REPORT

BVRLA

Fleet Technology Report:

Connected Vehicles and Data

Introduction

Connectivity and vehicle data are already disrupting the traditional economics and R&D focus of the automotive industry, as well as many of the legal frameworks and business models that have served the fleet industry for so many years.

To try and help its members navigate this uncertain and fast-moving environment, the BVRLA has worked with Connected Vehicle consultants SBD Automotive to compile this report. Using their knowledge and understanding of connected vehicle trends and strategies SBD conducted a series of in-depth interviews with senior executives at a number of vehicle rental and leasing companies.

The results have been compiled in this report which we hope will provide a useful perspective on the issues surrounding embedded vehicle connectivity and an insight into the way organisations across the sector are trying to unlock the huge value of vehicle data.


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What's driving vehicle connectivity?

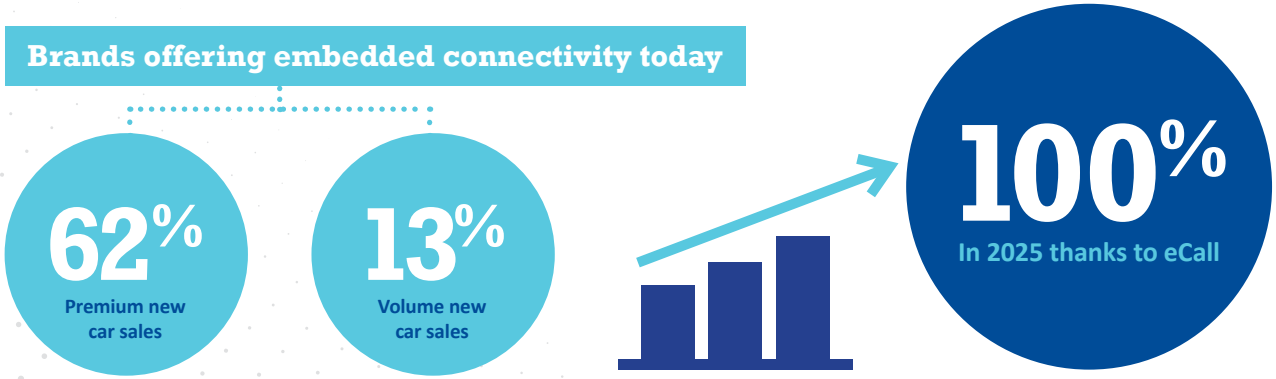
In-vehicle connectivity is not a new trend. Nearly 40% of European automakers (OEMs) already offer an embedded connection within the vehicle and by 2025 it is expected that every car sold in Europe will be connected to the internet.

This connectivity has been mandated by the European Union's eCall mandate which, since April 2018, has required that all new cars and light vans are fitted with an embedded SIM that enables an automatic emergency response call in the event of an accident.

Many OEMs' have tried to build on this functionality by developing a range of connected features, including navigation, infotainment and concierge services, with the aim of gaining extra revenues from customers subscribing to their proprietary connected car 'platforms'.

More recently, automakers have adopted a "freemium" model that sees them provide consumers with complimentary access to embedded connectivity. This change in strategy has been precipitated by poor activation and retention rates for vehicle manufacturers' own paid-for connectivity services. By building connectivity into the price of the car, much larger quantities of vehicle data can now be collected and monetised.

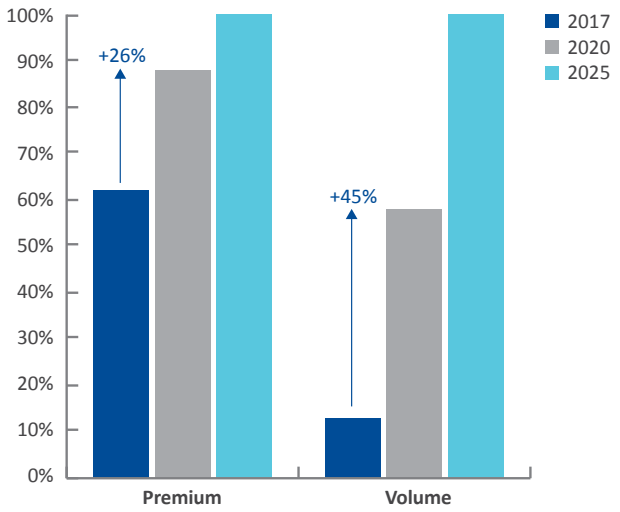
Brands offering embedded connectivity today



Connected Car Data Forecast to 2025

Penetration of embedded connectivity in new car sales

Europe is set for a large rise in embedded connectivity penetration in the next three years due to the eCall mandate that took effect in March 2018. This growth is most notable in the volume sector which will see 45% growth in the next 3 years from a very low base of 13%.



