Breathing Life into OEM Telematics Opportunities

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ABSTRACT

As the consumer-specific telematics market shows new signs of life, companies in the telecommunications and electronics industries are aggressively developing portable telematics capabilities that link with existing devices. Left behind are the automotive OEMs and their efforts to embed telematics devices in the dashboards of their cars. The relative merits of embedded versus portable devices are examined and, using survey data on consumer ownership of various communications devices from SRIC-BI's Consumer Financial Decisions proprietary database, this paper investigates OEM opportunities to move forward in the telematics market. Given the distinctive assets of the vehicle platform, OEMs are in a position to provide effective interfaces for portable devices, extend the devices' abilities, and improve driver interaction with them. Such an approach is in concert with the direction consumers are moving, not only in telematics but in communications and information technologies as well, and establishes a unique position for OEMs vis-à-vis other product offerings.

KEYWORDS

Telematics, navigation devices, global positioning system technology, wireless communications

INTRODUCTION

Within the past couple of years, many new personal portable navigation devices have become widely available in many parts of the world and are resulting in new signs of life for the sluggish U.S. telematics market. The automotive OEMs, however, have lost ground as applications become widely and inexpensively available in personal portable devices. These devices range from cellular handsets that provide traffic information to handheld navigation products. Why is the dashboard not as attractive for locating telematics applications? One reason is that the rate of technology advancement in wireless communication and personal electronics products is far shorter than the lengthier automotive industry's design cycle. OEMs often are not able to provide the most recent technology in their new vehicles and it is nearly impossible for them to easily and inexpensively update embedded devices every year or two. Consumers have voiced a strong preference for carrying personal information and communication devices with them, and the lack of personal device interface weighs against the high-priced dedicated in-vehicle products.

Are there still opportunities for OEMs in the telematics arena? To understand the OEM opportunities, we begin by looking at the telematics application market to determine if the dynamics are similar to those that existed when the cellular phone was first introduced, and then weigh the benefits of portable versus embedded devices. The use of consumer demographic information enables us to gain insight into future growth prospects and the robustness of the most promising target customer groups.

Although the outlook for telematics applications embedded in the dashboard is not as optimistic as portable applications, there are areas where the vehicle can play a supporting role. Vehicles have unique platform interface and power assets that cannot be ignored. With these assets in mind, several opportunities are presented that support and enhance portable devices. A suggested strategy for OEMs is to provide "plug and play" interfaces or docking stations within their vehicles. This strategy closely reflects the evolving market dynamics of portable personal devices and can offer new market life to automotive OEMs in the telematics business.

WHAT IS TELEMATICS?

Because telematics applications are still evolving, the term has taken on a diverse set of meanings. Telematics devices generally incorporate some combination of global positioning system technology, wireless communications, and information that keeps drivers abreast of location, travel and traffic information, automotive performance, and connects them with emergency services. Hands free/eyes free wireless connections to the outside world are becoming a key market enabler. In recent years, entertainment and infotainment for passengers have added to market growth.

MARKET DYNAMICS

It has been a decade since OnStar and other early precursors of products providing today's telematics applications first started appearing in passenger cars. In the United States, the initial market response to in-vehicle embedded telematics devices (safety, navigation and information) was barely measurable, with most interest given to safety features. Auto buyers in the United States could not find compelling benefits to justify additional outlays to purchase these devices or associated services. This trend has continued and the U.S. market for vehicle embedded telematics devices is still very small.

In-vehicle telematics applications can be broadly broken into two categories: automotive performance-specific and consumer-specific. The former include functions such as remote diagnostics, automatic crash notification (ACN), and door unlock. Consumer-specific applications include emergency services and information and content that users can access and use while in their vehicles or elsewhere. While the automotive OEMs will continue to control and dictate the location of vehicle performance-specific applications, those applications that are consumer-specific have no compelling reason to be embedded in the dashboard.

