Telematics for insurance

Capitalizing on the rise in connected vehicles to enhance customer engagement and develop new, value-added services
T elematics for insurance

We live in an era of connected cars, connected homes and connected lifestyles. For insurance companies, the technologies that enable this connectivity—ranging from embedded vehicle telematics systems to smartphone apps—challenge traditional business models and create new opportunities for rethinking how they do business. These technologies also provide a wealth of opportunities for insurers to offer new, value-added services to policyholders.

Some of the most immediate opportunities come from telematics technologies, which collect vehicle information and transmit it wirelessly to outside systems. Vehicle telematics has long been used in the transportation and logistics industry to monitor driver performance, enhance trip efficiency and track package locations. But the increasing prevalence of embedded telematics technologies and on-board diagnostics (OBD) ports, plus the introduction of smartphone apps that facilitate the collection and transmission of driving and location information, are spurring the development of new insurance telematics use cases. Meanwhile, the recent cancellation of telematics-related patents in the United States is opening the door for telematics-based offerings with the potential to transform the industry.

For insurance companies, the integration of big data and analytics solutions with telematics technologies offers important opportunities to extend the use of telematics data beyond usage-based insurance (UBI) and improve competitive differentiation. Insurers can personalize vehicle policies with rates and discounts based on actual driving scenarios that are placed into context. They can also develop geo-fencing services that make sure drivers stay within defined boundaries, keep fleet drivers on assigned routes, and present cross- and up-sell opportunities when drivers enter an area where they don’t have coverage. And insurers can use telematics data after an accident to initiate multiple value-added services that improve interactions with policyholders from the time of the accident through the claims process. Telematics enables insurers and policyholders to transform the relationship, bringing both sides closer together.

These and other new services enable policyholders to save money, improve driving safety and streamline claims. Insurers, meanwhile, can move beyond the infrequent interactions that typically define insurer-policyholder relationships and position themselves as partners, providing meaningful interactions on a consistent basis—and gaining a competitive edge. This white paper explores several important ways insurers can use telematics to enrich and expand their policyholder services, as well as the IBM technologies that support those efforts.

Introduce pay-how-you-drive offerings

Traditionally, insurers have created risk models and set premiums by using data about group behavior. They correlate past claims data with information on age, gender, years of driving experience and ZIP code to help predict the likelihood of future claims.

Those predictions might be good, but there will always be exceptions to the rule. For example, some young, inexperienced male drivers—whose premiums are often among the highest—will drive safely and avoid accidents. Some drivers have short commutes to work or work from home, reducing their risks of accidents and thefts.

Today, insurance companies can collect second-by-second data from existing policyholders to precisely identify individual driving patterns. Insurers can capture data on trip
For insurance companies, the potential benefits of pay-how-you-drive offerings are significant. These offerings can help attract and retain policyholders by keeping pricing low while generating new revenue streams for insurers as they present policyholders with targeted, relevant value-added services. For example, insurers can provide services that inform policyholders of the most efficient, safest routes to work.

In addition, insurance companies can use real, individualized data to select and retain the best, lowest-risk drivers as well as those with the highest lifetime value. With pay-how-you-drive offerings, insurers can enrich the vehicle data to better align risk and price.

**Launch geo-fencing services**

By analyzing telematics data in real time, insurers can also offer geo-fencing services that help promote driving safety and capitalize on add-on coverage opportunities. For example, a parent of a young driver—or the adult child of an elderly driver—can use geo-fencing to make sure the driver stays within

Real-time analytics can help insurers create personalized rates and offer discounts for safe driving, low-mileage driving, “eco” driving or other behaviors (see Figure 1). Telematics enables underwriters to distinguish between drivers who are safe on the road from those who simply seem safe on paper. These capabilities stretch well beyond what a simple usage-based model can offer.

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**Discount factors**

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**Estimated discount**

Your discount is looking good. Nice job!

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*Figure 1. Insurers can use telematics data to create pay-how-you-drive offerings that offer significant discounts based on individual driving behavior.*
particular geographic boundaries. The vehicle continuously tracks its location. If the driver goes beyond a defined boundary, the vehicle displays an alert on the car’s dashboard screen and the designated contact receives an alert on a mobile device through a smartphone app (see Figure 2). By enhancing location information with other data, such as traffic conditions and road maintenance information, insurance companies can help those receiving the alerts better understand any extenuating circumstances. Traditional UBI programs would simply not give the driver a premium discount.

