Telematics: Transforming the Automotive Industry
Unlocking the potential of the connected vehicle.
Introduction

Telematics is a set of interdisciplinary technologies that are providing the automotive industry the tools, methodologies and systems to transform driving into an engaging and interactive connected vehicle user experience (UX). In a broader context, it functions as a collection of foundational enablement technologies that facilitate the seamless exchange of information, vital to creating connected vehicle industry services, applications and ecosystems.

The emergence of integrated development platforms has enabled Auto OEMs to create purposeful ecosystems that leverage the innate synergies that exist between stakeholders, within the automotive sector, and without. This has resulted in the formation of sustainable value added service stacks geared to the unique and fluid requirements of manufacturers, channel partners, suppliers, customers and other industry stakeholders; each of whom play a critical role in the development, marketing, support and utilization of the emerging connected vehicle experience. It is the collective synergy a unified telematics ecosystem is able to unlock, that is pivotal to driving profitability, safety and brand loyalty.

Industry trends and challenges

Telematics in the service economy

The automotive market is transforming to an economy-of-services, subscriber based revenue models and positive ownership experiences. Widespread adoption of big data analytics, predictive AI, and backoffice business processes (such as CRM, ERP and SCM) leads to better decision making, improved safety, and higher profitability. This enables companies to offer solutions that are customer focused, value added and may be monetized over the long term. The current list of Fortune 500 global companies is made up of more service firms and fewer manufacturers than in previous decades, and the products that are being produced have, on average, a higher service component than ever before.¹

This development is referred to as the servitization of products. This is setting a high bar for performance, perceived value and usage, and OEMs who deliver on those expectations, are significantly more likely to edge out their competition and grow their customer bases. The connected vehicle market epitomizes this trend. McKinsey estimates that by 2030, up to US$750M will be generated in new, high margin revenues from connected vehicle services, and US$1.4B in shared mobility services.²

Telematics facilitates the passage of data from the IoT edge to the Cloud. This is fundamental to building connected vehicle solutions that enhance the user experience, unlock value, and bring insights to light.

¹Source: Creating and Marketing New Products and Services; CRC Press 2014
Security

Connected vehicles have been called “computers on wheels.” This is not far from the truth. In reality, they combine networks of integrated systems, electrical control units and myriad sensors that continually monitor, collect and transmit a wide range of metrics -- including information on current road conditions, in-vehicle events and driver behaviors.

But this unprecedented access to information introduces security risks. Inadequate safeguards may expose the connected vehicle ecosystem to sabotage, hacking, theft or unauthorized access. Not surprisingly security, privacy and safety top the concerns of customers. By 2020, an estimated 250 million connected vehicles will be on roads worldwide. This makes establishing a security policy across the entire value chain and at every point in the connective-vehicle solution, mandatory; it is simply not something that can be bolted-on as an afterthought.

In a 2016 survey KPMG found that: “8 in 10 consumers would be wary or never buy from an automaker if that brand experienced a car hack.”

However, for security to be effective it must mitigate risk while still allowing information to easily traverse the connected fabric of people, systems and things. This requires a unified security approach that works holistically with the larger ecosystem of IoT devices, information messaging and IT business applications.

The fluid telematics environment

Stakeholders

Stakeholders in the connected vehicle space are increasing in number and in kind; each with a unique set of requirements, responsibilities, expectations and goals. The visual below indicates the principal vehicle stakeholders. These include: Auto OEMs, owner operators, designers, tier-1 suppliers, insurance carriers and dealer service centers (DSC).

(Other stakeholders might also include: telecom carriers, system integrators (SI), telematics service providers (TSPs), repair shops, financial organizations (FinCo) and various institutions across vertical industries as diverse as insurance-UBI, distribution/transportation fleet operators and public sector utilities).

Building cohesive results oriented ecosystems that meets the needs of each connected vehicle stakeholder is a complex proposition. The challenge becomes obvious when

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attempting to reconcile multipoint relationships between stakeholders with a multiplicity of complementing and, oftentimes, competing interests. This requires a sophisticated enablement platform from which every component, business process and stakeholder interaction may be easily defined, modeled and built.

