

» People are no longer willing to be isolated in their cars. They now want to have the same access to information inside the car that they currently have outside the car. «



Source: Volvo Car Corporation. Future vision.

Wireless + Car = an Unbeatable Combination

By Jan Sandred

Nowadays, we spend so much time in our cars that they are almost a second home. A few years down the road that home will get cosier and safer, as we take advantage of wireless technology both inside and outside the car. The Internet revolution is not limited to the home, you know.

The most important issue in the car industry is, of course, safety. One clear lesson has emerged from decades of safety research: the best way to avoid being injured is not to crash in the first place. Dead customers don't buy cars.

"We're understanding more and more the critical link between vehicle safety and driver behavior, and we're working to improve both," says Dr. Lawrence D. Burns, vice president for General Motors Research and Development Planning.

Car companies are intensely experimenting with adaptive cruise control and collision avoidance systems. The focus is on helping the driver be more intelligent about avoiding collisions by making the car smarter about the traffic and environment around it.

General Motors is in the midst of an automotive crash warning research project with the U.S. Department of Transportation and partner Delphi Delco Electronics Systems, an integrated operating division of component manufacturer Delphi Automotive Systems. The Intelligent Vehicle Initiative research project involves development and testing of prototype vehicles equipped with crash avoidance technology.

AMERICAN, SWEDISH PROJECTS

GM and suppliers are currently working on a prototype Buick LeSabre car. A host of sensors and instruments on the car will measure road conditions and environmental factors. The information is fed real-time to decision-making software, which will alert the driver to hazards in the vehicle's

forward path and adjust the car's adaptive cruise control.

The LeSabres will be fitted with forward radar, vision, mapping systems, GPS global positioning systems, and adaptive cruise control, all tied together by sophisticated software and computers. The system even keeps an eye on what the driver is doing to estimate his or her "distraction level" and response times. When a threat is detected, the system will either alert the driver or, if adaptive cruise control is engaged, take control of the accelerator and brake to slow down the vehicle.

The Swedish National Road Administration is undertaking a large-scale safety research project involving "Intelligent Speed Adaptation" in urban areas. Several thousand cars around Sweden will be equipped with intelligent, supportive, voluntary adaptive cruise control and collision avoidance systems to help motorists keep to the speed limits. Those systems communicate wireless with intelligent road signs that inform the driver via a display in the car about speed limits, traffic conditions, and other factors affecting safety. General traffic information is distributed via wireless Internet.

DELPHI, ERICSSON TEAM UP

Cars with comprehensive facilities that can use the Internet will start being manufactured this year. Ford expects more than a million of its new cars and trucks to be equipped by the end of 2002, three million by 2003, and virtually all of its cars and trucks by the end of 2004, with the level and depth of services increasing each year during that period. The world's largest component supplier, Delphi Automotive Systems, and telecommunications equipment maker Ericsson recently formed a strategic partnership to develop mobile Internet products for the global vehicle market. They predict demand for in-vehicle mobile communications and

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entertainment products will grow 25 to 30 percent annually over the next five years. It is predicted that half of all new cars made in North America, Western Europe and Japan will have embedded communications modules in five years. In the premium segment, nine of every 10 cars will have this Internet capability by 2005. Those consumers are going to spend a lot of their time in a vehicle, so there is a huge market opportunity.

The strategic partnership between Delphi and Ericsson will develop plug and play communications solutions to extend the advantages of mobile Internet to all car users at all levels. Delphi also named Ericsson as a key supplier for standard wireless communication modules.

The two companies will define new plug and play mobile multimedia standards with features that will allow vehicle owners to make quick upgrades to their vehicles' products. This is especially important, as development cycles

in the telecom world are much shorter than the average vehicle ownership cycle.

The partnership will also bring new wireless solutions to consumers much faster, and will allow them to take advantage of innovations such as Bluetooth wireless technology, WAP Internet browsing, and packet switched data transmission like GPRS. In addition, the collaboration will also package third generation wireless technologies and make these advances available to the installed base through plug and play upgrades.

A NEW ERA OF SERVICES

The integration of mobile Internet in vehicles will provide a new era of services. The promoters say people in cars will be able to check e-mail, buy stocks, browse favorite Internet pages and even keep kids entertained by folding out video screens installed in the backs of front seats. People are no longer willing to be isolated in their cars. They now want

ERICSSON, VOLVO, TELIA TEAM UP IN WIRELESSCAR CORP.

Ericsson, Volvo AB, and Swedish telecom Telia have formed WirelessCar Corporation, a company to develop and market complete mobile e-service solutions for vehicle manufacturers and fleet operators.

By 2005, experts forecast that all cars manufactured in North America will contain built-in modules that handle everything from safety systems to a variety of information services. Similar systems are expected to be standard in Europe by 2007.

