

## Peiker developing OEM Bluetooth system

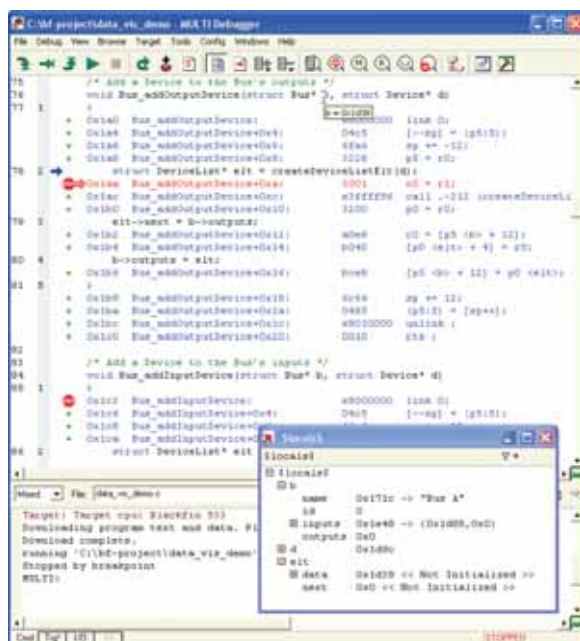
Using a cell phone in an automobile is becoming a lot safer. Automobile manufacturers are beginning to give drivers and passengers the ability to connect their existing cell phones to an in-car hands-free system that does not require interaction with a display, providing motorists with a convenient and safe way to use their cell phones while driving. These new hands-free systems are based

on the Bluetooth wireless protocol, which is already supported by many cell phone manufacturers including **Nokia**, **Siemens**, and **Sony Ericsson**.

Bluetooth kits—which provide the ability for closer integration with vehicle sound, steering wheel controls, caller-ID displays, and other systems—have been available for a few years for aftermarket installation and have been offered more recently as line-fitted options on a small number of vehicles. **Peiker acustic** entered the Bluetooth automotive market several years ago with a dealer-installed kit, then made the decision to develop a line-fit version on its own. The company's strategy in developing the hands-free system has been to rely on best-of-breed off-the-shelf components wherever possible, such as **Analog Devices'** Blackfin family of microprocessors and **Green Hills Software's** Integrity real-time operating system (RTOS). Peiker integrates the technologies with its application software and then takes advantage of the RTOS's ability to dynamically accept new features without recompiling to provide leading-edge functionality and easily adapted features for its customers.



Peiker acustic's strategy in developing its hands-free system has been to rely on best-of-breed off-the-shelf components wherever possible, such as Analog Devices' Blackfin microprocessors and Green Hills Software's Integrity RTOS.



Peiker debugged the code for the hands-free system using Green Hills' MULTI development environment.

## Hands-free systems enter market

**DaimlerChrysler** was the first North American car manufacturer to offer a Bluetooth hands-free system, using technology developed by Peiker, which not only supplies microphones, loudspeakers, handsets, car kits, telematic solutions, and other products to DaimlerChrysler, but also to **Ford**, **Mercedes-Benz**, **BMW**, **Volkswagen**, and other OEMs.

DaimlerChrysler's UConnect system is available as an aftermarket kit that can be installed by dealers in almost all DaimlerChrysler vehicles back to 1994. The motorist can talk through the vehicle's onboard microphone and listen through its speaker via a personal cell phone that can be located anywhere in the passenger compartment. Users interact with the phone almost solely through

the use of speech, without having to read the display or key-in information. The voice-recognition system responds, confirms the number, and dials. The user can also transfer a call from the vehicle's system to the mobile phone.

Peiker's hands-free system consists of a control pad, speaker, microphone, wiring harness, and a control module containing the voice-recognition software and the Bluetooth chipset. By offering UConnect through **Mopar**, Chrysler customers will be able to choose a hands-free communication system that is affordable, simple to use, and easily installed into their new **Chrysler, Jeep, or Dodge** vehicle by trained service personnel at their dealerships.

### The next generation

Peiker is moving ahead in the development of a more advanced system designed for OEM installation on the assembly line. The new system, for which the company already has a contract with a leading automobile manufacturer, will use

the vehicle bus to communicate with the radio, providing a much higher level of integration than was possible in the past. For example, the phone number of incoming calls will now flash on the radio display. This approach also saves space and money by making it possible to use the existing audio system of the car, rather than adding an additional speaker and microphone as with current aftermarket systems.

The new Peiker hands-free system supports several automotive buses including the Controller Area Network (CAN) and J1850. It implements a much more powerful architecture based on Analog Devices' Blackfin microprocessors, which combine a 32-bit Reduced Instruction Set Computer-like instruction set with dual 16-bit multiply accumulate (MAC) signal-processing functionality and the ease-of-use attributes found in general-purpose microcontrollers. The combination of processing attributes enables the microprocessors to perform equally well in both signal- and control-processing applica-



tions, in many cases removing the requirement for separate heterogeneous processors.