Geo-fencing can also be used by commercial fleet managers to augment fleet-tracking strategies. For example, the manager of a delivery service can define geographic delivery areas for each driver or identify the most efficient routes. If a driver travels beyond the delivery area or chooses an inefficient route, the driver and manager receive an alert. The more efficient routing can speed up driving tasks and reduce fuel costs. Additionally, if a driver is late for a delivery, the shipper and receiver could receive an alert with a complete view of the situation, adding context. At the same time, it helps thwart unauthorized activity by drivers and prevents drivers from endangering assets (such as a truck and its contents) by driving into heavy crime areas.

Insurers can also use geo-fencing capabilities to help ensure policyholders have appropriate coverage at all times. For example, an insurance company can send an automated alert when a policyholder crosses an international border, notifying the policyholder that he or she does not have coverage for that new country. As part of that alert, the insurer could integrate an offer for international coverage.

Geo-fencing also enables insurers to offer additional services to policyholders. For example, an insurance company can use cloud capabilities to notify drivers of available garages based on the driver’s destination. It can warn policyholders when they enter areas where auto thefts are more common or accident occurrences are high. Related technologies can immediately alert drivers to road hazards by drawing on data from nearby vehicles. These and other capabilities deliver timely, relevant information to policyholders while forging a strong, trusted relationship with the insurer.

Figure 2. Analyzing telematics data in real time enables insurance companies to offer geo-fencing services that alert a driver and others when a vehicle travels beyond a designated area.
Deliver next-generation FNOL capabilities

Real-time analysis of telematics data can also help insurers deliver important value-added services following an accident. Vehicle-based telematics systems can automatically send data to an insurance company immediately after the incident, providing the first notice of loss (FNOL). By rapidly analyzing data from sensors on brakes, air bags, seat belts and other systems, the insurance company can estimate the severity of the accident. The insurer can then initiate a series of appropriate actions, such as calling emergency personnel, contacting an automobile club or towing service, reserving and delivering a rental car to the scene, or sending a replacement fleet vehicle in the case of a commercial operation.

In an attempt to streamline accident reporting and the initiation of claims, several insurance companies previously introduced smartphone apps that asked policyholders to enter and submit information directly to the insurance company. However, many policyholders prefer to have human interaction following an accident.

The next-generation approach to FNOL delivers that human interaction and gives insurance call-center agents all the information they need to optimize the experience. In a competitive field such as insurance, companies must deliver a responsive experience during the FNOL to keep policyholders satisfied.

Beyond using data to spur post-accident actions, insurance companies can use vehicle telematics to automatically collect the information they need for a detailed crash report. Telematics systems can transmit information about the road—such as the number of lanes and the posted speed limit—as well as the vehicle's speed at the time of the accident, weather conditions, the force of the impact and more (see Figure 3). Having accident information immediately following an incident—instead of having to wait for policyholders to report incidents after the

Figure 3. Insurers can use telematics data to provide the first notice of loss (FNOL) after an accident and present key information about vehicle location, its speed before an accident, road conditions and more.
fact—can help insurers reduce response times and streamline the process of triaging claims. They can then rapidly produce estimates for car repairs and even potential medical costs. Incorporating telematics data into the claims process can ultimately help reduce loss adjustment expenses.

Using telematics information for the FNOL can also help reduce fraud. By analyzing telematics information sent from the car and incorporating information from geospatial, topography and other data sources, insurers can simulate an incident using accurate, machine-generated data. They can then compare the results from the simulation to information conveyed by policyholders and witnesses and assess the veracity of their accounts.

Identify the ecosystem of telematics technologies

Capitalizing on vehicle telematics involves an integrated set of processes and technologies.

Ingest: Cars, motorcycles, trucks and boats can generate terabytes of data per day and petabytes per year. Data might include information about vehicle speed, acceleration, braking, cornering, driving frequency and driving distance, as well as weather conditions, traffic conditions and more. Insurers need to efficiently ingest those large volumes of data into analytics environments.

Cleanse: Data quality and content can vary significantly by device and vehicle manufacturer. Insurers must cleanse data to ensure consistency and to support accurate analysis.

Enrich: Insurers can enrich telematics data with geospatial data, road data and weather data to provide context that aids analytics.

Analyze, report: Insurers need advanced big data analytics solutions that can analyze streaming data in real time and analyze increasingly large volumes of data. To generate and identify new insights, they must facilitate data exploration, enable predictive analysis and provide reporting capabilities.

Deliver: Insurers also need solutions that can provide customers with feedback and information on a variety of mobile platforms.

