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NETWORKING LIKE IT'S 1394

Some 15 years after it was developed for consumer electronic applications, the widely used digital network protocol known as IEEE 1394 may soon get its first automotive application—linking in-vehicle infotainment and other electronic systems.

Speakers at a recent 1394 Trade Association seminar on the subject in Dearborn, Mich., say the first in-vehicle use could come as early as 2011 and certainly before 2013. The American-based association includes 130-plus chip, cable, connector and software companies and is or has been affiliated with such carmakers as Chrysler, Daimler, Fiat, Ford, Honda, Hyundai, Nissan, Peugeot and Renault.

Ford and Nissan have been among early leaders in developing potential applications and are considered the most likely to introduce the technology in vehicles.

IEEE defined the 1394 platform, which facilitates quick and secure transfer of large amounts of data between ECUs and peripheral devices, in 1995. Applied under such proprietary names as Firewire, i.LINK and Lynx, the protocol is represented in more than 1 billion 1394-compatible computer ports.

The 1394 Trade Association says the protocol can be deployed immediately in the auto industry with several purported benefits, including operating speeds of 1 Gbps today and the potential of throughput as high as 3.2 Gbps in the future. It can be configured in multiple arrangements in a single seamless bus up to 26 ft in length with five inline connections. It also is backward compatible with various systems and devices; can be used with optical fiber, coaxial cable and various shielded twisted pair configurations, and bridges to existing USB, MOST, CAN, DSRC and FlexRay devices. It also offers scalable asynchronous (no clock required) and isochronous (data with constant phase relationship) communications and usually doesn't require a separate host microprocessor or costly CODECs. The system is designed to prevent copying DVDs and other digital source data, a capability the association says is becoming increasingly important.

Because the 1394 standard represents a 15-year-old technology, supporting software, wire and fiber-optic cables and connectors are abundant. A host of testing and validation equipment also is readily available. The technology benefits from designed-in power management systems proven in laptops and consumer electronic devices, but automotive applications would use automotive-grade silicon chips.

A 1394 network doesn't require its own power supply. This improves efficiency and reduces cost, which proponents say will make it especially useful for data storage systems and audio-video devices. They also point out that the high bandwidth would be especially attractive for feeds from backup camera systems because it eliminates delays in transmitting images to in-car displays.