"The Blackfin processor delivers anywhere from 450 to 800 MIPS, providing substantial power for a multitude of different features to be easily incorporated," said Samir Tailor, Director of Business Development for Peiker. "The use of a microprocessor instead of a digital signal processor provides the ability to use a true RTOS, which in turn abstracts the application from the hardware, making it possible to upgrade the applications without changing the communications between the microprocessor and the other hardware."

"The selection of the RTOS was one of the key decisions upon which the success of the project depended," Tailor added. "Since the technology in this area is evolving fast, we needed a way to dynamically bring new features onto the platform without having to recompile the operating system. We found only two RTOSs on the market that offered this

## Polyimide and high performance thermoplastics materials

## Mechanical components for production and high performance engines

**Saint-Gobain Performance Plastics**  
**North America:** 1-800-223-4966 Bristol, RI, USA  
**Europe:** +32 3 458 28 28 Kontich, Belgium  
**Asia:** +81 33 26 30 285 Tokyo, Japan  
**Email:** [sgppl.marketing@saint-gobain.com](mailto:sgppl.marketing@saint-gobain.com)  
**Website:** [www.rulon-meldin.com](http://www.rulon-meldin.com)

Meldin® is a registered trademark.  
PP-0505-SGCS




## MELDIN®

- Temperature from cryogenic to 315°C
- Intermittently up to 482°C
- Self lubricating properties

**Available as:**

- Machined part
- Custom molded



## Briefs

**Yazaki** North America plans to transfer from its operations in Japan to North America technical expertise supporting high-voltage engineering and manufacturing capabilities to support the rapidly growing hybrid electric vehicle (HEV), high-voltage connection systems, and components business in the U.S. Kevin Pimlott, previously Vice President, Electronics & Instrumentation, will lead a team in the first phase of the initiative to transfer HEV capabilities from Japan to North America. In the second phase, the company will begin manufacturing select high-voltage products in North America. At the end of the third phase, Yazaki will have established sufficient subsystem manufacturing and engineering capabilities to support any North American application of high-voltage technology.

**Valeo** and **IBM** have launched a new initiative aimed at expanding automotive embedded software capabilities, with Valeo providing automotive expertise and IBM process and methodology support. In conjunction with the initiative will be a new Valeo software division that will support the company's other divisions in managing increasing electronics and software technology in vehicles. The joint initiative is meant to achieve high quality, cost-optimized, and best-in-class reliability and safety for automotive software, and it will also allow Valeo to meet future AUTOSAR standards. The new Valeo division will be operational in July and will employ more than 80 software engineers by the end of 2005.

A new family of radios that will debut on some 2006 **General Motors** vehicles will include an auxiliary channel and front-mounted auxiliary input jack so that an **Apple** iPod or other audio sources can be easily plugged in and played through the vehicle audio system. Radios featuring the new auxiliary input jack will debut starting in late spring as standard equipment on the **Chevrolet** HHR, Impala, and Monte Carlo; **Saturn** Vue and Ion; **Pontiac** Solstice; **Buick** Lucerne; and **Cadillac** DTS. Auxiliary audio inputs in the console of GM vehicles equipped with DVD players also allow an iPod or other source to be played through the vehicle sound system using an adapter.

capability. Integrity is the only RTOS that could be dynamically compiled and come up fast enough for use on automotive buses. It also has the advantage of being royalty-free and supported by the very powerful MULTI integrated development environment."

## Overcoming development challenges

As the system designer/integrator and application software developer, Peiker works closely with several key partners.

"The Bluetooth code, voice-recognition software, noise-reduction software, and board support package that provides low-level communications between the process and peripherals are each provided as components by suppliers," Taylor said. "We are integrating these components and developing the application layer that provides the key hands-free functionality. Our selection of Integrity has been integral to the success of this project to date. The fact that Integrity is 30 to 40% smaller than the other RTOSs that we considered gives us more room for components and our own code. The Green Hills development environment makes it easy to set break points, run traces, and provides statistical analysis on which components take the most time to run. We run the

statistical analysis to see what part of the code takes the most time to run. That provides the information we need to easily identify and solve performance problems. We use the tracer to zero in on the problem, make changes to the code, then run the statistical analysis again to see whether or not we fixed the problem."

The entire development cycle has its challenges. After integrating the various hardware and software components including the operating system, the product is released to the OEM for testing. Based on its feedback, Peiker refines and finalizes the application layer. Then the product moves into the design-validation stage, where it is installed on prototype vehicles and run through additional testing. The use of a true operating system makes it possible to upgrade and improve the system much faster. Peiker is able to add features quickly by uploading them to the hardware without worrying about the impact on low-level functionality that is managed by the operating system.

Future Peiker products will include enhanced in-vehicle communications solutions that meet the specific needs of customers in the automotive market.

*This article was written by Bruce Clutton, CEO, Peiker acoustic.*

## Microsoft spinoff to predict traffic flow

**Microsoft** has apparently decided that traffic information will be a large market. The firm has given licensed software for predicting travel times to startup **Inrix**, which recently received \$6.1 million in independent financing.

Inrix plans to deliver real-time, nationwide, predictive traffic information to a broad range of devices and distribution partners. "We have patented technology that factors [in] a variety of variables—such as construction and school schedules, weather forecasts, and traffic patterns—to provide predictive traffic information," said Bryan Mistele, Inrix CEO.