From the beginning of the development and commercialization process for consumer-specific telematics products, there was debate over whether devices would be embedded in the dashboard or be portable. We believe a clear winner is now emerging: the personal portable device. U.S. consumers have clearly expressed interest in using personal communications devices in their vehicles. Telematics features are now included in a wide number of hand held devices (cell phones, PDAs, notebook computers, etc.). There is also some interest in low- to moderately-priced aftermarket devices that can be easily mounted in and removed from the vehicle. The Telematics Research Group (TRG) reports that DVD-entertainment systems, GPS navigation, satellite radios, and in-vehicle phone solutions are among the more popular aftermarket products. **[1]**

Another area of debate has been where the telematics systems storage and processing will reside—in the device, at a remote server location with which the device communicates to obtain stored information, or in the vehicle. As use of small portable communications and computing devices by consumers and mobile workers gains momentum, it appears that memory, databases, information, and entertainment content will not necessarily need to reside within the device, but can be easily accessible using wireless connectivity and is downloadable to the device or via a voice driven response.

Today's consumer-oriented telematics devices, therefore, are following the market evolution of the cell phone, and for much the same reasons. Large, cumbersome vehicle-mounted cell phones provided by the OEMs of some years ago were a failure because of the dichotomy between the development cycle for autos and that for much faster-to-market new technology communications equipment. Microsoft's first attempt to develop a car computer for in-vehicle information was also a failure because of software reliability problems. Furthermore, while cars may be kept by buyers for three or more years, cell phones, PDAs, and other portable devices are often upgraded every year or two to take advantage of the rapidly developing new technologies. Drivers do not want to pay for an expensive telematics device (costing up to $2000) embedded in the dashboard that is likely to be technology dated even before it is purchased. Most are unlikely to find the benefits do not come close to this amount, as reflected by the fact that only about 3% of the cars sold in 2003 had a navigation system built in at the factory. **[2]** Other reasons favoring the use of portable devices are miniaturization and application flexibility. Consumers and mobile workers want to take their personal communications and information devices with them, not leave them in the vehicle's dashboard.

TELEMATICS UPDATE

After a prolonged period of evolution and commercialization in the United States, location technology capabilities, primarily GPS based, are now finding a growing client base through applications in notebook computers, PDAs, cellular phones, and other portable devices. Location capability is available through internal GPS technology embedded devices, add-on location-enabling attachments (some combined with Bluetooth), PCMCIA and CF cards for device expansion card slots, and navigation enabling software. A growing number of telematics options are available to purchasers of personal portable communications and computing devices. This, coupled with dramatic drop in the cost of products with location and communications capabilities (to about $100 to $600), has resulted in telematics related applications finally appealing to a broader mix of U.S. consumers.

Improving device real time information content combined with location accuracy is also helping create compelling market benefits. (Location accuracies now routinely fall between five and twenty meters.) Cellular based location services, also called off-board navigation, allow users to navigate and locate business sites and addresses using both handsets and wireless enabled HPC/PDAs. Cellular off-board services continuously deliver updated geographical data and real time content, such as on traffic and weather conditions, via the cellular network.

Many of the handheld location-enabled navigation devices are capable of being mounted on vehicle dashboards or attachable consoles and offer most of the features of the far more expensive embedded vehicle navigation systems including color displays, voice command and response instructions, business locations and turn-by-turn directions for the most direct destination route.

