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New Application Brings Intelligent Connections to the Vehicle

Intel Joins Hands with Shenzhen Hazen Auto Electronics Co., Ltd. to Build Next Generation In-Vehicle Infotainment System

Overview

Automotive electronics cost is becoming an increasingly larger percentage of total vehicle cost, while cars are gradually transitioning from an information isolated island to a mobile information processing platform. Global car users spend billions of U.S. dollars each year on installing the latest in-vehicle devices to access the information and entertainment they enjoy and to communicate freely with friends, families and colleagues from their cars.

The use of Intel® architecture in in-vehicle infotainment (IVI) systems allows IVI developers to closely follow the development trend of consumer electronics and provide drivers with unparalleled interactive experiences. Shenzhen Hazen Auto Electronics Co., Ltd. (Hazen) is working closely with Intel to accelerate IVI system development and bring compelling IVI capabilities to the marketplace much faster. Its innovative Intel®-based IVI system is becoming popular amongst more and more customers, and Hazen will continue to expand their reach to vehicle manufacturing partners.

Challenge	
	Stringent industrial regulations on temperature adaptability, interference resistance and vibration resistance of in-vehicle electronic products
	The industry has imposed stringent regulations on electronic devices to ensure they work properly under vibration and extreme temperature conditions, and do not impose inter-device electromagnetic interference during vehicle driving.
	Requirements for stronger networking computing function
	IVI systems require not only smooth internal bus communication, but also always-on communications with devices both inside and outside the vehicle through wireless technologies such as GPS, 3G and Bluetooth*.
	In-vehicle systems require low power consumption and compact designs
	From a design standpoint, the processor must provide low power consumption and allow for design flexibility while maintaining high performance computing capability.

Solution	
	Hazen adopted the Intel® Atom™ processor Z510PT to meet the special needs of in-vehicle electronic devices and can now more easily customize IVI systems for specific vehicle models.
	With Intel's advanced 45nm processor technology and breakthrough C6 state (Deep Power Down Technology), the Intel Atom processor Z510PT features a TDP of 2.2W, runs at the maximum of 1.1GHz and supports Intel® Hyper-Threading Technology (Intel® HT Technology) ; it provides mobile computing devices with powerful computing performance and graphic processing capability. The support for industrial temperature (-40 ~ +85°C) allows the processor to meet the demand of temperature-restricted designs such as in-vehicle applications.

Advantages

Hazen's IVI system based on the Intel® Atom™ processor brings an unparalleled driving and entertainment experience to car users, and has entered nearly 100 4S dealerships throughout China with stable month-by-month sales increase.

- **-40 ~ +85˚C industrial temperature**

  This design meets the industrial temperature requirement of the automotive industry; the excellent power consumption enables fanless thermal radiation, further improving system stability and ensuring the vehicle's normal operation in tough driving conditions affected by extreme high or low temperatures and other strong interference.

- **Embedded Intel® architecture has robust networking capability and platform compatibility**

  This design supports many operating systems (OS) including Windows*, Linux* and real-time OS. It also enables compatibility with third-party software without the need for special drivers or time-consuming software migration efforts, and allows direct, seamless adoption of capabilities such as video conferencing, wireless networking (3G and Bluetooth), mobile digital telephony, 3D navigation and a large breadth of multimedia applications. All this, combined with the benefits of lower R&D and maintenance costs, make Intel architecture well suited for IVI systems.

- **Higher picture and video processing capability**

  The Intel Atom processor Z510PT has integrated graphics and video, enabling features such as 3D navigation, games, DVD, streaming media broadcasting, and satellite TV reception to be integrated into a single system. The system can also support applications such as in-vehicle video collection and out-of-vehicle mobile monitoring.

Excellent Performance Creates Opportunities New Application Ignites the Market

At present, many IVI systems are deployed in the form of DVD players with navigation capabilities. Hazen is helping pave the way for technology advances in Chinese in-vehicle electronic products by offering a highly integrated IVI system with features that consumers are demanding. For system vendors, traditional single-function products, most of which are based on closed hardware and software architectures, are far behind the market trend and have failed to bring developers enough development flexibility.

"Thanks to the excellent performance of Intel® architecture, Hazen has achieved some market visibility since 2003 when we started R&D of the IVI system. We are aware of the demand from vehicle plants for stable, full-featured and highly networked devices. Traditional DVD systems cannot compete with integrated in-vehicle infotainment systems in terms of both function and performance. Users are surprised that our products can run Windows* XP. Therefore, in my view, the integrated IVI system can be called "the killer application" and using Intel architecture gives us the fastest and most effective path to deliver this.

— Guo Yiqin, General Manager of Shenzhen Hazen Auto Electronics Co. Ltd

Opportunities usually come with big risks. Selecting the right system platform is the first step to success. In-vehicle electronics are quite sensitive to extreme temperature variations, vibration and electromagnetic interference. However, the more functions that are integrated, the more severe interference and problems such as noise and shock resistance of hard disk will become. Hazen's long-term continuous work, including playing large audio/video files, poses high requirements on processors. Hazen solves these technical problems in a perfect way with the Intel® Atom™ processor Z510PT. Intel architecture is highly interoperable with existing consumer electronics solutions and many wireless technologies, enabling ease of integration and reduced development times. Hazen said that in contrast to other embedded in-vehicle systems and discrete DVD systems that offer limited features, Intel® architecture enables the development of integrated IVI systems that provide infinite opportunities for marketplace expansion.

Integrated IVI systems are the future mainstream and the advantages of Intel architecture are key to realizing this goal. Although the marketplace is still in the initial phase now, Intel's strong support to Hazen and other technology and industry ecosystem companies will allow vendors to more quickly transform the in-vehicle experience for consumers.

To learn more about Intel's solutions for in-vehicle infotainment and the embedded industry, please visit
www.intel.com/go/infotainment and www.intel.com/embedded