Hitachi and TTChip Sign IP License Agreement to Deliver TTP Silicon for Automotive Applications

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Hitachi Ltd (TSE: 6501, NYSE: HIT, Hitachi) and TTChip Entwicklungsgesellschaft mbH (TTChip) today announced that they have signed a strategic partnership for the joint development of microcontrollers with on-chip Time-Triggered Protocol (TTP®) in automotive applications. TTChip will supply Hitachi with TTP-related Intellectual Property. Hitachi, a leading vendor of microcontrollers worldwide, will contribute its expertise in order to include TTP technology in its extensive family of microcontrollers for automotive applications.

Hitachi plans to embed TTP in a microcontroller based on a high-performance SuperH™ series 32-bit RISC microcontroller. Subsequent plans include adding TTP functionality to the H8S/H8SX series 16/32-bit CISC microcontroller to meet the customer requirements. The TTP controller is based on a sequencer core and features communication speeds of up to 5 Mbit/s in asynchronous mode.

Hitachi's Semiconductor & Integrated Circuits and Mitsubishi Electronic Corporation's semiconductor group will establish a new joint venture on April 1st 2003 named Renesas Technology Corp. TTP development will be continued by Renesas.

Kazushige Higashihara, Manager of Hitachi's Automotive Industrial Marketing Department for Semiconductors & Integrated Circuits, comments: "Hitachi's focus on automotive electronics enables us to provide the right solutions for the worldwide automotive industry. We have been carefully watching the success of time-triggered protocols, which are mandatory for the introduction of safety-relevant applications such as driver assistance systems and steer-by-wire. We believe adding TTP functionality to our line of successful microcontrollers is the right signal to our customers that Hitachi will continue to play a major role in automotive electronics."

Leonard Gagea, CTO of TTChip, adds: "We are excited about the strategic relationship with Hitachi. It gives us confidence in continuing our way to develop TTP IP for worldwide leading semiconductor suppliers. Automotive manufacturers who are planning the bus architectures and safety concepts for their next generation of cars must rely on stable protocol features. Only TTP offers adequate safety levels for these applications."

Hitachi semiconductor has provided devices for automotive applications for more than 20 years. These have been used in a broad variety of applications such as powertrain (engine, transmission etc.), chassis (stability power steering etc.) and safety-critical (airbag, antilock brake, stability etc.) applications. Products range from the 16-bit H8/H8S series to the high-performance 32-bit SuperH series. Such devices are qualified for wide temperature ranges and are generally accepted as high-quality components with leading technology such as

embedded flash memory (ranked worldwide No.1 in microcontroller share). Renesas will focus on four major markets, one of which will be automotive.

TTP is the only solution available today for high-speed fault-tolerant communication in advanced applications, such as automotive steer- and brake-by-wire. In contrast to event-triggered electronic systems such as CAN, time-triggered electronic systems communicate continually in pre-defined time slots on a data bus. Therefore, they avoid communication overload due to the occurrence of several important events at the same time.

TTP is ideally suited for safety-critical applications in which electronically controlled systems completely replace mechanical systems. In addition to fault tolerance and reliability, TTP has other outstanding features such as reusability, composability and testability. These enable carmakers and their suppliers to shorten time-to-market significantly and to reduce their costs for development, testing and maintenance of new electronic systems.

About TTChip Entwicklungsgesellschaft mbH

TTChip Entwicklungsgesellschaft mbH, a subsidiary of TTTech, is a developer of Intellectual Property for devices used in systems based on Time-Triggered Architecture. TTChip develops chip models and offers support for TTP controller implementations, including stand-alone devices and system-on-chip solutions.

For further details about TTChip's products and services please refer to www.ttchip.com.

About TTTech Computertechnik AG

TTTech Computertechnik AG is the leading supplier of technology and software products in the field of time-triggered systems and TTP® (Time-Triggered Protocol). TTTech products enable developers of aerospace, automotive, and industrial control equipment to deliver reliable embedded systems quickly and efficiently. TTTech's products comprise a complete software development environment for TTP-based systems, including hardware as well as TTP chip models. In addition, TTTech provides a broad range of services, from training courses on TTP to worldwide product and project support. TTTech especially emphasizes by-wire and integrated vehicle control systems.

Further information on TTTech is available at www.tttech.com.

About Hitachi Ltd

Hitachi Ltd, headquartered in Tokyo, Japan, is a leading global electronics company, with approximately 320,000 employees worldwide. Fiscal 2001 (ended March 31, 2002) consolidated sales totaled 7,994 billion yen ($60.1 billion). The company offers a wide range of systems, products and services in many market sectors, including information systems, electronic devices, power and industrial systems, consumer products, materials and financial services.

For more information on Hitachi, please visit the company's website global.hitachi.com.

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