Source: SBD's Connected Car Forecast 2017

Types of connectivity

Embedded

Embedded connectivity is when all hardware, software and firmware is shipped in a car from the factory. This means the embedded SIM is inaccessible to the user.

Tethered

Tethered connectivity sees the OEM provide the software, hardware and firmware from the factory, but rely on the user for the actual internet connection.

Smartphone

Smartphone connectivity is when the OEM uses an application to duplicate mobile device screens on their head unit. This allows users to control the device through their in-car display. OEMs have some control over the apps which can be used though this category. Connectivity is dependent on the user.

The value of vehicle data

The user experience of digital features in a car is still a key differentiator in the buying process, but OEMs are now placing greater importance on the internal benefits and indirect revenues that vehicle data can bring.

Automakers can use vehicle data to help them hit important reliability or quality KPIs whilst also making the same data available for third parties to purchase so that they can enable their own set of use cases. In the case of rental and leasing companies, vehicle data can bring a wealth of operational and asset management benefits.

Data is frequently described as the 'oil of the automotive industry', supplying huge benefits for those who can put it to good use. The comparison to extractive industries does not end there, with automakers consistently referred to as 'sitting on data goldmines'.

For OEMs, getting to a stage where a continuous flow of vehicle data can be realised has required huge expenditure in technology (e.g. vehicle electronics, over-the-air updates and data analysis), operations (e.g. marketing, CRM activities and dealership training) and legal frameworks (e.g. data privacy, security compliance and security measures).

Having invested in the development, operation and maintenance of connected car platforms over many years, automakers now believe that they have a right to control and monetise this data 'resource'.

What internal benefits are OEMs seeking from connected car data?

Repeat purchase from data driven CRM & insight

Using connected services and co-ordinated CRM to enhance the customer lifecycle experience and increase repeat vehicle purchase

After-sales servicing

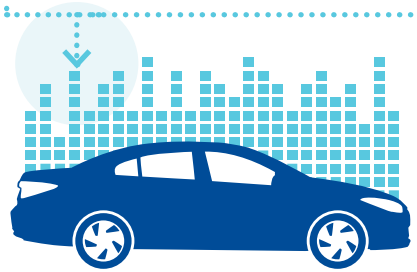
Using connected services to improve the experience for "customer pay" (as opposed to warranty) work at dealerships and increasing the revenue in after-sales

Subscriptions

The potential revenues for customer-paid connected car subscriptions, and keeping connected services active for longer

Residual/resale value optimisation

Using connected car data to identify the optimal vehicle residual value to provide a customer with a strong offer to lease a new vehicle earlier



Maximising retail transactions

Using vehicle utilisation data and digital service records to prove the value of a pre-owned vehicle, rewarding sellers for careful treatment of their vehicle

Product improvement

Using vehicle data to identify product improvements through customer utilisation

Warranty avoidance

Using vehicle fault data to avoid warranty claims across a whole range of vehicles

OEM's data sharing/monetisation strategies

Approaches	Example
OEM-owned data marketplace	BMW has recently created a private data marketplace called BMW CarData with the aim of providing customers with customised third-party services in a transparent and privacy-compliant manner.
Multi-party data marketplace	Otonomo is a data aggregator that is approaching OEMs with a ready-made price list for data based on pre-sold use cases to 3rd party partners. It is backed by a handful of OEMs but only Mercedes-Benz is publicly known.
In-house OEM single use case	BMW FlexiMile Insurance uses the BMW ConnectedDrive embedded connectivity platform and has been designed for customers driving up to 5,000 miles per year and offers the benefit of a lower premium.
Out-sourced single use case	Utilising factory-fitted or installed hardware, NissanConnect Fleet connects the vehicle to Telogis' Mobile Resource Management (MRM) software platform to help companies make more informed business decisions based on driver & vehicle performance.
Revenue share by use case	Volvo and GM are rolling out in-car deliveries with Amazon, taking advantage of embedded connectivity features such as keyless entry and remote lock/unlock and Amazon's vast logistics supply chain.

