

Delivering Connected-Car Insurance with M2M On-Board Telematics Solutions

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White Paper

Applications tailored to mobile-connected users are transforming service industries, from banking and finance to transportation and healthcare. As mobility expands from people to vehicles, the auto insurance industry is undergoing its own revolution. Machine-to-machine (M2M) on-board telematics technology empowers underwriters to provide “connected-car insurance,” a new service-delivery platform offering breakthroughs in risk management, driver safety, product innovation, and customer satisfaction.

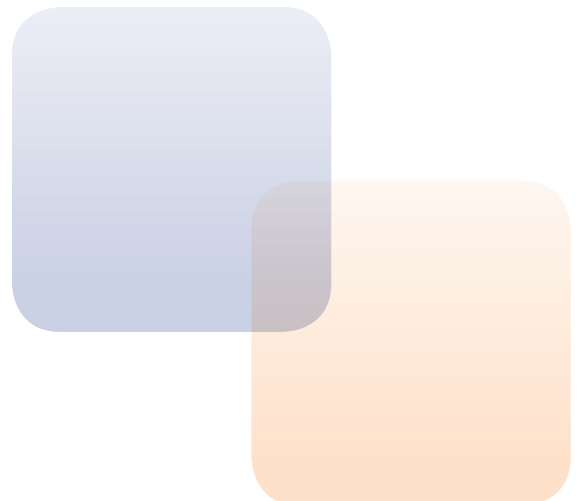
Connected cars provide real-time access to vehicle diagnostic and location data, empowering insurers to move beyond the use of inferred risk criteria (such as zip codes, age, marital status, and credit scores) to actual information about driver behavior and vehicle operation. With this data, insurers can better match premiums to customers with usage-based insurance (UBI), thereby improving customer segmentation, pricing, and policyholder retention.

The connected car is also a platform that enables insurers to deliver far more than insurance, as illustrated in **Figure 1**. Safety is enhanced through applications that curtail distracted driving and monitor vehicle health. Value-added services like roadside assistance, vehicle tracking, hands-free mobile communication, navigation, and in-vehicle Wi-Fi access can boost revenue, customer loyalty, and policy retention rates.



Figure 1: The connected car enables insurers to deliver far more than insurance.

With the connected car, auto *insurance* providers can expand their reach and become automotive experience *assurance* providers, trusted partners that assure an optimal driving and vehicle experience for their customers.



Connected Car Insurance Offerings: More Than UBI

Imagine a power utility without electric meters. The utility would have to do its best to guess how much power a home would use and set its prices accordingly. Generic predictors, like the size and age of the home or the number of occupants, might be employed. However, when it comes to measuring actual usage, the electric company would be in the dark.

Historically, auto insurance providers have operated in a similar fashion, estimating policy premiums based on generic risk factors. While these are legitimate, they shed little light on the policyholder's actual driving behavior. Where do they drive? When do they drive? How long? How far? How fast? How safely?

With connected-car technologies, auto insurers can directly access this real-world data in real time to create connected-car insurance products, including usage-based insurance (UBI), driver-safety solutions, vehicle protection, and enhanced customer services, as described in **Table 1**.

Usage-Based Insurance: Increased visibility into the behavior of high-risk and low-risk customer segments allows insurers to better match premiums to policyholders. Usage-based insurance products, such as Pay-As-You-Drive (PAYD) and Pay-How-You-Drive (PHYD), link the risk of loss to actual driving habits. Insurers are empowered to employ pricing strategies that increase customer satisfaction, retention and market share without sacrificing profit margins.

