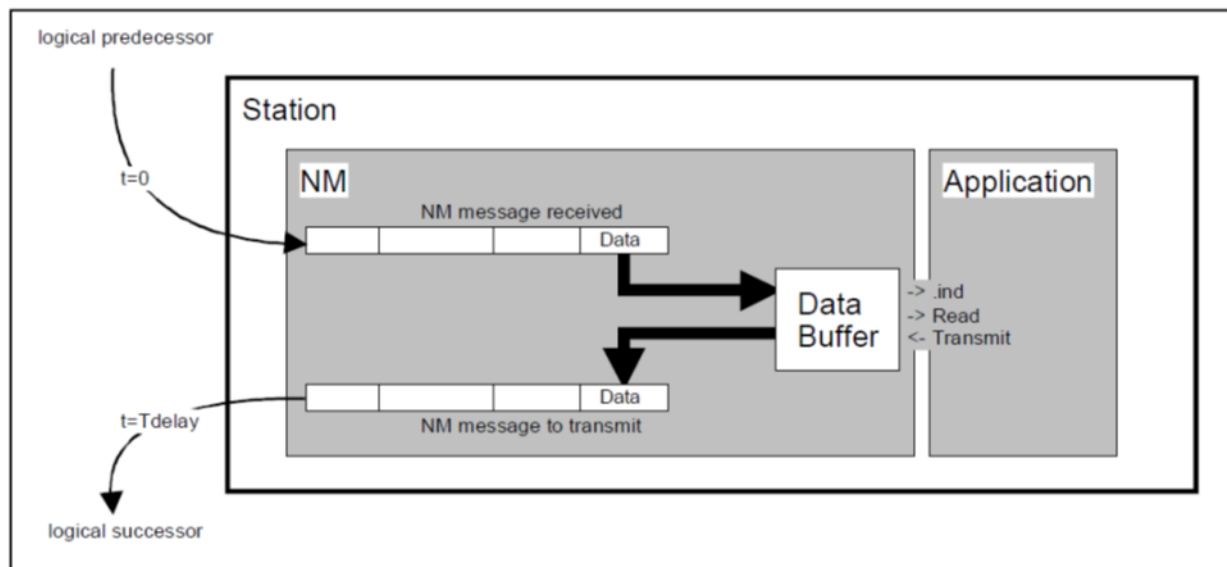


Figure 4 Mechanism to transfer application data via the logical ring

Petitioner further argues that “OSEK/VDX further discloses that ‘several busses [can be] connected to one μ Controller’,” as shown in Figure 1:

