AUTOMOTIVE CLOUD PLATFORM AND SOLUTIONS
Introduction

The automotive industry is on the precipice of (r)evolution. Gartner estimates that by the year 2020 there will be over 250 million connected vehicles on the road, with the number of installed connectivity units in vehicles worldwide increasing by 67 percent and consumer spending on in-vehicle connectivity doubling. Ernst & Young, similarly, predicts that 88 percent of all new cars will feature embedded telematics by 2025, amounting to 16 million new cars in the United States.¹ Research conducted by Intel shows that connected cars are the third-fastest-growing technological device after phones and tablets.² Driving this revolution is The Internet of Things (IoT) and its newest member: the automobile.

¹ Ernst & Young LLP: The Quest of Telematics 4.0
² intel.com/newsroom/kits/iot/pdfs/Intel_QNX_release.pdf
The subject of the connected car dominates our news cycle, and whether you’re a believer or a skeptic, the reality is that intelligent vehicles as well as vehicle-to-vehicle and vehicle-to-infrastructure communications are accelerating at a startling pace. The signs are everywhere. Whether it is Bluetooth-enabled smartphone connectivity, GPS-enabled location services, or sensor-enabled safety features, car manufacturers today are becoming, in essence, partly software companies.

As with all transformative technologies and new advancements, there is an endless parade of pundits preaching numerous possibilities. Some hit the mark, while others speculate on how IoT will soon have autonomous vehicles dominating our cities and carrying us from one place to another with casual aplomb and zero human input – an unrealistic scenario in the near, tangible, future.

Despite all of the hype surrounding autonomous vehicles and their potential, the service side of the automotive industry has been largely ignored, until now. At SHIFTMobility, we believe new business models will emerge centering around remote diagnostics and telematics coded part commerce. Through the introduction of the industry’s first telematics platform with machine learning and human machine interface, SHIFTMobility is able to drive connectivity from car to smartphone to a service network comprising vertically integrated part manufacturers, distributors, and repair shops. This white paper will explore the vehicle telematics revolution and illustrate how SHIFTMobility solutions are enabling two-way communication between connected cars and the service network.
Telematics

Until now, the automotive industry has never been able to directly communicate with consumers and commercial vehicles to deliver on-demand and on-spot services. The effective delivery of connected car services requires seamless integration of various software and hardware components, human machine interfaces for communications with vehicles, and machine learning infrastructure. From in-vehicle entertainment to maintenance and sales, the car and its underlying technologies represent vast untouched potential. This is good news not only for consumers but also for parts manufacturers, distributors, and repair centers. In fact, connected car technology is already changing the way we drive today.

Telematics, at its core, is a communication technology for the automotive industry that is based on information generated from and exchanged between vehicles and a connected ecosystem. It’s a merging of wireless mobility, location-based services and in-vehicle electronics, and it’s nothing short of a game changer.

Vehicle telematics is in a constant state of evolution denoted by four distinct phases. The first, which is already widely in use, consists of hands-free calling and navigation. The second phase, also prevalent today, includes portable navigation and satellite radio. Phase three introduces comprehensive vehicle connectivity, and phase four extends this connectivity to an inclusive service network. Phase five enables robust vehicle-to-vehicle and vehicle-to-infrastructure communications, including the seamless integration of mobility and web services.³

³ Ernst & Young LLP: The Quest of Telematics 4.0.
We are all familiar with the high-tech extras that now come packaged in the most expensive vehicles, but as technology evolves, so too does its accessibility. Many of these features are now making their way into vehicles, paving the way toward a new way of driving augmented by connectivity. From integrated artificial intelligence to advances in human-machine (HIM) learning, this shift represents significant opportunity for technology companies. Soon enough, every car on the road will be fully connected, transformed into a mobile integrator of technology.  

In-vehicle technology, used to monitor vehicle functions and diagnostics information, has undergone rapid development to address today’s enhanced safety needs and support autonomous and driverless cars of the future. Industry specifications ISO 14229 – Unified Diagnostic Services (UDS), and Worldwide harmonized OBD WWH-OBD/ISO 27145 are the preferred diagnostic vehicle protocols for next-generation vehicles. Mobility networks are now being extended to acquire location and contextual data in order to provide real-time traffic alerts and deliver emergency services to consumers all over the world. But this is only the beginning.

