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Paper 25
Entered: December 6, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DAIMLER NORTH AMERICA CORPORATION, MERCEDES-BENZ USA, LLC, and MERCEDES-BENZ U.S. INTERNATIONAL, INC.,
Petitioner,

v.

STRAGENT, LLC,
Patent Owner.

Case IPR2017-01504
Patent 8,566,843 B2

Before LYNNE E. PETTIGREW, PATRICK M. BOUCHER, and CARL L. SILVERMAN, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

In response to a Petition (Paper 2, "Pet.") filed by Daimler North America Corporation, Mercedes-Benz USA, LLC, and Mercedes-Benz U.S. International, Inc. (collectively, "Petitioner"), we instituted an *inter partes* review of claims 2–46 and 52–59 of U.S. Patent No. 8,566,843 B2 (Ex. 1001, "the '843 patent"). Paper 7 ("Dec."). During the trial, Stragent, LLC ("Patent Owner") filed a Response (Paper 10, "PO Resp.") to which Petitioner filed a Reply (Paper 19, "Pet. Reply"). An oral hearing was held on September 11, 2018, and a copy of the transcript was entered into the record. Paper 24 ("Tr.").[1]

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner shows by a preponderance of the evidence that claims 2–37, 40–46, and 52–59 are unpatentable, but does not show by a preponderance of the evidence that claims 38 and 39 are unpatentable.

I. BACKGROUND

A. The '843 Patent

The '843 patent describes systems and methods "for sharing information in a distributed system." Ex. 1001, 1:29–30. Such systems and methods are illustrated for system architectures such as "may be situated in automotive electronics or industrial control and monitoring systems." *Id.* at 3:11–13. An example is provided in Figure 1 of the '843 patent, which is reproduced below.

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[1] The hearing was a consolidated hearing for IPR2017-01502, IPR2017-01503, and IPR2017-01504.

FIGURE 1

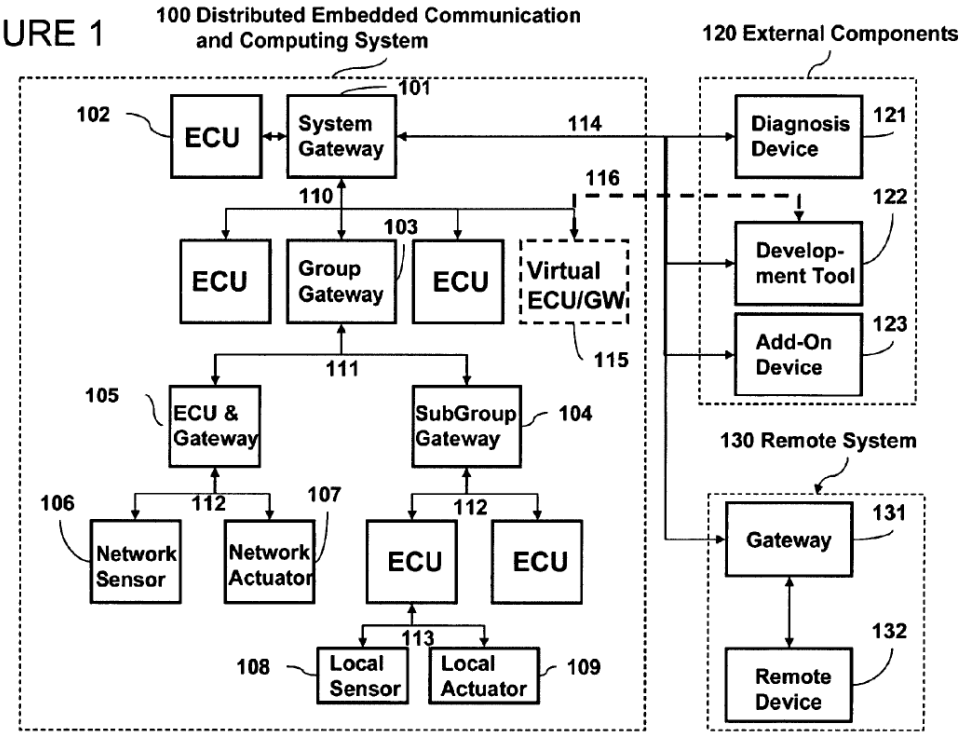

Figure 1 generally depicts elements of a distributed embedded communication and computing system. *Id.* at 3:9–11.

In an automotive environment, various electronic control units ("ECUs") control such applications as engine control, brake control, or diagnostics through connections to various sensors and actuators organized into separate subnetworks. *Id.* at 3:13–18. Such applications are themselves grouped into backbone system functions, such as "body control, power train, and chassis." *Id.* at 3:19–21. With a hierarchical organization that includes gateways 101, 103, 104, 105, messages are relayed up and down through the system layers. *Id.* at 3:24–26. Each layer may contain multiple ECUs connected through wired serial multiplexing bus systems, with the '843 patent noting several examples that include Controller Area Network ("CAN"), Local Interconnect Network ("LIN"), and Flexray. *Id.* at 3:26–33.