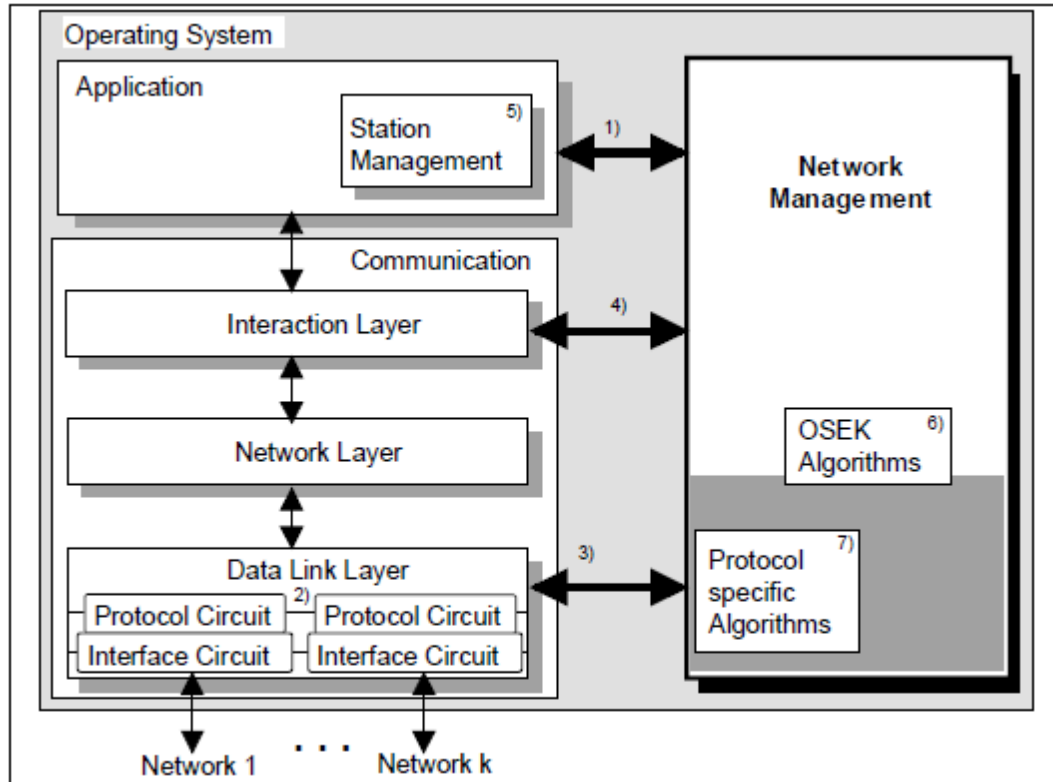


Figure 1 interface and algorithms responsibility

Pet. at 66.

Petitioner errs, and Fig. 1 actually illustrates the deficiencies in Petitioner's argument.

As demonstrated in Fig. 4, the process which Petitioner deems to be "sharing" is actually nothing more than transmission of data between nodes on a logical ring confined to a single network, and, thus, amounts to no more than simple network transmission. Ex. 2001, ¶88.

Moreover, even if Petitioner were correct that simple network transmission can constitute "sharing," limitation 1.7 requires "sharing the information utilizing at least one message format corresponding to a second network protocol associated

with a second network which is different from the first network protocol.” The alleged “sharing” cited by Petitioner is not “sharing,” and, more importantly, does not “utilize[e] at least one message format corresponding to a second network protocol associated with a second network which is different from the first network protocol.” Ex. 2001, ¶89.

The fact that OSEK discloses several busses connected to one μ Controller, and that the several busses can be low-speed or high-speed CAN does not mean that that the different busses are sharing the same information. OSEK merely provides for handling or processing of multiple busses, but not sharing of data between the various busses that operate on different protocols, which is what limitation 1.7 requires. Ex. 2001, ¶90.

In general, sharing in the context of the invention of the ‘705 Patent requires sharing information in real time between two networks, via a shared memory resource. OSEK does not disclose that concept. The ‘705 Patent describes a shared memory located on an ECU which contains two or more network interfaces. *See, e.g.* Pet. Ex. 1001, Figs. 3, 7. Petitioner identifies no shared memory in Fig. 1. Rather, as detailed previously the “storage resources” to which Petitioner points in OSEK are the data buffers present in the nodes of the logical ring network. Pet. at 64-65; Fig.4. The function of these buffers is to store ring messages received from a logical predecessor in the ring, and to store messages before subsequent

transmission to the logical successor node *on the same ring*. See *Id.* at 64, Fig.4;

Ex. 2001, ¶91. Petitioner identifies “receiving a message from a ‘logical predecessor’ node, storing the data in a data buffer, and then sending the stored data to the ‘logical successor’ node” as the required “sharing”. Pet. at 64.

Finally, OSEK does not meet the real-time requirement. Petitioner points to the time delay for logical ring message transmission as disclosure of “in real time, sharing,” But the language of Claim 1 requires that “the information is capable of being shared in real-time *utilizing a second network protocol* associated with a *second network*.” While Petitioner points to Fig. 1, Petitioner offers no evidence whatsoever that Fig. 1 contains a storage resource which can share information between the ECU’s attached networks, much less in real-time. Neither has Petitioner demonstrated movement of information between networks in real time. Ex. 2001, ¶92.

Petitioner further points to the timing analysis of message transmission through a node on a logical ring, describing a variable T_{typ} as the “[t]ypical time interval between two ring messages,” to argue that OSEK/VDX discloses sharing information in “real-time.” Petitioner points to an exemplary value of T_{typ} as 70 ms, and offers this value to demonstrate that the OSEK system shares information in “real time.” Petition at p. 65; see also Pet. Ex. 1009 at 61. But, Petitioner has pointed only to nodes on a logical ring, occurring within the confines of a single

network. The exemplary value of 70 ms appears in a section of the OSEK NM reference dealing with the structure and timing of alarms in Network Management, which is directed only to timing as it occurs within a logical ring scheme. Pet. Ex. 1009 at 58-62. In other words, the proffered timing information reveals nothing about real time performance of a system as a whole. Nowhere does Petitioner point to anything that discloses sharing of information in real time between two networks, via a shared memory resource. Ex. 2001, ¶93.

B. Claims 2-6

Claims 2-6 are dependent from claim 1, and requires in addition of various other elements. Petitioner has not demonstrated that OSEK meets the limitations of claim 1, and, thus, claims 2-6 are not rendered unpatentable.