Initially, Ericsson, Volvo and Telia hold equal shares in WirelessCar, but additional owners will be invited over time. The new company is headquartered in Gothenburg, the Swedish west coast city where Volvo is based.

Consolidating its position as one of the world's leaders in automobile safety, Volvo Car Corporation in March 2000 inaugurated a SEK 650 million (US \$75 million) ultra-modern vehicle safety center in Gothenburg. The project represents the culmination of decades of safety work by Volvo engineers. The center will feature computer simulation, component tests, crash simulations and full-scale tests – all designed to resemble real accidents as closely as possible.

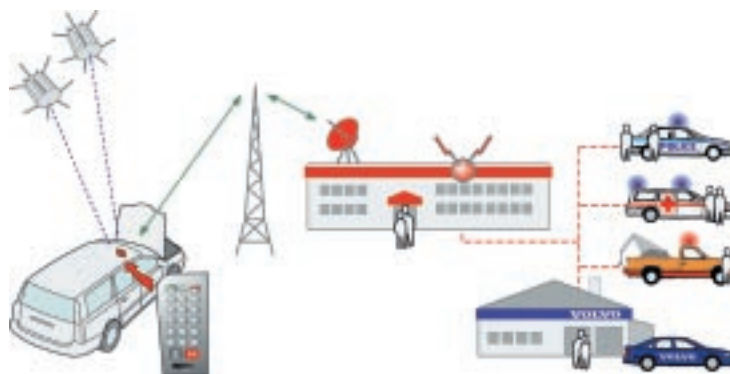
"Volvo has a world-class reputation for safety, quality, durability and environmental responsibility – all of which are attributes that are increasingly important to our customers," says Jacques Nasser, Ford president and chief executive officer. Ford acquired Volvo Car Corp. in early 1999.

Sweden is one of the world leaders in automotive safety. Volvo and Saab (now owned by General Motors) were pioneers in seat belt and other passenger safety systems. Autoliv is one of the world's largest manufacturers of air bags and seat belts, and has more recently led development of side-collision safety screens.

Chalmers Technical Institute, also in Gothenburg, has established a special institute for Technical Traffic Safety. This institute was founded and built up by Bertil Aldman, a pioneer in automotive safety and the expert behind the three-point seat belt and the reverse-facing safety seat for children.

EURO NCAP has ranked Volvo and Saab automobiles among the safest in extensive crash tests. This has also been confirmed in statistics on actual accidents maintained by insurance company Folksam.

An example of a safety service would be an automatic alarm, via GPS (Global Positioning System), to a call center when an air bag is activated. The call center could direct emergency services and police to the accident site.



to have the same access to information inside the car that they currently have outside the car, and this will provide “increased productivity, convenience and safety. All together, it is an unbeatable combination.”

Delphi is working with GM on an in-car system that includes a navigation system, e-mail, Internet access, and an integrated hands-free telephone and address book. It will first appear at the end of this year in the new Cadillac Seville and DeVille.

FORD TAKES THE LEAD

Ford is the world’s second largest vehicle manufacturer after General Motors and has similar projects to make cars Web-enabled. But Ford seems to have taken the lead in the race. As a result of strategic alliances with the US wireless telecommunications providers Sprint PCS and Qualcomm, Ford will deliver vehicles with voice-activated digital wire-

less communications and Internet features in 2001. Sprint’s digital wireless network throughout the US will provide Ford drivers and passengers with in-vehicle communications and information services. Ford’s current Remote Emergency Satellite Cellular Unit safety and security systems will be enhanced by Sprint’s Wireless Web Internet features to be introduced on model year 2001 Lincoln cars.

Ford and Qualcomm have formed Wingcast, a company that will offer wireless information systems bringing voice, entertainment, Internet access and safety services into Ford cars and trucks. Nissan is working with Ford and Qualcomm to bring Wingcast services into certain luxury vehicles. Nissan may extend the use of these applications to a broader selection of Nissan and Infiniti vehicles in the future.



“WirelessCar will support vehicle manufacturers and fleet operators in delivering mobile e-services to their end-users on a global basis. The company will provide the automotive industry with one supplier interface and offer continuous delivery of services irrespective of network, operator or service provider,” says Jan Hellåker, President of WirelessCar Corporation.

Mobile e-services will become a standard in the same way, as airbags are standard equipment today, he believes. The first wireless car services will focus on safety and convenience. Automatic emergency calls – “panic buttons”, automatic burglar alarm with position indication (if the car gets stolen, that is), and remote control for car heaters or locks, will be among the first applications. It is not easy to combine the IT industry and the vehicle manufacturers. They have very different business models, the quality standards are very different, there are no technology standards at all for wireless car applications, and so forth. For example, an automatic emergency call is sent by the Short Messaging System, SMS, in the GSM mobile network. But there is no routing standard today for SMS

communication between the various telecom operators’ networks. And there are no standards for how the message is received and handled at the rescue services in different countries. Therefore a separate independent company is needed that understands the demands and culture of both the vehicle industry and the IT industry.