The role of the telematic service provider (TSP)

The connected vehicle market is global, fast paced and increasingly competitive. Fluid regulatory environments, emerging intellectual property (IP) technologies, and shifting customer expectations are compelling providers to deliver sustainable future proof solutions. These new competitive pressures are rapidly relegating traditional ecosystem-in-a-box approaches to the scrap heap of history. One size fits all solutions are simply not equipped to satisfy the complex and heterogeneous requirements of most commercial connected vehicle environments. Unfortunately, most attempts to implement these “canned” solutions, result in a hodgepodge of generic services that require extensive post-implementation configuration and support. From an intellectual property standpoint alone, it is simply infeasible for one size fits all solutions to properly integrate domains of complex assets, workflows and knowledge bases typical of most OEM environments.

Alternatively, providers who adopt ecosystem from scratch development models, run the risk of creating standalone (stovepipe) services of hardwired logic and isolated business rules. Such initiatives rarely yield more than one mainstream telematics service or are able to leverage abstracted connectivity, seamless IoT device interoperability or other leading edge development methodologies.
In either case, the result is an ineffective poorly integrated mismatch of hybrid-services that are ill-equipped to address modern-day security, information and IoT interoperability challenges. In an attempt to overcome these constraints, many TSPs elicit help from third-party providers which adds further integration complexity in the development process. Few of these initiatives prove successful, sustainable or profitable in the long run.

Given the increasingly compartmentalized and complex nature of the global automotive market, the race is on to build, operate and monetize large interconnected connected vehicle ecosystems. Success hinges on an enablement platform provider with the requisite competencies to help OEMs:

- Actualize secure, interoperable, information driven ecosystems of connected vehicle services.
- Create strategic alliances with best-in-class partner solutions and enhance their value propositions.
- Collaborate with channel partners to diversify risk, grow profits and stay globally competitive.

The telematics journey from concept-to-market

The Covisint Platform

Covisint is a leading enabler of connected vehicle ecosystems. The platform is composed of an enterprise grade Platform-as-a-Service (PaaS) that elegantly reconciles foundational IoT, Security and Messaging technologies with a unified development environment from which any service, system or application may be actualized. The platform achieves this with a rich collection of microservice accelerators, configuration templates and other software development components that enable OEMs to easily integrate their existing backoffice databases, processes and workflows with a wider ecosystem of people, system and things.
Covisint’s purposeful PaaS enables OEMs to rapidly develop sustainable services on parallel tracks without the need to build and maintain complex computing Cloud infrastructures. The Covisint Platform is unique in the market in that it is purposeful; it offers a high-availability computing experience of industry-centric integration points, programmable interfaces and software routines (unlike general purpose PaaS solutions such as Amazon AWS or Microsoft Azure).

Purposeful telematics enablement

The Covisint solution stack

From its inception, Covisint has been helping OEMs build telematics based solutions that bridge IoT edge devices (like vehicles, smartphones and other remote assets) with Cloud business services and in doing so, closing the gap in the datacycle between operation technology (OT) and information technology (IT) domains. This enables connected vehicle ecosystems to dynamically scale growth, assimilate third party content and actualize trends in the digital economy. The Economist has described this as the reinvention of business practices [in order] to derive the maximum value from digital technologies such as social media, cloud computing, mobile technology and big data analytics.⁵

The Covisint Platform defines eight industry-centric solution stacks, each of which, address specific needs of OEMs, their stakeholders and the wider connected vehicle market. These include:

- Telematics
- Mobility
- Fleet Management
- Preventative Maintenance & Remote Diagnostics
- User Based Insurance (UBI)
- Autonomous Vehicles
- Over-The-Air Update (FOTA/SOTA)
- Vehicle-to-Vehicle/Anything (V2V/V2X)

Turnkey functionality baked in

The Covisint Platform knits Identity & Access Management (IAM), Messaging & Orchestration (M&O) and the Internet of Things (IoT) into a cohesive fabric of core competencies, enablement technologies, and knowhow. This helps OEMs easily navigate the complex relationships between people, systems, processes and things.

⁵Source: The Economist Intelligence Unit Aug 2016
• **Covisint IAM is the security component.** It provides comprehensive identity and access management across the connected vehicle ecosystem and facilitates secure access to critical resources and information.

• **Covisint M&O improves collaboration while mitigating risk.** Functionally, it is responsible for information routing, data transformation and the syndication of intelligence across the ecosystem.

