



■ Technology

When products talk

By Joel A. Osman

Telematics opens up new possibilities for data mining and cross-selling—and even entirely new products and services—based on a better understanding of customer behavior. Innovative companies in a variety of industries are beginning to see this wirelessly enabled, computer-enhanced set of solutions as an essential tool for doing business.

■ So far, the new millennium has not been kind to heavy industry. Manufacturers are operating in low-margin, highly competitive sectors that are struggling to attract capital. The rate of growth through traditional methods, like mergers and acquisitions, has slowed. So where do these companies, trapped in a value rut, turn to find new sources of profitable growth?

Innovative companies in a variety of industries are beginning to recognize the value of telematics in its most recent form: wirelessly enabled, two-way communication between a vehicle or piece of equipment with embedded computing power and its external environment. Although some of the supporting technologies for telematics have been around for more than a decade, the transformational potential telematics represents is only now being fully understood.

Listen to your equipment

Consumers know telematics from automotive applications like OnStar, which helps many General Motors Corporation vehicle owners get roadside assistance and driving directions. Such an application can be useful and even lifesaving. But the widespread use of telematics has, to date, been hampered by a “gee whiz” factor that narrows its appeal to early adopters and technophiles instead of plant supervisors and product managers seeking market insight and competitive advantage.

That’s about to change. Leading-edge companies are beginning to broaden their business models and think of telematics as a set of solutions rather than just a new generation of gadgets.

Instead of a car that talks just to you, a telematics solution would mean

cars that talk to one another, to the road they drive on, to the stores they pass along the way and, ultimately, to a central repository where all these conversations would be dissected and refined for nuggets of market insight. Indeed, telematics opens up a number of new possibilities for data mining, cross-selling and entirely new products and services that could be developed with a better understanding of customer driving behavior.

Manufacturing and power-generation facilities are particularly ripe for transformation through telematics. Embedded computers and communications devices, which already exist at most industrial sites, can be combined with wireless technologies to transform a factory floor into an “aware environment,” where intelligent pieces of equipment are, in effect, conscious of their status and surroundings. Equipment can interact with technicians to automate record keeping and, ultimately, the regulatory and compliance process.

Today, these applications are limited to the most expensive pieces of mission-critical equipment. But what would happen if all the equipment in an industrial facility were linked through embedded computers? One obvious benefit would be instant awareness of impending component failure, which would save expensive downtime. In the utilities industry, for example, where downtime can cost more than \$600,000 per hour, the savings would be significant.

In the past, the enormous cost of connecting individual pieces of equipment in industrial settings to one another and to a central monitoring facility prohibited the spread of self-monitoring systems. But that is changing as technology costs decline and new methods come online.

For instance, the Manufacturing Telematics Services prototype, developed by Accenture Technology Labs, the technology research and development organization within Accenture, is making aware environments an affordable reality by eliminating the need to lay cables over long distances. The prototype shows how companies can outfit individual pieces of equipment in the field with sensors that broadcast and record ongoing system activity. The equipment is also wirelessly linked to a repository containing

maintenance history, procedures and sensor data.

This enables the sensors on a pump, for example, to actually help fix a problem. Rather than passively waiting for the technicians to arrive, the sensors can notify the dispatcher of all the tools and parts needed for the repair. The pump can then access its maintenance history and ensure the system's ongoing operation by rerouting certain functions. When the mechanic arrives on the scene, he can use his personal digital assis-

tant to access previous notes, past repair or service information, and even a video detailing the most recent service. During the repair, the system documents the maintenance activities so that industry regulators and other mechanics will be able to understand how this particular problem was resolved. (For related articles exploring the use of tagging, tracking and sensing technologies, see "Fish and chips," *Outlook* Vol. XIV, No. 1, January 2002, and "Reality online," *Outlook Special Edition*, September 2002.)

How telematics is transforming the auto industry

Telematics offers new opportunities for automobile manufacturers to stay connected with their products and customers long after the cars have left the showrooms, and to tap into a maintenance and repair aftermarket worth an estimated \$175 billion annually in the United States alone. (For a related article, see page 26.)

