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# *telematics*

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# Embedded vs. Portable Telematics

*See inside for details ...*

# Personal telematics - a global paradigm change

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Since Lincoln launched Lincoln Rescu, the first embedded telematics system in 1996, the telematics landscape has rapidly developed.

While the focus in the North American market is still on embedded systems that target safety and security applications, the market in Japan and Europe have already turned towards other consumer oriented solutions provided through multimedia head-units and portable phones.

Multimedia Telematics blends radio and entertainment functions with navigation and wireless connectivity. This approach is mainly found in the luxury car segment. Embedded telematics solutions are sponsored by the carmakers and primarily support customer relationship management, asset protection, and safety/security services. The embedded terminals are installed permanently in vehicle, mostly as OEM line-fit and are highly integrated with vehicle electronics.

But consumers, especially the so called "X&Y Generation" who are highly comfortable with ubiquitous connectivity want more than some car makers are offering. Personal telematics leverages the ever-increasing power of portable (personal) devices that is fuelled by Moore's law as well as the rapid and highly innovative design cycle of

consumer electronics. Personal Telematics solutions provide a wireless voice and data link, have some location awareness, and provide the exchange of content between the personal device and a remote service center. Today, most US mobile phones have GPS or similar positioning technology embedded to comply with the E911 mandate for emergency calls. And most new high-end phones, which account for about 10%-15% of the

adoption.

Personal Telematics adds new applications to portable communication devices that are primarily used for voice communication. New portable phone features include multi-party chat, MP3 music, location aware games, position enhanced directory services, Personal Information Management, and server based navigation. These applications can be used in the car, but also by the



about 400 Million phones sold globally, offer remote programming using powerful Java or BREW software environments. Given that more than 90% of new car buyers walking into a car dealership already have a portable phone, from a numeric standpoint, Personal Telematics appears to be the market sweet-spot for affordable mass

pedestrian or at work. Furthermore, Personal Telematics services do not require an additional service provider and the services are added on to the existing mobile phone bill.

What has to be done to integrate portable consumer devices into cars? Personal Telematics solutions have overcome the lifecycle disparity between consumer

electronics and automotive electronics. There are 3 dimensions that have to be addressed:

### 1) Mechanical Integration:

Although some people believe that the driver can keep his portable device in his or her jacket, most European car companies prefer a safe mount for the portable device in the vehicle. The specifications require a portable device specific adapter with a universal interface, to hold the device even in a crash situation with 50g maximum deceleration. In addition, a mounted device will also allow the driver to utilize the portable device's user interface, as shown by BMW for the Mini Cooper. But there are still challenges in future proofing the docking solutions and in packaging with the vehicle interior.

### 2) Electrical Integration:

Today there is a debate as to whether portable devices should be integrated by just using a wireless communication technology such as Bluetooth. But beyond the communication link, portable devices need to charge batteries, have high-quality (stereo) audio connection, and external antenna connections. An external antenna is needed to comply with the newest EMC regulations and to function in vehicles that have metal coated glass for better energy efficiency.

### 3) Communication Integration:

Portable devices need to be integrated with the car's

communications network. Today, most of the existing portable phones allow a connected terminal to control it as wireless modem through a serial communication interface. The Bluetooth Special Interest Group has developed a few standard profiles for Bluetooth equipped portable phones in the vehicle environment. These profiles are used for hands-free telephony, dial-up networking, and for more detailed phone access

In the United States, Chrysler is introducing a Bluetooth based personal telematics solution that provides a communication interface

**“...we see a strong trend towards OEM installations driven by the hands-free regulations...”**

with pre-defined functionality to the car. In Germany, many car companies appear to prefer a two-part architecture that was pioneered by Cellport Systems. This architecture is based on a universal docking plate coupled with an electronic interface module, which is designed for a specific vehicle. Each portable device fits into a specific adapter cradle that interfaces with the universal docking plate on the vehicle side. This architecture allows the car company to prepare the car for a variety of portable devices that the vehicle users may buy over the car's lifetime. This approach provides comprehensive mechanical, electrical, and communications

integration with the vehicle. Universal two-part solutions are provided by a variety of companies, including Cellport, Cullmann, Funkwerke Dabendorf, Motorola, Omron, and Peiker.

Today, Personal Telematics is mostly sold in the aftermarket, but we see a strong trend towards OEM installations driven by the hands-free regulations in 21 countries along with New York in the United States. A study by Dain Rauscher Wessel in 2001 projected that by 2005 there would be 16.8 Million Personal Telematics installations in US vehicles (aftermarket and OEM). In Germany, last year auto OEM built-ins of universal hands-free two-part integration solutions reached a sales volume of more than 450,000 units and will surpass 1 Million units by 2004.

In the near future, the universal connectivity solution for Personal Telematics will be further enhanced to allow applications in portable devices to use vehicle information (e.g. vehicle speed, odometer, diagnostic data, etc.) and vehicle resources (buttons and displays) as made available by the likes of Automotive Multimedia Interface Collaboration (AMI-C) standard. This will allow application developers to build new and innovative personal telematics services for consumers and commercial fleet operators. These technological developments combined with the rapid progress in computing power and communication networks (e.g. 802.11) will further strengthen the already impress growth rates of the Personal Telematics market.