However, other experts disagree with our conclusions about the lack of market potential for embedded telematics applications and continue to make bullish predictions about sales of telematics technologies. In 2003, Gartner predicted that by 2005, the number of American businesses and consumers using location devices will reach 42 million (compared to 150,000 in 2002) and the market size will be about $828 million (compared to $6 million in 2002). Gartner's 2007 forecasts are even more optimistic, with a total worldwide market for location technology exceeding $26 billion. **[3]** Given the small current location technology penetration of the U.S. market today, it is difficult to imagine the market will expand that rapidly. The government mandated 2005 E911 cellular handset emergency call location requirement in the United States will enable growth in cell phones containing location applications, but unlikely at the level predicted by Gartner. Frost & Sullivan has estimated the automotive segment of the market for GPS navigation systems in North America was $545.5 million in 2003 and is expected to reach over $1.8 billion in 2010, The non-automotive segment of this market, according to Frost & Sullivan, is estimated to grow from $417.8 million to $891.3 million between 2003 and 2010. **[4]** This source concludes that most cars will become equipped with some level of navigation device within the next 5 to 10 years. Other experts agree with our conclusions. Recognizing that auto makers are not able to keep up with the pace of new product development in electronics, Greg Simons, a senior engineer at BMW's Palo Alto research laboratory, reported that BMW is offering a Bluetooth wireless link rather than in embedded devices. **[5]**

Despite the fall in price and increase in accuracy, not everyone will be rushing to use telematics applications on their portable devices. Based on the SRIC-BI Consumer Financial Decision survey of 3973 households conducted in 2004, and a similar survey conducted in 2002, household ownership and use of computers and communications devices, household income is a key determinant of the use of wireless devices such as cell phones and PDAs that provide interface to the Internet (see Table 1). While computers remain the primary way people access the Internet, cell phones are the primary method for wireless communications. Nearly 60% of the households in the United States have access to cell phones. A recent Harris survey indicates that nearly two-thirds of cell phone users take their telephones everywhere, and nearly 80% take them with them while traveling. **[6]** Based on information from the 2004-05 SRIC-BI Consumer Financial Decisions Survey, slightly more than 10% of cell phones users had access to the Internet through them.

Other portable devices, such as Personal Digital Assistants (PDAs), are much less widely used, but are growing in popularity (the percent of households owning PDAs increased from 7% to 9% between 2002 and 2004). These devices are primarily used by members of affluent households. However, enterprise and business use of wireless connected PDAs is forecast to show rapidly increasing market growth, according to an SRIC-BI Explorer Portable Intelligence research report. **[7]** As wireless network data services improve within the next few years, cellular connected devices, including phones, Blackberries, and PDAs, are likely to be choice in the United States for receiving information from the Internet, including telematics, when away from office and home.

STILL A RAY OF HOPE FOR AUTOMOTIVE OEMS IN THE TELEMATICS MARKET

While the OEMs are not likely to take the lead in U.S. consumer-specific telematics, they still have numerous opportunities to build on the future growth of these applications. OEMs do not have an advantage in development of telematics content and delivery systems, and those perhaps are best left to vendors that specialize in them. OEMs also suffer from lengthier design cycles compared to electronics and communications devices.

Table 1 - Estimated Distribution of Ownership of Communications Devices and Access to the Internet in 2004

Household Income	All Households	Under $40,000	$40,000 to $100,000	$100,000 to $150,000	$150,000 and over
Number, in thousands	120,408	57,288	46,753	10,795	5,572
Percent of households	100%	100%	100%	100%	100%
Percent of households in each category with access to:					
Personal computer	73%	56%	86%	96%	95%
PDA	9%	4%	9%	24%	29%
Cell Phone	58%	38%	73%	86%	84%
Percent of households in each category with access to Internet using:					
Personal computer	69%	51%	82%	96%	94%
PDA	2%	2%	2%	4%	6%
Cell Phone	6%	5%	6%	10%	16%
Percent of households with access to the following devices by income group:					
Personal computer	100%	37%	46%	12%	6%
PDA	100%	21%	39%	25%	15%
Cell Phone	100%	31%	49%	13%	7%
Percent of households with access to Internet using the following devices by income group:					
Personal computer	100%	35%	46%	12%	6%
PDA	100%	46%	26%	16%	12%
Cell Phone	100%	36%	37%	15%	12%

Source: SRIC-BC Consumer Financial Decisions 2004-05, unpublished survey database (3973 respondents).

