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The evolution of the Extended Vehicle (ExVe)

Advances in vehicle technology have created an impetus for vehicles to have greater connectivity to the transportation hub and to other vehicles on the road. There is also a drive for consumers to be offered an ever increasing myriad of online connected services. BI Intelligence predicts that the number of connected cars on the road will rise from 36 million in 2015 to 381 million by 2020.

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Publishing Information

More about Mavis Cournane

Dr Mavis Cournane holds a PhD from the National University of Ireland and is fluent in German. Mavis has over 15 years' experience working in the Automotive sector. She has played a leading role advising Cognitran's automotive customers on the business impact of Repair and Maintenance Information (RMI) legislation and in steering compliance. She is actively working on devising business strategies to overcome the ever increasing legislative burden on her OEM customers. The topics 'Connected Vehicle', Remote Diagnostics and Data Protection are her areas of special interest. Mavis is heavily engaged in both the legislative and standardization arenas as an OEM representative and expert.

Introduction

82% of all cars manufactured in 2021 will be connected.

Advances in vehicle technology have created an impetus for vehicles to have greater connectivity to the transportation hub and to other vehicles on the road. There is also a drive for consumers to be offered an ever increasing myriad of online connected services. BI Intelligence predicts that the number of connected cars on the road will rise from 36 million in 2015 to 381 million by 2020.

The advent of connected vehicles poses a number of challenges and opportunities for vehicle manufacturers and consumers. For vehicle manufacturers, connected vehicles will provide new opportunities for vehicle diagnosis, prognosis, repair and other driver services. Connected vehicle consumers will be able to choose from a wide variety of services and service providers.

Significant risks to OEMs through connected vehicles.

Greater vehicle connectivity poses new risks in the areas of vehicle integrity, cyber security, and data protection. Moreover, to achieve competitive balance in the industry, legislators will be looking to maximise consumer choice by ensuring all service providers in the market area have equality of access to in-vehicle data.

Vehicle manufacturers recognize that the connected sphere will not be their sole preserve. But they wish to ensure that third party access to data does not affect the safety and security of vehicles or customers.

The independent aftermarket - fearful of OEM dominance - is arguing stridently for completely open and direct access to in-vehicle data.

The OEM members of ACEA have developed the concept of the Extended Vehicle (ExVe) as a means of ensuring safe and secure access to aftersales, repair and maintenance type data by third parties with consumer consent.

The ExVe is essentially a cloud representation of a physical vehicle. Data is provided via a server to third parties who have the necessary consumer consent. The ExVe server is an OEM server that will provide data via a standardized interface, to either a neutral third party service provider or directly to a third party.
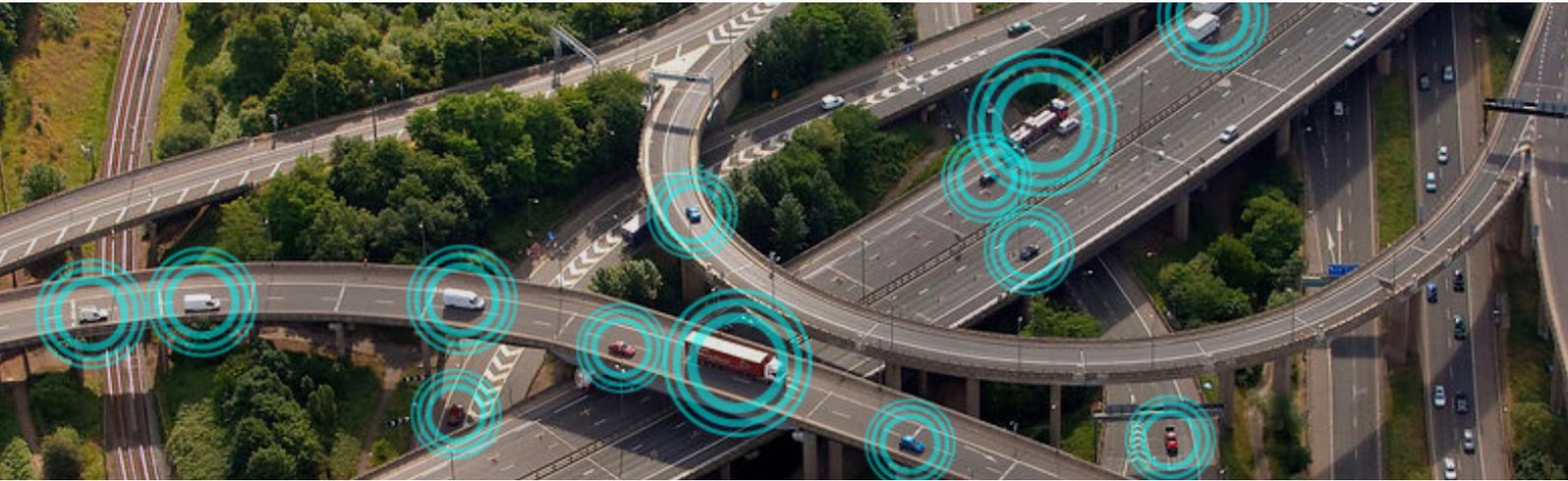
The Extended Vehicle – Key Considerations