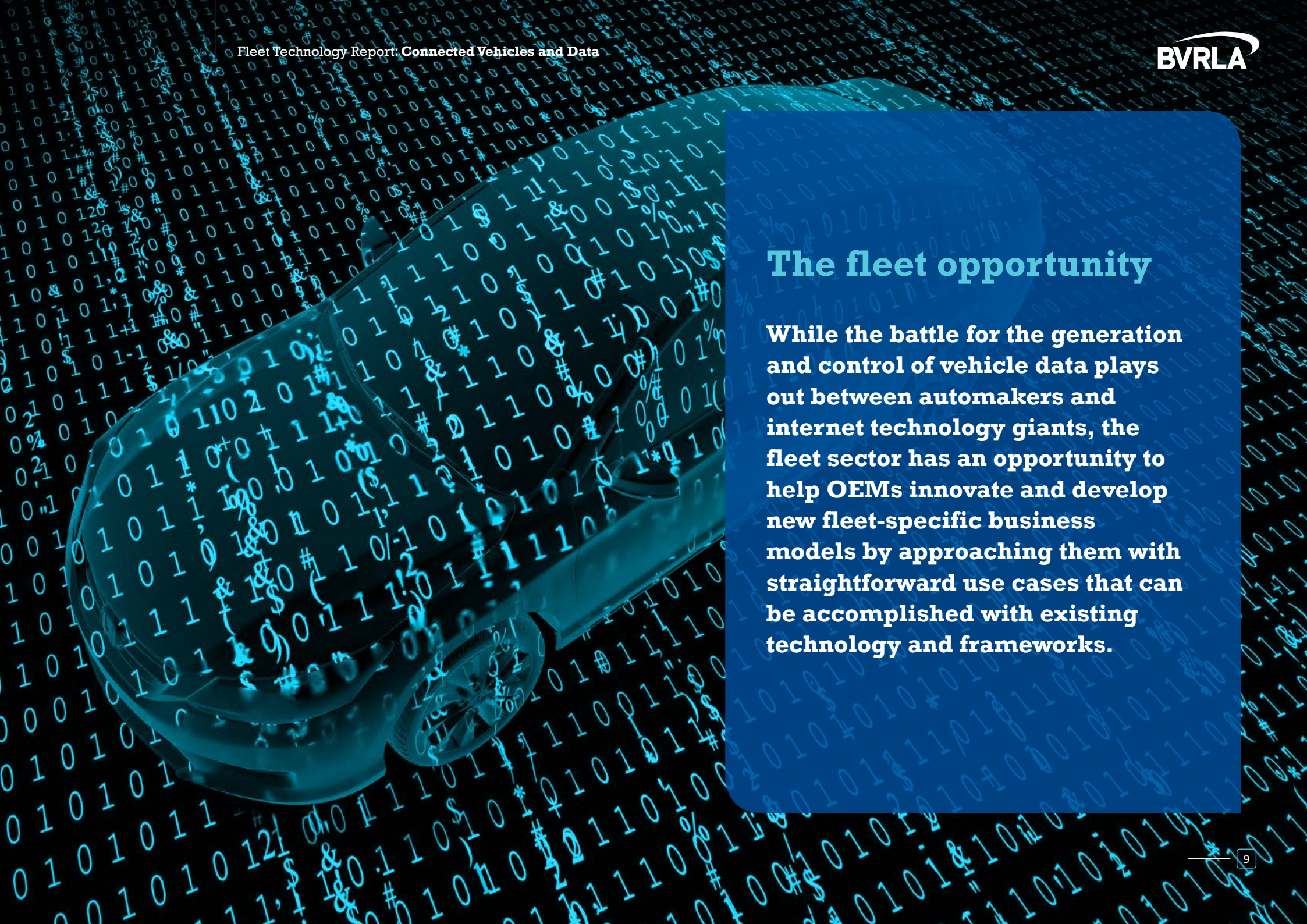
The OEM perspective

Automakers wanting to push the boundaries of technology need to balance innovation with risk.

It is very difficult for OEMs to differentiate their connected services when they are working with a limited number of software and hardware suppliers that are very quick to replicate and commoditise any new features or use cases that emerge. OEMs are now investing heavily in new technologies such as artificial intelligence, autonomous safety features, predictive maintenance and e-commerce services in a bid to assume market leadership.

Meanwhile, regulatory requirements including the eCall mandate and the General Data Protection Regulation (GDPR), which heavily scrutinises the collection, processing and storage of personal data, have given automakers less room to innovate and differentiate themselves from competitors.