At the highest level in the hierarchy, "the system level," system gateway 101 is connected via various buses to other system-level ECUs, to subsequent gateways 103, and to external components 120. *Id.* at 3:60–67. In addition, system gateway 101 may be connected to external gateway 131 to link the system to remote device 132. *Id.* at 4:1–6. "Subsequent to the system level may be several layers of groups and subgroups that are link[ed] to the higher levels via gateways (101, 103, 104, 105)." *Id.* at 4:7–9.

In operation, ECU 102 receives "real-time" input variables from local sensors 108 or from networked sensors 106, respectively via signal lines 113 or multiplexing bus system 112. *Id.* at 3:39–42. "[R]eal-time may include any response time that may be measured in milli- or microseconds, and/or is less than 1 second." *Id.* at 3:36–38. ECU 102 processes the input variables and generates output variables that may be shared with other ECUs 102. *Id.* at 3:46–51.

Two relevant modes of sharing are described. First, 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." *Id.* at 3:51–55.

Second, a bulletin board may be used so that "the information is shared, in real-time, among a plurality of heterogeneous processes." *Id.* at 1:31–33. According to the '843 patent, "heterogeneous networks may refer to any different communication networks with at least one aspect that is different." *Id.* at 7:27–29. Figure 7 of the '843 patent, reproduced below, illustrates a logical architecture between three heterogeneous network controllers using such a bulletin board. *Id.* at 6:33–35.

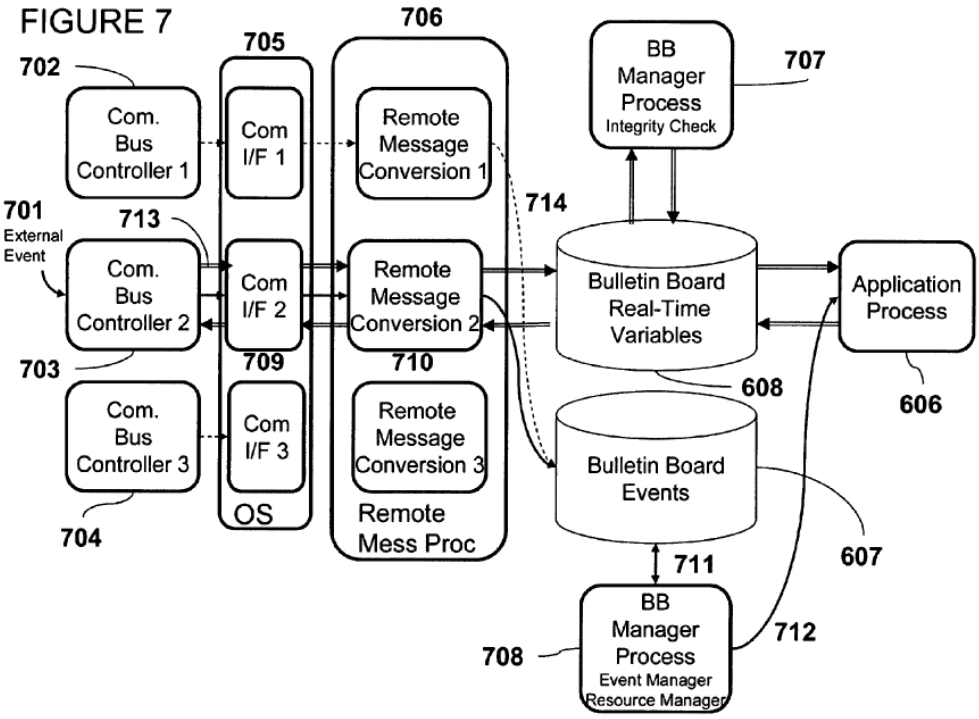

Figure 7 illustrates a system architecture in which a bulletin board acts as a shared memory interacting with multiple communication buses, with data received from one communication bus stored on the bulletin board and shared as a new message with other network types. *Id.* at 7:4–37.

The illustrated architecture includes four principal components: (1) network controllers 702, 703, and 704 (first column) for each of multiple heterogeneous networks; (2) associated operating system interfaces 705 for each of the heterogeneous networks (second column); (3) remote message communication processes 706 for stripping out network-specific information (third column); and (4) the bulletin board, which may contain events 607, real-time variables 608, configuration parameters, and firmware. *Id.* at 5:3–67, 6:33–37. In operation, external event 701, such as a flag indicating that data from a sensor are available, is transmitted on a network to a communication bus controller, such as network controller 703 in Figure 7. *Id.* at 7:4–9. This causes an operating system interface (such as

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