The Equipment

OEMs, however, should capitalize on the unique assets of the vehicle. It is an ideal platform for the wired age. It has plenty of battery power, excellent space for antennas, and first-rate entertainment audio capabilities associated with radio/CD and other systems. Cars can also serve as wireless LAN nodes and as platforms for DSRC services (vehicle to vehicle and roadside to vehicle). Furthermore, because OEMs have experience in understanding human machine interface (HMI), this knowledge can help the OEMs design vehicle interfaces for personal portable devices to appeal to drivers and also enable safety constraints on the use of telematics in a moving vehicle. **[8]** To promote these efforts, over the past several years international committees on standards and architecture and industry forums, such as the AMI-C (Automotive Multimedia Interface-Collaboration), the IEEE ITS Data Bus Standards Committee, the IDB (ITS Data Bus) Forum, and MOST (Media Oriented System Transport) have collaborated to create electronics and communications hardware interfaces for the global automotive OEM industry.

OEMs should exploit the use of the car as the ideal platform with support interfaces for portable devices and make the purchase of a car with personal portable plug and play interfaces or docking stations appealing to target markets. Providing an easy plug-and-play link between personal portable devices and the vehicle's built in audio/video systems and antenna would be a major first step (such as currently being done with iPod and BMW). Vehicles need to support and enhance the use of personal portable devices without trying to interface the development cycle for communications and computing devices with that for automobiles.

Examples of amenities beyond plug and play capabilities that are now being implemented in some models are Bluetooth enabled hands free/eye free systems for safer use of the cell phones within the car. Allowing drivers to verbally access and use their portable device without a wire connector, such as through Bluetooth, can be very appealing to both personal users and mobile workers. In addition to the communications aspects of these devices, entertainment is also critical. OnStar, for example, has starting promoting the "fun" aspects of its services, as well as safety and security. **[9]** Thus, identifying in-vehicle support systems that improve the quality of entertainment, such as quality video displays, will bring in additional customers.

Just as consumers can pick out their audio systems for cars from a variety of options, it should be relatively inexpensive for dealers to offer several personal portable options in support of telematics. In addition, devices that link to car entertainment systems to off-board entertainment sources can be easily changed and upgraded, just as radio and CD players can be now.

The Target Market

What demographic segments will be interested in these personal, portable features? The growing numbers of the mobile workforce leads the list. Whether it is the delivery service community, off-site repair employee, or the sales force, these men and women are carrying their office-connected device with them. Efficient, productive, and seamless support can offer compelling advantages.

Not surprisingly, using the data from 2004-05 SRIC-BI Consumer Financial Decisions household survey on ownership of communications devices and information from other sources, it is easy to conclude that the target market with the highest likelihood of purchasing or using telematics devices and in-vehicle support hardware is households with incomes of over $100,000, primarily ones with members who are still in the workforce. Members of this group often are either part of the mobile workforce or early adapters, interested in using the latest gadgets, whether embedded in the dashboard or portable. This segment comprises those consumers most likely to buy luxury cars with built in capabilities that enable easy use of portable devices. However, given the relative size of the market segments, in order for sales of OEM-provided in-vehicle plug and play connections to reach mass market levels, they need to be attractive to a large percentage of households in the $40,000 to $100,000 income range. It is these households that currently purchase or own well over half of the portable communications devices, including those with Internet connections. Telematic devices will have to fall to the $100 to $500 range, with relatively low costs of operation and connections, before they reach the mass market.

CONCLUSION

Although it is our view that the majority of future telematics devices will not be embedded in the dashboard, all is not lost for the OEMs. Clearly, there are ample opportunities to build on the unique strengths of the car as a source of power, an antenna, and a link to larger and more powerful audio and video devices. As auto OEMs realistically assess market trends and act accordingly, they can differentiate their cars to appeal to consumers interested in quality communications and the ability to easily and safely use and display the information contained in their portable devices while on the road.

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