OEMs have recognized that, for the ExVe to be feasible, they must address the concerns of consumers, legislators and third-party customers. With this in mind, initiatives have begun in ISO to develop a set of core standards around the ExVe.

The ISO 20078 standard is currently being worked on by key stakeholders from both the OEM and OES side. This standard aims to define a standardized web interface for accessing the Extended Vehicle Server. Third-party implementers will then be assured that regardless of the OEM ExVe server chosen, there will be a single standardized interface that will work across all OEM ExVe servers. This should ensure coherency of implementation and a cost effective way of requesting and accessing the required data.

The **ISO 20077** standard is focused on the OEM who is responsible for creating the ExVe. It prescribes a methodology for creating an ExVe. Although OEMs need flexibility due to differing vehicle architectures and technologies, the ISO 20077 standard offers coherence to ExVe design across OEMs.

The **ISO 20080** standard is not directly related to the ExVe standards (20077 and 20080). It defines Remote Diagnostics. It is expected that this standard will be the first customer for the Extended Vehicle web interface defined in 20078. The Heavy Duty Euro VI Regulation already mandates the provision of Remote Diagnostics Support to Independent Operators and it is anticipated that the updates to Euro 5 regulations for passenger cars will adopt this requirement. With this in mind OEMs are keen not only to define what is Remote Diagnostics (undefined by legislation) but also ensure that it is provided in a safe, secure way to third-parties. Thus, there is the opportunity to leverage the ExVe web interface for this purpose.

Opportunities

The extended vehicle is an opportunity for all players in the automotive sector. More importantly, it is the only currently technically feasible and safe mechanism to provide third party access to non-time or safety critical data.

We can expect that in the short/medium term (3-5yrs) to see the implementation of the ExVe by the members of ACEA. Indeed, BMW has already launched a version of ExVe in

> Core ISO standard already in development.

> Remote diagnostics likely to be mandatory for passenger cars.

to the market place. See https://aos.bmwgroup.com/apps/otp-public

The Extended Vehicle is a physical road vehicle with external software and hardware extensions for some of its features. These extensions are developed, implemented and managed by the vehicle manufacturer.

Access to the ExVe is via a variety of interfaces. The type of interface provided depends on the type of data that needs to be accessed e.g. non-time critical data will be via a web interface as standardized by ISO 20078, whereas time critical, safety data could be provided via ITS-G5. See www.acea.be/publications/article/position-paper-frequency-bands-for-v2x

The Business Case

The ExVe will allow consumers to benefit from a range of online services from a variety of providers. Many of these do not yet exist but will doubtless be developed once there are standardised and non OEM-specific vehicle interfaces.

OEMs can also leverage extended vehicle connectivity to enhance the ownership experience and offer additional services.

By embracing the ExVe concept and standards OEMs will ensure that their consumers and vehicles are not disadvantaged in the marketplace, while ensuring the security and integrity of their products is maintained.

Without active engagement and collaboration around ExVe standards there is a risk that more open and direct access to vehicle data will be mandated. This will make it harder to guarantee the security and integrity of OEM products.

> Opportunities for OEM to offer additional services.

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