Vehicle manufacturers are not just competing with each other, they are also coming up against stiff competition from consumer electronics giants including Amazon, Apple, Google and Facebook. These companies have the financial means to invest in emerging technologies and are much better versed in data processing, analysis and storage. In the last few years we have seen OEMs acquiesce to the screen duplication systems of Apple CarPlay and Android Auto on the back of consumer demand. As a result, automakers face a very real battle over the coming years for the continued control of data coming from vehicles.



The fleet opportunity

While the battle for the generation and control of vehicle data plays out between automakers and internet technology giants, the fleet sector has an opportunity to help OEMs innovate and develop new fleet-specific business models by approaching them with straightforward use cases that can be accomplished with existing technology and frameworks.

Data access decisions

Operators are faced with an increasing range of options when it comes to accessing vehicle data. There are an array of hardware-based devices and OBD plug-ins (dongles) that are capable of providing almost all the data required by fleet managers.

These aftermarket solutions are a preferred access method for many, and remain the only option when an OEM does not have its own connected vehicle data strategy.

Third-party telematics providers can take the lead in terms of managing the link-up with a range of different OEM APIs and providing a single interface for fleets. On the downside, third party telematics have cost and installation implications for fleets, particularly those with very tight budgets or short life cycles. One possible evolution of this model would be the introduction of on-board application platforms that would allow fleet operators to run their own apps, accessing vehicle and sensor data directly.

A number of OEMs are introducing cloud-based platforms that can deliver vehicle data as a web service. OEMs are rolling out their own proprietary systems to provide this (often referred to as 'extended vehicle' platforms), but there are other models that involve a consortium of automotive supply chain companies (commonly referred to as a 'neutral' platform) or are offered by a technology service provider ('B2B marketplace' approach). Such systems have the potential to provide much richer, more granular levels of vehicle data. Data such as battery status, odometer readings and tyre pressures can be delivered at the end of every drive cycle, while event-related data such as diagnostic trouble codes can be sent when required. Access to this data, however, is firmly in the control of OEMs, who will require fleet operators to sign up to a specific B2B agreement.

Data elements typically shared with the cloud

Data can be separated into two categories: (1) Data routinely shared at each drive cycle and (2) Data shared as the result of a specific event, such as a fault with the car

Typical routine payload	Typical conditional payload
Ignition on/off timestamp	Diagnostics Trouble Codes (DTC)
ICCID (SIM CARD ID – identifies subscriber)	Freeze frame data (a more detailed snapshot of the sensor data that caused a DTC)
MSISDN (vehicle 'phone number')	Heading
Vehicle Identification Number (VIN)	Speed
Odometer	Shift position
Lat/Long (GPS)	User warnings (e.g. seat belt)
Tyre pressure	Over-the-air (OTA) campaign data (used to manage data and deliver updates)
Door status	
Battery status	
Trip computer data	

Methods of accessing vehicle data

Concept		Significance
Data Server Platforms	*Extended Vehicle*	Access via an ISO-standardised interface from the OEM's back end servers
	Neutral Server	Access from a server controlled by a consortium of stakeholders (rather than an OEM) with an equivalent link to the vehicle
	B2B Marketplace	Access in a similar way to the neutral server concept but taking the form of a marketplace that is maintained by a service provider, facilitating data access by 3rd parties
In-vehicle Interface		Access via an upgraded OBD interface inside the vehicle. Any application using data would run outside the vehicle system, either on an external device or on a layer on the interface itself
On-board Application Platform		Access to vehicle data and the execution of applications inside the vehicle environment

Source: Access to In-vehicle Data and Resources: Final Report - European Commission

Data access dilemmas

Some BVRLA members remain committed to using OBD-based aftermarket telematics devices or 'dongles', but are concerned about the prospect of automakers reducing or blocking the data currently available through the OBD port as a security and privacy measure, in response to highly-publicised vehicle hacks and concerns over GDPR (General Data Protection Regulation).

Operators are also exploring the opportunity to work with OEMs and their embedded vehicle platforms. These relationships are at an early stage, with frustrations around the lack of understanding of the vehicle rental and leasing sector's business requirements and use cases. There are also concerns about the cost of data, particularly if the alternative routes for accessing this information are gradually closed off.

Regardless of the approach taken, BVRLA members are united in agreeing that allowing OEMs to have monopolistic control of vehicle data would lead to 'market distortion'. Data supplied to fleet operators and their aftermarket service providers via an OEM-controlled gateway must be provided on the same terms (timing, quality, format, cost) as the manufacturer itself to ensure fairness and equal opportunity for the entire automotive supply chain.