C. Claim 20

Petitioner states that “Claim 20 is very similar to claim 1,” and that the “only differences are that the preamble recites a ‘system’ that includes a ‘processor’ and ‘memory’ that stores ‘logic’ for performing the same method as claim 1.” Petition at p. 82.

The distinctions drawn between OSEK and the limitations of claim1 apply here, and, thus, claim 20 is not unpatentable.

XI. GROUND 5: PETITIONER FAILS TO SHOW THAT CLAIMS 1-6 AND 20 ARE OBVIOUS OVER OSEK/VDX IN VIEW OF MILLSAP AND WONG.

Claims 1-6 and 20 are not unpatentable for obviousness over OSEK

Binding, OSEK COM, OSEK FTCom, OSEK NM, Millsap and Wong (“Ground 4”).

Petitioner relies entirely on Petitioner’s analysis of OSEK, which was discussed above. Petitioner thereafter states that “Millsap in combination with Wong discloses a system for sharing information between CANs, LINs, and FlexRay networks.” Petition at p. 85.

In fact, as detailed previously, Millsap and Wong do not contain any pertinent disclosures, and do not disclose any of the limitations missing in OSEK. Petitioner’s arguments regarding Millsap and Wong are basically the same as those which Petitioner had made previously, and which have already been considered. Pet. at 85-90. The prior analysis of Millsap and Wong are incorporated here. See *supra* § IX; Ex. 2001, ¶¶ 61-68.

Further, Petitioner’s arguments (Pet. at 85-90) are very generic, and do not apply Millsap or Wong to any specific limitations. Petitioner argues why a skilled artisan would combine OSEK with Millsap and/or Wong. *Id.* The issue, however, is less whether a skilled artisan would combine the references, but that the references, as combined, still do not show all the ‘705 Patent limitations. Ex. 2001, ¶100.

Thus, Petitioner argues that:

As in the '705 patent and OSEK/VDX, Millsap discloses gateway ECUs with software and physical interface layers, which include a physical layer and a data link layer that pass messages between them. *Id.*, 12:42-57.

Pet. at 85. Petitioner's point is either irrelevant or wrong. Millsap discloses messages passing through a gateway to other networks, but Millsap does not show sharing of information and certainly does not disclose messages passing between disparate networks. The Millsap excerpt cited by Petitioner, 12:42-57, discloses only "a communication kernel 120 that can be used by each of the ECUs in communicating with its respective bus." Further, this communication kernel "provides a standardized interface between the bus and the application process 122 being executed by the ECU," that includes a standard digital-to-analog converter, but it still provides only a link to the application process and "for the transfer of individual frames between nodes (ECUs)." This is mere standard transmission of network data. There is no disclosure, or even hint, of modifying the disclosed system to provide for either sharing of information or for transmitting data by way of a disparate network, as described by the '705 Patent claim limitations. Ex. 2001, ¶101.

Petitioner then argues that "Wong expressly describes the concurrent use of LIN and CAN." Pet. at p. 88. But, again Wong merely discusses current development in developing gateways that include LIN and CAN. Wong does not

say anything, much less enable, any communication of information that begins under a CAN protocol, and then is shared with a LIN device. It is the sharing of information that is critical and is missing entirely. Ex. 2001, ¶102.

Given that OSEK also fails to disclose sharing of information or for transmitting data by way of a disparate network, as described by the ‘705 Patent claim limitations, the combination of OSEK and Millsap and/or Wong does not disclose the claimed inventions, even if a skilled artisan had been motivated to combine the references for reasons articulated in Petitioner’s argument. Ex. 2001, ¶103.

XII. CONDITIONAL CLAIM ELEMENTS SHOULD BE GIVEN PATENTABLE WEIGHT

The Board has raised the following issue *sua sponte* in their decision to institute:

We note that 1.3–1.5 appear to be conditional limitations (“in the event that . . . ,” “if the timeout has not been reached”) whose interpretation may be governed by the Board’s precedential guidance of *Ex parte Schulhauser*, Appeal No. 2013-007847, at *9 (PTAB April 28, 2016) (precedential) (holding “[t]he Examiner did not need to present evidence of the obviousness of the remaining method steps of claim 1 that are not required to be performed under a broadest reasonable interpretation of the claim (e.g., instances in which the electrocardiac signal data is not within the threshold electrocardiac criteria such that the condition precedent for the determining step and the remaining steps of claim 1 has not been met)”).