• **IoT provides seamless interoperable connectivity between people, systems and things.** It includes end-to-end user profiling, relationship and lifecycle management, and messaging across the connectivity chain.

IAM, M&O, and IoT functionality is baked into Covisint’s entire solutions stack. This permits OEMs to spend less time worrying about infrastructure or capturing complex business logic, and more time delivering tangible business value to their customers.

**Telematics services under-the-hood**

**The telematics stack**

The Covisint Platform subscribes to the precepts of proven open development methodologies and is engineered to enable rapid prototyping, development and integration of telematics services. Covisint classifies its telematics solution stack in a grouping of nine interrelated services (or feature sets), six of which require minimal configuration; the remaining three, offering OEMs the flexibility to easily onboard their unique IP. This has the effect of putting OEMs in control of the design, build out and execution of their custom services.
The Covisint telematics solution stack comprises the following services:

- **Legacy TSP Integration** - a platform of middleware tools and software that enable rapid integration with legacy telematics services.

- **Roadside Assistance** - a collection of real time connected vehicle assistance and predictive maintenance services.

- **Geo-based Mapping and Positioning** - a collection of real time location based navigation and information services.

- **AuthN** - a set of user-centric single-sign-on (SSO) ID validation checkpoints that ensure a person is who they say they are.

- **AuthZ** - a set of role-based user-to-service and service-to-service permission-based mechanisms that enable granular access to resources.

- **Data Orchestration** - a centralized real time messaging-bus of cross platform data orchestration and transformations services.

- **Head-Unit Applications** - interactive and engaging application experiences across a unified collection of user interfaces.

- **Infotainment** - real time access to rich streams of navigation, social media, entertainment and content and services.

- **Theft Management** - a collection of real time theft and intrusion prevention, notification and recovery services.

Each telematics service includes unrestricted access to a comprehensive development environment of 24/7 support services and integrated IAM, IoT and M&O functionality. In addition, Covisint provides a rich collection of microservices, configuration templates and other software development components to help OEMs differentiate their telematics solutions in the market.

**Purpose-built industry accelerators**

Covisint go-to-market accelerators are highly modular microservice packages that help OEMs unlock requisite telematics functionality. Implementing these accelerators is as simple and straightforward as downloading the relevant integration framework. Covisint’s offers a comprehensive library of bundled software templates and application program interfaces (RESTful APIs) relevant to the connected vehicle use cases in development.

Onboarding supplementary functionality from new solution provider partnerships and other best-of-breed telematics services is quick and easy. This immersive integration approach reduces reliance on any one provider and enables connected vehicle services and applications to dynamically scale to any need. The five Covisint telematics accelerators are as follows:

- **Vehicle Command Registry**: A registry of prebuilt templates of vehicle commands with corresponding APIs and microservices. These templates normalize common vehicle commands and may include functions that secure, start and disengage a vehicle, enable geofencing or provide screen alerts.
• **Catalog Registry**: A catalog of in-vehicle services that a consumer can subscribe to including: roadside assistance, infotainment, navigation and location based services.

• **Automatic Vehicle Stream Discovery**: The ability to automatically discover standard vehicle data streams and automatically integrate corresponding events and commands with workflows.

• **Vehicle Event, Command, Solution Templates**: A predefined set of templates for vehicle commands and events that allow grouping of commands/events/attributes that relate to a specific use case or solution.

• **Prebuilt Enterprise Connectors**: Utilizing the Custom Application Protocol Services (CAPS) approach that includes a predefined set of adapters for popular System of Records (SOR) or System of Engagements (SOE).

**Abstraction**

Abstraction enables verified sandbox development efforts to be applied directly to live environments. This allows OEMs to easily implement new business logic or update security policies without impacting the underlying connected vehicle edge infrastructure. An ecosystem of logically abstracted service and data layers results in a solution that uncouples vehicles, services and stakeholders, so that OEMs can incrementally upgrade features in real time, and not defer implementation of these enhancements to future build outs.

An abstracted platform provides the following benefits:

- A consistent and reliable user experience.
- A seamless interface across disparate telematics devices, models and versions.
- Localized asset profiling and lifecycling.
- Business rules logic on a per jurisdiction or locality basis.