A telematics-connected ecosystem will create new information models and new opportunities for the worldwide repair and service industry. Those seeking to tap into the possibilities brought about by telematics include traditional vehicle manufacturers, OEM and aftermarket parts manufacturers, distributors, automotive dealers, and large service chains. The telematics revolution is not solely limited to the aforementioned, however, as stakeholders in telecom and insurance will be impacted as well.

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4 Ernst & Young LLP: The Quest of Telematics 4.0.

5 Frost & Sullivan, Opportunity Analysis of Telematics in the North American Automotive Aftermarket
As technology advances faster than ever before, it is essential for companies to be agile enough to continuously adapt their business strategies in order to maintain a competitive edge. Big Data is big business, but connected vehicle data is enormous.

**Market Size & the Current State of Telematics**

Models speculating on the size of the global telematics market vary, but the general consensus is that it is expected to breach $50 billion by 2021.\(^6\) Ernst & Young predicts that approximately 104 million new cars are expected to have some form of connectivity by 2025.\(^7\) For the $250 billion aftermarket industry, the need to embrace connectivity has never been more compelling.

Back in 1995, OnStar Corporation gave the automotive industry its initial glimpse into early telematics by outfitting GM vehicles with the ability to automatically call for help should a crash occur. This was the first step towards a future we are only beginning to realize. Fast forward to the present: today’s consumers expect their in-vehicle experience to be an extension of their mobile-first, connected lifestyle. Emerging telematics-enabled services, such as in-vehicle diagnostics and vehicle-to vehicle communication, promise to transform the driving experience.

Already, major vehicle manufacturers have taken the first steps to bring payment features to connected vehicles. While automotive businesses vie for control of your dashboard and smartphone, many are missing a crucial piece of the puzzle: a platform designed to meet the requirements of the telematics-enabled ecosystem.

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\(^6\) Booz-Allen & Hamilton: Automotive Telematics: Driving Toward the Wireless World

\(^7\) Ernst & Young LLP: The Quest of Telematics 4.0
Telematics e-commerce

While every industry is seeing staggering gains in purchases made through mobile devices, it’s the untouched real estate of automotive that has the potential to truly revolutionize the way an entire industry makes, sells, and buys products. Coupled with recent advances in telematics technology, mobile commerce is about to get a lot smarter – welcome to intelligent mobility.

With touch-screen dashboards and app integration, carmakers are already evolving into technology companies, but some of the more tangible benefits of this technological leap center around the automotive service side. Vehicle-to-cloud communication will allow cars to be directly connected to their manufacturers, the distributors who stock their parts, and the repair shops who service them. On-board vehicle sensors will aggregate and provide data in ways never imagined just a decade ago.

Telematics-based commerce introduces the potential for businesses to sell directly to buyers by connecting with vehicles whenever they malfunction, need repairs, or break down. The idea behind telematics-based commerce is just that – the evaluation of supply-demand at any point in the network so that services can be effectively planned and delivered. In just ten years’ time, drivers will be connected with retailers and businesses based on location and have the ability to purchase music, goods, and services, and even pay tolls right from their dashboards.
Remote Diagnostics

In the near future, when a car indicates that it is time for servicing, the vehicle will automatically transmit all pertinent information directly to the nearest repair center or dealer service bay. In fact, telematics-equipped automobiles will even be able to schedule the service visit sans human intervention. With this level of connectivity, service centers will have the parts and a technician ready to go when a new customer drives into the bay. And it doesn’t stop there.

The automobile of today has between 20 and 150 microprocessors along with a network of sophisticated sensors that monitor the external environment, such as air temperature, tire pressure, subsystems, and vehicle performance. These devices control everything from unlocking doors and running the infotainment system to engine management and airbag deployment. If there is a problem with any of these complex systems, computer-controlled diagnostic machines and hand-held scan tools are deployed to interpret data from the sensors and download specialized diagnostic trouble codes (DTC) for researching and resolving issues. As manufacturers transition from electromechanical devices to adaptive systems to complement new features like proximity sensors, autopilot navigation, and lane keeping systems, the number of sensors and electronic gadgetry is expected to grow dramatically.

Similarly, advances in telematics have also paved the way for predictive and maintenance analytics. Through the analysis of vehicle data, organizations can track driver behavior, institute optimal maintenance intervals, and monitor overall equipment and vehicle condition. For fleet operators, this will allow for real-time asset tracking while virtually eliminating unplanned downtime, thus cutting costs and increasing productivity. Part and vehicle manufacturers, on the other hand, will be able to use the incoming
data to predict component failures, make improvements, and notify the vehicle owner when a part is nearing the end of its service life.