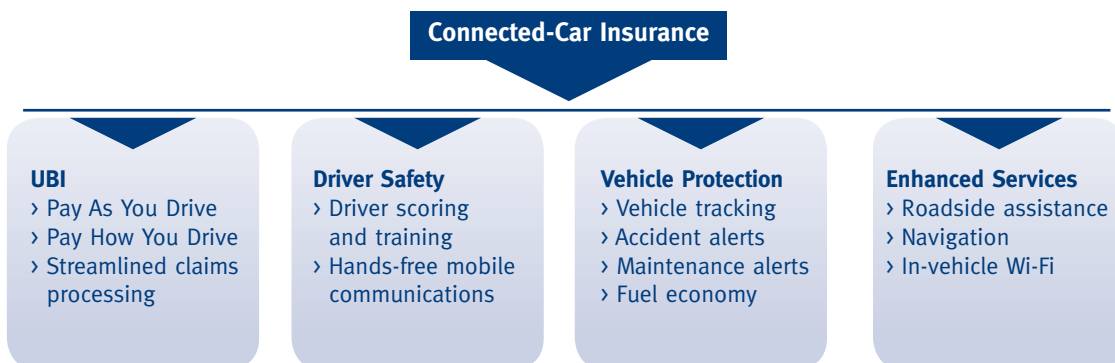
Driver Safety Solutions: Beyond saving money, improvements in driver and vehicle safety save lives on the road. Connected car applications can send alerts at the time of a collision, speeding the arrival of emergency or roadside assistance. Just as insurers offer incentives for seatbelts and airbags, insurers can motivate policyholders to adopt connected car applications, such as hands-free calling and texting, to reduce distraction-caused accidents from mobile phone use. Additionally, driver scoring applications are available to identify risky driving behavior and offer opportunities for skill improvement.

Vehicle Protection: With a connected car, insurers can improve stolen vehicle tracking and recovery. Maintenance alerts can be provided to encourage auto repairs that prevent accidents and claims. When a collision does occur, claims can be started automatically, dramatically improving accuracy and processing speed.

Enhanced Customer Services: The in-vehicle platform that enables connected-car insurance empowers underwriters to deliver a range of compelling, value-added services. From navigation and roadside assistance to in-vehicle Wi-Fi access, insurance companies can be service providers that help ensure the best total automotive experience for their customers.

Increased visibility into the behavior of high-risk and low-risk customer segments allows insurers to better match premiums to policyholders.

Table 1: Connected-Car Insurance Products



A Look Under The Hood

The connected car is made possible through the combination of machine-to-machine (M2M) wireless communications and automotive telematics, a technology that integrates vehicle on-board diagnostics and Global Positioning System (GPS) capabilities.

On-board diagnostics (OBD) offer access to a vehicle's engine control unit (ECU), the computer system that gathers data from digital sensors monitoring the car's health and operation. This is accessible through an OBDII connector, typically found under the dashboard near a car's steering wheel.

GPS is a well-known solution for gathering precise geographic location information. Not only can GPS identify where a vehicle is, but also movement and speed may be calculated, based on changes in the vehicle's position.

The telematics information gleaned from GPS and the car's OBDII interface is transmitted by an on-board device, such as the A+ Tracker from Applus Technologies, to a remote telematics server over an M2M mobile network data connection, whether CDMA or GSM. Applications can access the server data to track a vehicle's location, operation and performance, and interpret results. Applications are typically provided by third-party software providers specializing in insurance solutions that integrate with a telematics on-board device. Some insurance companies have built their own proprietary software as well.

Table 2 describes the kind of data that can be collected and how it enables connected-car insurance solutions.

Actuarial Opportunities

Traditionally, auto insurance actuaries have been forced to assess risk based on limited information, much of it unverifiable and provided directly by the current or prospective policyholder.

The data collected by an on-board telematics platform delivers verifiable data about when, where, how, and how far vehicles travel. Actuaries are able to create reality-based risk models or a per-customer basis to support connected-car insurance offerings.

“In interviews we conducted with insurance companies and their actuaries, there was consistent agreement that charging for mileage would be preferable to the current system.”

—The Brookings Institution¹

Table 2: Telematics Data Collection and Risk Assessment

DATA CAPTURED	RISK ASSESSMENT OPPORTUNITY
Time of day, hours driven	Identify peak risk time and driving patterns
Mileage driven	Verify mileage driven per policy period
Average and maximum speed	Detect speeding
Aggressive driving tendencies	Track rapid acceleration, sharp cornering, hard braking, and other aggressive driving behavior
GPS/ location information	Verify driving and parking zones, urban or rural driving, and road type
Vehicle identification information	Ensure that data collected is for vehicle insured
ODBII vehicle diagnostics from engine control unit	Provide engine-trouble code indicators, idling, fuel efficiency, and emissions test data

¹ Jason E. Bordoff and Pascal J. Noel, “Pay-As-You-Drive Auto Insurance: A Simple Way to Reduce Driving-Related Harms and Increase Equity,” The Brookings Institution, July 2008.