The benefits are a two-way street. For drivers, the sound of an engine malfunction needn't mean a detour to an unknown service station. New telematics applications enable the transmission of real-time sensor data directly to the dealer or original equipment manufacturer so that problems can be diagnosed on the spot.

The next step would be *predictive* maintenance, where diagnostic data from thousands of cars and customers are aggregated and made accessible to carmakers and dealers. They can alert their customers to potential problems *before* serious and more costly repairs become necessary.

Such proactive dealer responses could generate new revenue for the dealership, the supplier and, ultimately, the manufacturer, all of which currently operate in a fragmented marketplace served by hundreds of thousands of small independent auto repair centers.

Previously unavailable telematics data could reveal how people actually use products and how those products perform in real-world conditions. This would help original equipment manufacturers and carmakers design better products and reduce the cost of production and maintenance by creating new efficiencies in their design and manufacturing processes.

Indeed, remote diagnostics would be a boon to original equipment manufacturers, helping them detect and fix warranty problems and reduce product recall and liability costs. It could also increase revenues from the sale of automotive parts—especially as manufacturers and dealers learn to inventory replacement parts effectively—and improve the reliability of future products. And by allowing original equipment manufacturers to make information available to third parties such as insurance companies, telematics-enabled diagnostics could create new revenue sources. The chief beneficiary of all this would, of course, be the consumer.

For car dealers in the European Union, new legislation has made it possible to sell multiple car brands under one roof. Dealers can now seek customers across brands as well as borders. Services that leverage telematics can help create a strong new bond with customers across the newly opened European market.

Industry research indicates that the future is already here. A recent Accenture study found that more than half of original equipment manufacturers and their dealers already are offering telematics solutions to their customers, and that one-third of end users are either employing or testing telematics. Many of those customers are looking to telematics to improve the operational efficiency of their fleets. Twenty percent report using applications involving field service truck and technician uses, and 25 percent are using applications in their equipment delivery trucks.

Making industrial environments aware provides a variety of benefits. It can help improve safety, minimize equipment downtime, reduce costs and help improve product design, since sensors will be able to pass along information about what works and what doesn't.

But more important, the wealth of information generated could also form the basis of a vast secondary market of product and customer insight for retailers, public-sector planners, financial service providers and any other organization with an interest in consumer behavior and market dynamics.

Take the auto industry. Telematics data means that original equipment manufacturers could begin to broaden their business models from making and selling vehicles to selling information about those vehicles and their owners to a variety of third parties.

For example, insurance companies currently spend hundreds of millions of dollars to gather and analyze information about how customers operate their vehicles. They then use this information to help them manage risk and offer appropriate, targeted policy coverage. Using telematics to supply insurance providers with this information is a potential new revenue generator for original equipment manufacturers.

In fact, everyone benefits. Insurers could save time, reduce costs and offer more appropriate services to their customers. Those customers, in turn, would receive policy quotes that more accurately reflect their driving records.

For the makers of vehicle engines and parts, this stream of information represents a unique source of per-

formance data on their products. The insights gleaned from this mountain of information about how products are used in real-world conditions could help manufacturers improve designs and even tailor parts and components for specific driving conditions.

As the data collected by telematics devices become more widely available, new applications become possible. Imagine, for instance, how much more effective urban planning programs would be if developers had real-time access to information that revealed the number of people traveling by car to a certain area at a certain time. Or consider local and federal agencies that collect the reports required of interstate truck drivers. What if the agencies could check compliance in real time, at any time? Or what if they were able to monitor emissions and fuel

consumption by tapping into the aggregated view of a particular car model's data?

Local government, law-enforcement and other security professionals would find many ways to use telematics data to improve safety. For instance, shipments of hazardous materials could be carefully tracked, and delays or other problems could be instantly identified.