Govern: At the same time, they need ways to help simplify data retention and governance.

IBM offers a comprehensive, end-to-end portfolio of solutions that help insurance companies integrate sophisticated big data and analytics capabilities into their telematics strategy. That portfolio incorporates dozens of new patented technologies and capabilities developed by IBM Research and builds on IBM Watson™ Foundations, an integrated set of big data and analytics capabilities designed to generate actionable insights.

IBM solutions include:

IBM® InfoSphere® Streams: Provides real-time analytic processing for data streaming in from connected vehicles. InfoSphere Streams can support up to millions of events or messages per second.

InfoSphere BigInsights™: Builds on an Apache Hadoop framework to allow insurers to enrich, stage and analyze a large volume and variety of data at rest. Offers seamless interoperability with traditional enterprise data warehouses, plus a workload engine for advanced modeling and predictive analytics.
**InfoSphere Information Server:** Facilitates data integration and enables insurers to understand, cleanse, transform and deliver information to third-party applications and business processes. InfoSphere Information Server also provides the capabilities insurers need to simplify governance.

**IBM Watson Explorer:** Enables federated discovery, navigation and search across multiple data repositories so insurers can find and share information quickly, even within complex IT environments. Support for mobile platforms helps insurance organizations deliver results to users anytime, anywhere.

**IBM Cognos® Business Intelligence (BI):** Provides reports, analyses, dashboards and scoreboards to help insurers identify insights from telematics data in real time.

**IBM PureData™ System for Analytics:** Offers a scalable, massively parallel system for conducting complex analytics on multi-petabyte data volumes, delivered through a simple appliance. Supports data discovery, visualization and advanced analytics as well as traditional data warehousing and BI.

**IBM DB2® Analytics Accelerator for z/OS®:** Allows insurers running the z/OS operating system to increase performance for telematics analytics while controlling costs.

**IBM SPSS®:** Provides predictive analytics capabilities that can help insurers discover data relationships and develop precise risk models based on telematics data.

**IBM Worklight®:** Helps insurers extend applications to mobile platforms. Using Worklight, insurers could offer smartphone applications that notify insurers of accidents or provide trip-by-trip driving feedback.

**IBM Telematics Analytics on Cloud:** Built on IBM software and infrastructure, insurers can use this solution to quickly conduct sophisticated modeling and easily launch new value-added services.

**Build on a telematics foundation: Extend big data and analytics to new areas**

The big data and analytics solutions that insurance companies adopt for vehicle telematics can serve as a foundation for capitalizing on other emerging trends. Machine-to-machine (M2M) communications, which play a primary role in the Internet of Things (IoT), present new opportunities for insurance companies. Insurers that can analyze the data streaming in from a broad array of devices can generate previously unavailable insights that help build deeper relationships with customers. They can offer value-added services that fit today's increasingly connected lifestyle while providing tighter risk control. Capitalizing on M2M communications can benefit both personal and commercial lines of business.

For example, insurers can introduce new services that take advantage of sensors installed in connected homes. They can analyze data coming from sensors attached to pipes and electrical outlets, alerting homeowners of leaks or short circuits. They can also offer security services that contact police when home sensors indicate a break-in. And they can offer discounts to proactive owners who take preventive actions against the most likely causes of claims. In addition, insurers can provide services that track temperature, wind speed, humidity and mechanical vibrations that can cause structural problems in an insured object (such as a home, airplane, train or anything else) or that could interrupt business.
Develop new business models and improve customer interactions with telematics data

In many cases, insurance companies interact with customers on only two occasions: when individuals apply for insurance and when they report a claim. By analyzing telematics data, insurers can create new business models and introduce value-added services that facilitate deeper, more personalized engagement with policyholders. With the IBM big data and analytics portfolio, insurers can interact with policyholders at just the right time and the right way to maximize value for both parties.

For more information

To learn more about the expanding role of telematics in the insurance industry and the IBM big data and analytics solutions that can help you capitalize on data resources, contact your IBM representative or IBM Business Partner, or visit:

- ibm.com/software/data/bigdata/industry-insurance.html

Additionally, IBM Global Financing can help you acquire the software capabilities that your business needs in the most cost-effective and strategic way possible. We’ll partner with credit-qualified clients to customize a financing solution to suit your business and development goals, enable effective cash management, and improve your total cost of ownership. Fund your critical IT investment and propel your business forward with IBM Global Financing. For more information, visit: ibm.com/financing