Intelligence for the following risk categories is greatly enhanced with embedded telematics:

Mileage: Actuaries know that more mileage driven means more accidents. Insurance companies rely on self-reported mileage data or updates provided through vehicle visits to service centers and emission test stations. The reporting timeframes are infrequent and the data collected is unverified. With an M2M on-board device, actual vehicle mileage can be measured at underwriter-specified intervals, delivering this critical data on a regular and verified basis.

Location: Actuaries understand that risks differ significantly between urban and rural areas. Urban drivers are more likely to experience accidents, vehicle theft, or vandalism than their rural counterparts. As a result, policyholders in rural zip codes usually pay less for insurance. However, such residential billing address zip code data may share little about where a vehicle is actually driven. For example, the vehicle may spend more time parked at work or school than at home, drive on busy interstates, or slow surface streets. This kind of precise location data is available with a connected car.

Time: When a vehicle is driven is an essential consideration. A connected car can track the amount of driving during peak risk times, such as morning and evening rush hours, and late night activity.

Aggression: Actuaries are on the lookout for signs of aggressive driving behavior. The connected car can detect speeding, as well as hard braking, faster-than-typical acceleration, and sharp cornering during turns. With this information in hand, it is easier to discern whether a driver is responsible or a daredevil.

Enhanced Services

Several auto insurance providers are already testing or selling usage-based insurance (UBI) products, including Progressive, State Farm, and Allstate. Other insurance providers will be forced to respond with their own products.

Beyond UBI, the connected car enables a range of services and applications that strengthen the insurance underwriter's relationship with customers, creating new opportunities for revenue gains and churn reduction.

Underwriters are uniquely positioned to offer auto experience assurance, in addition to insurance. Connected-car insurance providers may offer roadside assistance and navigation services to

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their customers. Additionally, communications services like hands-free calling and texting, plus in-vehicle Wi-Fi, are possible with embedded telematics platforms.

With the connected car, underwriters can create relationships that extend beyond insurance, making it more difficult for competitors to lure away customers with pricing-focused tactics.

Conclusions

Advances in M2M on-board telematics technologies are creating new opportunities for connected-car insurance. Real-time access to vehicle diagnostic data enables insurers to move beyond the use of inferred risk categories to employing direct data about driver behavior. For the first time, insurance companies can understand exactly where, when, and how their customers drive. Armed with this data, insurers can offer usage-based insurance (UBI), reducing risk, improving profitability, and opening new markets by better matching premiums to customers.

Beyond UBI, connected-car insurance is a platform that empowers insurers to grow revenue and strengthen customer relationships. Safety is enhanced with applications that rein in distracted driving, thereby helping to reduce accidents, injuries, and fatalities. Enhanced services, such as navigation, roadside assistance, and in-vehicle Wi-Fi, create differentiators that can boost policyholder retention.

With connected car technologies, auto *insurance* providers are transformed into automotive experience *assurance* providers, a partner customers trust to deliver an optimal driving and vehicle experience.

About the Author

Michael Harris is principal consultant at Phoenix, Arizona-based Kinetic Strategies, Inc. Applying more than 15 years of experience as a strategist, research analyst, journalist, public speaker and entrepreneur, Michael consults with select clients in the networking, Internet and telecommunications industries.

About Applus Technologies

Applus Technologies, Inc. is part of the Applus Group, a recognized global leader in OBD technology and vehicle emissions and maintenance inspections, performing over 17 million vehicle tests annually in 40 countries on five continents, with annual revenues exceeding \$1 billion. Applus Technologies also provides custom-engineered solutions for remote data collection, systems integration, and mobile asset management for government and enterprise customers. The financial strength of the Applus Group is backed by a majority shareholder, The Carlyle Group, a private global investment firm with over \$106 billion under management.

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