Institution Decision at 16, n. 3. Without deciding whether the limitations in question were not entitled to patentable weight, the Board indicated that the parties would have an opportunity to address the conditional nature of the limitations during the trial. *Id.*

However, it is clear from at least one previous decision, *Ex parte Hehenberger*, Appeal No. 2015-007421 (Jan. 31, 2016), that there are exceptions to the supposed rule from *Ex parte Schulhauser* that the mere existence of a condition results in no patentable weight being given to the conditional limitation. A clue is provided by the Board in *Schulhauser* when it distinguishes system claims from method claims:

The broadest reasonable interpretation of a system claim having structure that performs a function, which only needs to occur if a condition precedent is met, still requires structure for performing the function should the condition occur. This interpretation of the system claim differs from the method claim ***because the structure*** (i.e., a processor programmed to perform an algorithm for carrying out the recited function should the recited condition be met) ***is present in the system regardless of whether the condition is met and the function is actually performed.***

Schulhauser at 14 (emphasis added). Thus, the test demanded by *Schulhauser* is not simply whether conditional language is present, but rather whether the method claim as a whole provides one or more structures (such as a processor programmed

to carry out the recited function) that would be “present in the system regardless of whether the condition is met and the function is actually performed.”

In the present case, the method explicitly requires several structures, including “an electronic control unit with a plurality of interface portions,” “a first network,” and “a second network.” One skilled in the art would recognize that the method also implicitly requires several other structures, including at least one processor in the electronic control unit (ECU) capable of “in real-time, sharing the information,” and processing “the first interface-related first layer messages.” One skilled in the art would recognize that, unlike the method in *Schulhauser*, the functionality of the structures explicitly or implicitly identified in the present method claims, including the ability to share information in real-time, requires structure (i.e., a processor) to exist and be programmed with the functionality to perform at least the steps of “causing a request,” “causing an error notification to be sent,” and “causing storage of the information” even if the conditions are not present.

Therefore, the claimed limitations should be given patentable weight.

XIII. THE IPR PROCESS IS UNCONSTITUTIONAL

Finally, this IPR should be terminated and the petition dismissed because the IPR system is unconstitutional for at least two reasons. First, it vests judicial power outside the judicial branch in non-Article III courts and thus violates Article III of

the Constitution. Second, it gives non-Article III administrative bodies the authority to revoke patent rights without a jury trial in violation of the Seventh Amendment to the Constitution. The Federal Circuit held to the contrary in *Oil States Energy Svcs., LLC v. Greene's Energy Group, LLC*, No. 2015-1855 (Fed. Cir. 2015), but the Supreme Court has granted certiorari and will hear the case in its upcoming term. Petition granted, *Oil States Energy Svcs., LLC v. Greene's Energy Group, LLC*, No. 16-712 (U.S. June 12, 2017). Accordingly, Patent Owner preserves this argument for further review.

XIV. CONCLUSION

For at least all the foregoing reasons, Patent Owner respectfully requests that Petitioner's challenge of Claims of the '705 Patent be denied in its entirety.

Dated: September 21, 2017

Respectfully Submitted,

/Thomas H. Kramer/

Thomas H. Kramer

Reg. No. 71,042

901 N. Market Street, Suite 1000

Wilmington, Delaware 19801

(302) 778-4000

tkramer@oeblegal.com

CERTIFICATE OF COMPLIANCE

This Paper contains 11,574 words, excluding the portions exempted by 37 C.F.R. § 42.24(a)(1). Accordingly, this Paper complies with the requirements of 37 C.F.R. § 42.24(b)(1).

Dated: September 21, 2017

Respectfully Submitted,

/Thomas H. Kramer/

Thomas H. Kramer

Reg. No. 71,042

901 N. Market Street, Suite 1000

Wilmington, Delaware 19801

(302) 778-4000

tkramer@oeblegal.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing was served by filing this document through the Patent Trial and Appeal Board End to End (PTAB E2E) as well as providing a courtesy copy via email to the Petitioner's lead and backup counsel at the following addresses:

Lead Counsel
Lionel M. Lavenue
Reg. No. 46,859
lionel.lavenue@finnegan.com
P: (571) 203-2750 / F: (202) 408-4400
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP
11955 Freedom Drive
Reston, VA 20190

Backup Counsel
Joshua L. Goldberg
Reg. No. 59,369
joshua.goldberg@finnegan.com
P: (202) 408-6092 / F: (202) 408-4400
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP
901 New York Avenue, NW
Washington, D.C. 20001-4413

Dated: September 21, 2017

Respectfully Submitted,

/Thomas H. Kramer/
Thomas H. Kramer
Reg. No. 71,042
901 N. Market Street, Suite 1000
Wilmington, Delaware 19801
(302) 778-4000
tkramer@oeblegal.com