“Volvo has a long history of applying mobile communications in vehicles with our strict standards and requirements promoting safety, reliability and functionality,” says Jan Hellåker. It is perhaps the world leading company in this area. Reliable and secure wireless connections are crucial for fleet operations; WirelessCar will for example offer wireless subscriptions for fleet usage. The Fleet Subscription allows fleet operators to reduce the complex management of subscriptions in their fleet. The customer meets a “one operator interface” towards the different countries and operators. Both costs and administration are minimized and the features of the subscriptions are customized to get a reliable and secure data traffic.

The next step will be paid services like route maps, city guides, restaurant surveys, gas station and garage directions et cetera. These services will most probably be tied to different car brands. It is very probable that we in the near future can have an on-line Guide Rouge (former Guide Michelin) in our cars. As a consequence the next big wireless consumer market will be in the car. The competition will be among integrated services for the car.

Who owns the right to the driver? Jan Hellåker asks himself.

» *What does the car buyer of 2001 want? Honestly, I can't see myself talking to the car, reading and sending e-mail while I speed on a highway. It's hard enough juggling the cell phone, super-mega-hot coffee, double-decker hamburger, CD player, and adjusting the heater. Oh, yeah, then there's that manual gearshift that needs shifting once in a while, too. I wonder if I will be able to get a couple more arms and hands by 2001* «

SAFETY THE KEY WORD

Well, is this really what the car buyer of 2001 wants? Honestly, I can't see myself talking to the car, and reading and sending e-mail while at speed on a highway. It's hard enough juggling the cell phone, super-mega-hot coffee, double-decker hamburger, CD player, and adjusting the heater. Oh, yeah, then there's that manual gearshift that needs shifting once in a while, too. I wonder if I will be able to get a couple more arms and hands by 2001.

Again, the word is driver safety.

"Ford's systems offer the safety and security of being automatically connected in emergency situations," explains Mike Ledford, Ford's global director of telematics. "Now customers can safely access the information and services they need without fumbling for a phone or using a computer screen."

Wingcast goes beyond standard automotive applications to offer users greater security, information and entertainment applications that they can access anytime, not only from within the car, but also from a variety of wireless devices.

Voice control has not been the great success the IT industry has hoped, but it will surely be of vital importance in the car industry. Why? Because our hands are fully occupied on the steering wheel. Wireless Internet in the car will for instance allow you to avoid juggling with cell phones.

The Ford/Nissan systems will use a fully integrated suite of voice-activated mobile voice and data services. Swedish Telia Infovox has developed a system that can decipher and read out loud written text, for example, e-mail messages. Text-to-speech is a technology that enables the automatic processing of written text to produce speech output. Infovox Text-to-Speech converters convert all normally spelled and phonetic text into synthetic speech. This synthesis is multi-lingual and is available in 12 languages at the present time: American English, British English, Danish, Dutch, Finnish, French, German, Icelandic, Italian, Norwegian, Spanish and Swedish. It has five set voices and is also able to store individual voices. Aspiration and intonation can also be varied.

MANY WIRELESS FEATURES

Hooking up a car to a wireless Internet based safety system together with a smart collision avoidance system provides automatic, intuitive interaction with the vehicle through enhanced safety and security systems. One such service would be an automatic alarm, via GPS global positioning systems, to a call center when an air bag is activated. The call center could notify emergency services and police and direct them to the accident site and even aid in determining the nature of the accident and emergency assistance requirements.

Other features will include full voice control, hands-free dialling and audio information delivery allowing drivers to listen to the latest news and information services without taking their eyes off the road or hands off the wheel. In metropolitan areas, the latest traffic information could be delivered directly to the car, along with graphic displays of less congested, alternative routes.

Eventually the cars could tell the garage that it needs service or tell the police where it is if it's been stolen – all before the owner even knows of the problem.

On a more immediate basis, Ford has announced an agreement with Yahoo to let owners register their cars online at Yahoo Auto and get recall notices, service reminders, information on their credit accounts, driving directions and real-time traffic reports in major markets. Eventually customers will be able to schedule service appointments online.

GM has signed a similar deal with AOL and executives of DaimlerChrysler, who have been mostly silent about pursuing connections to Internet portals, recently said that they are close to announcing a deal of their own.

Although the first models and wireless links will be confined to the US, the concepts are expected to spread around the world very quickly, where the Swedish governmental initiative is a pioneer project. □

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