It will also factor in real-time information such as accidents. While many drivers are expected to use the service for travel on the day of the trip, they can also make advance plans.

"People can look two weeks ahead and route their trip," Mistele said. "They

*Inrix will give drivers predictive traffic info for not only freeways, but also side streets.*



can also look at what time they have to leave for work to get there by say 8:50." He noted that Inrix is not a mapping service, only determining traffic flows along routes.

The predictive software was developed by Microsoft, which fared well spinning its technology out to an independent company, **Expedia**, in the travel field.

"This is the first time besides Expedia that Microsoft has launched a startup," Mistele said. Microsoft did not invest in the company, which received funding from venture capitalists.

Inrix and Microsoft have been testing the technology with around 3000 pilot customers in the Seattle area. Over the next year, the technology will be broadened to a number of large cities. "We model not only freeways but also side streets," Mistele said.

Inrix, which serves primarily as data aggregator and distributor, will license its offerings to companies like **Yahoo!**, **Google**, and **Mapquest**, Mistele said. Inrix will link up with a variety of companies, including cell phone providers, to distribute its traffic info.

"We have mobile applications with some of the main carriers," Mistele said. "Pilot users have Microsoft smart phones."

*Terry Costlow*

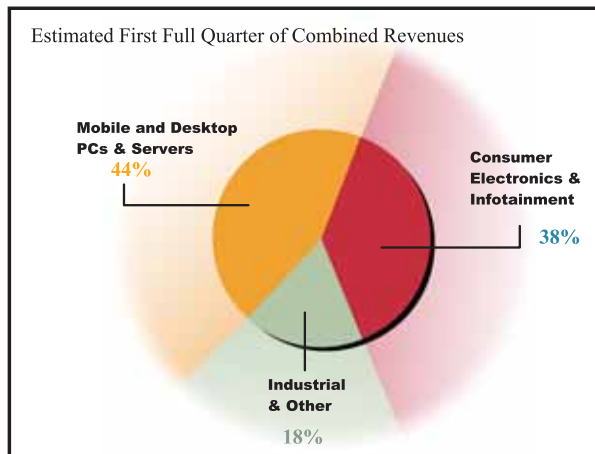
## PC chipmaker enters auto market

**SMSC**, a chipmaker that focuses on connectivity in PCs and networking, is hoping that **MOST** (Media Oriented Systems Transport)—which is being offered in about 30 vehicles as a network for carrying video and other infotainment data—will become a popular networking technology that extends the company into the automotive market. The company recently purchased **Oasis SiliconSystems**, a German semiconductor company focused on **MOST**.

SMSC, a fabless semiconductor company that makes USB and Ethernet devices, has made most of its revenue in the PC market. Its diversification move of acquiring Oasis, roughly a \$50 million company, makes automotive a big portion of SMSC's markets.

"This broadens us beyond a PC-centric company," said Johnson Tan, Vice President at SMSC's Networking Group. "With MOST, only 45% of our business will be PC-oriented. Three years ago, that percentage was 75%."

Oasis, which is also a fabless semiconductor supplier, derives a large portion of its revenues from **MOST**. About 120 electronic devices such as DVD players, CD players, and navigation systems have **MOST** interfaces that let them connect to the vehicle network, said Henry Muyschondt, SMSC Business Development Manager, who is also Technical Coordinate to the **MOST Cooperation**.



*Entering automotive by acquiring Oasis decreases SMSC's reliance on the PC market.*

The key benefits of **MOST**, which is generally used as an optical network although it can also use copper, are its high bandwidth and light cabling requirements. "As you got more and more multimedia components that needed to talk, cabling was becoming cumbersome and electromagnetic interference and coupling issues were increasing," Muyschondt said. Plastic fiber-optic cabling solves both issues, he added. **MOST** currently carries 24 Mbits/s.

Another benefit of **MOST** is that it is a peer-to-peer network, so functions can easily be added without disrupting the network. While SMSC is gaining experience in automotive, the evolution of the infotainment market may well open up applications for the company's existing USB technologies, Tan added.

*Terry Costlow*

## >>Engineering Tools

**LIN**  
**FlexRay<sup>tm</sup>**  
**CAN**  
**MOST**

### **CAN**oe

Model and validate complete network behavior. Multiple nodes and multiple buses... software-in-the-loop.



### **CAN**alyzer

The industry standard monitor and analysis tool for in-vehicle networks... multiple bus types and multiple channels.



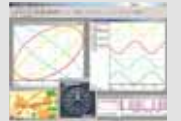
### **CAN**ape Graph

Direct RAM access for module calibration, and measurement... CCP support and XCP for LIN, CAN, USB and Ethernet.



### **CAN**graph

Advanced graphical plotting and display of multiple captured log files... bus signal data analyzed via program algorithms.



Call for a Demo Today!

**vector**

www.vector-cantech.com  
Vector CANtech, Inc.  
39500 Orchard Hill Pl. Ste 550  
Novi, MI 48375 USA  
(248) 449-9290

Circle 263