Telematics data could also be an invaluable source of customer intelligence for retailers trying to decide where to locate new stores and outlets. The data could tell site-selection professionals not only how many cars pass a certain location but also what kind of cars they are—limousines, sport utility vehicles or compacts—providing real-time demographic snapshots of potential sites.

Keep on truckin'

Another industry where telematics can add value and cut costs is commercial trucking. For example, an automated vehicle location system can enable fleet managers to keep tabs on the locations of multiple vehicles without having to manage cell phone conversations with different drivers. Also, tracking the locations of trucks can increase general safety and security on the roadways, especially for trucks hauling hazardous materials.

There are a number of other benefits that could be derived from the analysis of truck operations and performance data gathered by telematics. For example, drivers could reduce the time they spend on administrative activities if the logs they keep manually could be automatically generated more quickly and accurately. Preventive maintenance based on the actual performance data of the truck and engine—rather than just on mileage and time—could keep trucks in service longer. And fleet managers could better analyze and reward top-performing drivers and other employees based on more timely and accurate operational data.

In addition, fuel tax reporting—which is done across jurisdictions and is very costly to create, manage and submit—could be more cost-effectively generated automatically from telematics data. Finally, manufacturers could use engine performance data to improve the designs of their trucks—giving fleet customers trucks better suited to their uses.

Sooner than many people realize, businesses will be leapfrogging basic telematics applications and entering a new age of visionary, cross-industry business opportunities.

To succeed, the business case for a successful telematics solution will have to be broad enough to include partners across industries. The infrastructure necessary for creating aware environments is prohibitively expensive for a single application. But when telematics data can be collected, aggregated and shared across a spectrum of users with multiple purposes, the cost will become a justifiable way of achieving competitive advantage, even in low-margin industries.

Before the full potential of telematics is realized, two challenges will need to be addressed.

Technology lifecycle. The shelf life of a meaningful telematics solution may be much shorter than the expected life of the vehicle or equipment in which it is being installed. This lifecycle gap—the fact that much of this technology will be obsolete before the greatest returns of telematics are realized—makes it difficult for a company to commit to the costly investment required.

Data ownership and privacy. Who owns the information that is being collected? Is it the equipment manufacturer, the customer or some third party? Ownership is a key question, and privacy issues will need to be addressed.

Data collected through telematics can be either extremely valuable or highly invasive, depending on your point of view. As with many information-based innovations, the customer's participation in the data-gathering process will depend

on the perceived benefits offered by this participation. If behavioral data collected about a person result in a more personalized customer experience that exceeds the value of that person's privacy, then the service becomes much less intrusive.

Critical partnerships

A rich telematics application system requires many specialized elements that are likely to fall outside the core competency of any one organization. These include hardware, software and wireless networking, as well as service provisioning and call center management.

A viable system will also need a robust infrastructure with customer service and support, billing, technology infrastructure, application integration, and data mining and management. Coordinating the host of business capabilities, partner alliances and technologies required to design, build, deliver and operate telematics systems is a daunting task for many companies.

Clearly, the will to leverage telematics is not enough to ensure success. It must be combined with partnerships spanning industries and direction from experienced third parties that understand how to use available technology to take advantage of the latest value-creating opportunities.

The story of telematics demonstrates that the difference between a clever invention and an indispensable solution can be a subtle matter of application. The workshops and garages of the world are filled with clever inventions that solve no known business problems. They are destined to gather dust unless they are applied in ways that their inventors never imagined.

Telematics is one of those developments that is poised to break out

of the "interesting invention" category and become an essential tool for doing business. But for that to happen, telematics must be recognized as a generator of valuable data that is unavailable from any other source. When approached this way, the possibilities become apparent, the value comes into sharp focus and the revolution begins to take hold. ■

About the author

Joel A. Osman is a senior manager in the Accenture Technology Labs organization. Mr. Osman, who has helped build the Accenture technology practice in Southeast Asia, currently leads the research, business development and alliance management efforts for telematics in North America. In this role, he has been working with other Accenture colleagues from various industry groups and alliance partners to create innovative business solutions for clients. He is based in Chicago.

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