With telematics and a mobile service network, parts manufacturers gain the ability to quickly diagnose vehicle problems with auto-aware smart devices and automatically predict the demand for vehicle maintenance and repairs. Not only will this move the parts supply closer to consumers or service points, but it will also mitigate the strain of unusual demand surges when a component fails unexpectedly. The historic tensions between the OEMs and aftermarket should not matter to consumers, and with telematics-enabled vehicles further blurring the lines, they will not.

Anna Buettner, manager for infotainment at IHS Automotive, states that “the telematics supply chain will see amazing growth and innovation through the end of the decade, as more vehicles debut new connected solutions that make use of embedded modules, while at the same time enabling consumers to fully leverage their mobile devices.”

The benefits are clear: instant access to services, reduction in wait times, faster recalls, and lower costs for manufacturers and distributors. Telematics simplifies the complexity of automotive parts commerce.

**Automotive Cloud Platform**

SHIFTMobility’s platform provides the infrastructure necessary to seamlessly connect, monitor, and transfer data between vehicles, service networks, and anything in between. Leveraging vehicle

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8 Frost & Sullivan, Opportunity Analysis of Telematics in the North American Automotive Aftermarket
telematics and common on-board diagnostics interfaces, we have simplified the exchange of standard diagnostic data by including details of vehicle run-time statistics, Diagnostic Trouble Codes (DTCs), system identifiers, and repair procedures. Consumer safety is enhanced by providing the means to direct drivers to their nearest service provider as soon as their dash service indicators (MIL) signal an issue.

The platform is designed to cater to the needs of the automotive service industry, from installers and service centers to fleets and consumers. Each market segment has a specific set of user requirements and features that SHIFTMobility has modularized for easy assembly, integration, and delivery over all mobile devices.

Along with the ability to be customized according to an organization’s specific needs, the platform includes real-time communications with vehicles, Human Machine Interface (HMI) communication, live data streams, charts, OBD II command support, and data logging and sharing with cloud and mobile applications - all with simple integration through APIs.

Our solution also supports a wide range of OBD II standard compliant adapters, CAN, LIN, Bluetooth, WiFi and cloud, eliminating connector obsolescence or the need for proprietary devices.
Through this innovative platform, organizations can leverage SHIFTMobility’s unique understanding of automotive data, standards, vehicle communication, and telematics to bring both cars and the service industry into the next generation of connectivity.

Installers & Service Centers
Remote diagnostics and over-the-air updates enable installers and repair centers to wirelessly stream real-time data for advanced vehicle diagnostics, accurate parts ordering, and increased customer retention. As vehicle technology accelerates, repair shops will require advanced tools that are able to make sense of increasingly complicated on-board systems and extensive parts catalogs.

Fleet Customers
Advances in GPS technology found a home in fleet vehicles some time ago. For organizations that control a sizable stable of vehicles, the ability to monitor their whereabouts and overall status is essential. By knowing when a specific vehicle is started, en route to a delivery, or sitting idle, businesses can better optimize fleet usage, control fuel costs, reduce operating expenses and labor costs, and increase overall vehicle productivity.9 Augmented with telematics, these entities gain the means to analyze and respond to this incoming data in real time and optimize accordingly.

Consumers & DIY
SHIFTMobility apps allow novices and pros alike to comprehend increasingly complicated modern vehicles and their systems, and repair them accordingly. No longer will complicated repairs require a visit to the dealer.

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9 Frost & Sullivan, Opportunity Analysis of Telematics in the North American Automotive Aftermarket
Built specifically for the automotive industry, SHIFTMobility’s technology integrates manufacturers, distributors, repair centers, and vehicles on a common platform and is well positioned to capitalize on and support the wave of new vehicles and their corresponding technologies, whatever they may be.

Conclusion

The opportunities presented by telematics and the connected car are limitless. However, to harness these evolving technologies, organizations require a platform designed to manage and understand the massive amount of data generated by our increasingly connected world. Deploying connected car solutions on SHIFTMobility’s automotive platform will allow any organization to enter the emerging telematics and connected car market with less risk, quicker deployment, and lower costs.

Ditch the complexity and drive connectivity with SHIFTMobility.

Learn more about our revolutionary automotive cloud platform at http://shiftmobility.com/automotivecloudplatform/