**Identity management and data residency**

Data ownership, privacy and sharing remains a highly sensitive topic for OEMs, customers and public sector agencies. A KPMG Global Auto survey found that “Over 41% of consumers believe that the owners/drivers of the vehicle are the sole owner of the vehicle/consumer data”.

Since its inception, Covisint has been enhancing the efficacy and reach of its embedded security technology solutions across diverse sectors and use cases. Covisint offers a fine grained, battle-tested network of security gateways that manage identities, defines data-residency policy and provides data governance. Embedded IAM, M&O and IoT functionality provides OEMs with granular User Managed Access (UMA) functionality, so that they can focus on configuring their security environment, not coding it.

This functionality also provides powerful unified identity and cross-platform authentication technologies that address the unique security needs of users, digital assets and devices. Industry compliant access directory protocols (LDAP) and stateful authentication routines track usage across the ecosystem ensuring that the right information is shared with the right individuals at the right time. Covisint also balances

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6 Source: KPMG Consumer Loss Barometer Study 2016
security requirements and ease-of-use by providing directory services, role-based privileges and a cross-platform single sign-on authentication. A recent KPMG report found that “82% agree that by 2025 a single sign-on platform will be an absolute purchasing criterion.\(^7\)

Covisint IAM functionality includes the following core security components:

- Authentication, user validation and security policies that establish trusted pathways across the ecosystem.
- Intelligent gatekeepers that inspect a digital identity before granting access to data.

The Covisint Platform offers highly scalable localized data residency solutions that determine vehicle location and automatically apply business rules that conform to local regulations and laws. Covisint supports Cloud Foundry’s OpenStack compliant IaaS and a Custom Application Protocol Service that offers strong physical and logical security (SAS 70 Type II) to help OEMs leverage their data instances in any jurisdiction. In addition, IAM provides fine-grained control of dataflows by tracking data ownership privacy via a *tokenization* and *anonymization* processes. This enables authorized connected vehicle stakeholders with profile-based access to customer data without infringing owner rights.

**The wrap**

Covisint’s Platform provides OEMs a turnkey, strategic enablement solution from which to securely actualize and monetize their connected vehicle telematics services. The platform is comprised of a collection of unified competencies that effortlessly manage connected vehicle ecosystems of people, system and things. This ability comes via three foundational technologies that are baked into the platform: Identity & Access Management, Messaging and IoT services.

The value proposition inherent in this model is clear and indisputable. The Covisint Platform offers its customers unlimited access to industry centric development resources, frameworks and knowhow from which to springboard their connected vehicle telematics solutions. It is hard to overstate the benefits of this innovative and immersive approach.

- First, the platform offers OEMs a stable platform from which to design, build and certify highly purposeful connected vehicle services in a secure, interconnected and interoperable way.
- Second, the platform enables OEM to go-to-market fast by providing integrated IAM, M&O and IoT functionality across each point of their connected vehicle ecosystems.

\(^7\)Source: KPMG Consumer Loss Barometer Study 2016
• Third, the platform enables OEMs to effortlessly manage their connected vehicle ecosystems of people, system and things.

• Fourth, the platform provides highly a scalable development, sandbox and live environment that enables OEMs to effortlessly expand the scale, scope and reach of their connected vehicle solutions over time.

By offering core connected vehicle functionality baked in to every process, application and programmable interface, Covisint allows OEMs to focus on designing services that satisfy business objectives, solve customer challenges and contribute to the advancement of the connected vehicle industry.

The Covisint difference

Covisint offers an infrastructure agnostic, highly scalable, and purpose built Platform-as-a-Service (PaaS) for unlocking the potential of IoT and identity-centric solutions with accelerators for the automotive world.

Differentiation is in the solution – A cloud-based PaaS unlocks customer and partner led development and faster innovation in the application layer.

Infrastructure agnostic and highly scalable – To meet the privacy, security and performance demands of increasingly global businesses.

Purpose-built – For solutions that connect people, processes, systems and things, enables faster innovation in the platform capabilities and your solutions.

Offered as a cloud service – To drive operational simplification and reduce costs for customers through economies of scale.

See more at Covisint.com/industries/automotive
Covisint is the connected company — we securely connect ecosystems of people, systems and things to enable new service offerings, optimize operations, develop new business models and ultimately enable the connected economy. Today, we support more than 2,000 organizations and connect to more than 212,000 business partners and customers worldwide.

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