Vehicle data challenges

- **There is no harmonised or standardised approach to embedded connectivity on the part of OEMs. Proprietary APIs and data formats make it very hard for fleets to manage and work with the output.**
- **Installing third-party telematics devices or dongles can be expensive and cause issues with driver acceptance.**
- **Most OEMs still view their connected vehicle platforms as a retail offering and take a global 'one-size fits all' approach to working with fleets.**

Connected vehicle visions

In an ideal world, where all discussions over data access and control have been concluded and acceptable pricing or licensing agreements have been made between OEMs and fleet operators, the benefits of vehicle connectivity are very real.

A key goal for rental companies is the desire to make the rental process as automated as possible, providing customers with an on-demand, self-serve experience. The pursuit of next-generation mobility services becomes much more viable with a link into embedded vehicle platforms. A fusion of car rental, sharing and pooling with other modes of transportation is the most obvious way of providing consumers with a seamless end-to-end mobility experience. To this end, one rental company was particularly excited about working alongside automakers and city authorities to create mobility-as-a-service (MaaS) solutions where data could be shared to aid traffic flows and transportation options.

Asset management was another key focus, ranging from the basic ability to keep track of vehicle location and availability through to detailed health and predictive maintenance information that can keep fleets on the road for longer.

This was also an essential use case for leasing companies, who acknowledged the huge business efficiencies available with access to real-time or batched vehicle condition data. They were also excited about how this information could help them improve their customer relationships and loyalty.

SWOT – Business opportunities for rental and leasing companies

Strengths:

- **Vehicle purchasing power** – as buyers of hundreds of thousands of new cars, vans and trucks each year, BVRLA members have huge potential influence in OEM discussions around new connected features and services
- **Customer relationships** – rental & leasing companies have a long history of understanding customer needs and delivering innovative solutions
- **Asset management expertise** – the experience of managing and maintaining large and diverse fleets is something that industry outsiders or start-ups find very difficult to disrupt on any significant scale
- **Usership v Ownership** – with a wide range of pay-as-you-go motoring options already on the market, the rental and leasing industry is ideally positioned to take advantage of the trend towards using and not owning

Weaknesses:

- **Lack of internal tech capabilities** – the vehicle rental and leasing sector is a mature market that was not created with connected car services and data analysis in mind. It must embrace new skillsets and organisational structures if it is to compete with new, agile and data-driven competitors
- **History of misalignment with OEMs** – BVRLA members and OEMs need to better understand each others' business requirements and data cases, and use this knowledge to build a more collaborative and trusting relationship
- **Delivering 'value added services'** – technology is making it cheaper and easier to find, finance and manage vehicles. Rental and leasing companies must continue to innovate and show that they can add value

Opportunities:

- **On-demand mobility** – always-on connectivity gives rental and leasing companies the technology and cost efficiencies to roll out new mobility services and link in with integrated mobility as a service (MaaS) platforms
- **Increased vehicle health visibility** – a richer and more granular view of vehicle performance and condition promises to improve uptime and decrease maintenance and repair costs
- **Future technology** – with a large number of units in operation, rental & leasing companies are the perfect partners for technology companies seeking to test and validate self-driving capabilities
- **Lower cost of entry** – with an existing customer base, fleet infrastructure and brand awareness, rental and leasing companies have a significant 'cost of entry' advantage when it comes to launching new services

Threats:

- **Over-reliance on aftermarket connectivity** – with rumours floating around the industry that data from the OBDII port could be significantly reduced or shut off in the next few years, many companies could be left exposed
- **OEM monopoly of data** – the current lack of up-to-date competition law and guidance leaves the entire automotive supply chain at risk of an anti-competitive OEM monopoly on vehicle data
- **Data privacy** – with GDPR in its infancy, the industry is still working out its ramifications and how personal data stipulations apply to the vehicle. Companies need to approach use cases such as driver monitoring very carefully

Connected vehicle visions

Vehicle data use case: Servicing, Maintenance & Repair

What problem does this use case solve?

Problem

- Maintaining vehicles according to the manufacturer's servicing schedule is important for optimising residual values.
- Minimising repair and maintenance costs (e.g. tyre replacements using independent partners) is crucial to reducing operational overheads.

Use case

- SMR 'trigger' data can be obtained remotely from the vehicle to provide timely notifications of vehicle faults and maintenance needs.
- When aggregated and analysed, this data can also be used to provide preventative maintenance or warranty-related insight.
- If the service reminder warning is activated in the vehicle, reminders can be sent to the fleet manager enabling them to take appropriate action.

KPIs involved

- Service history maintenance
- Disposal performance (maintained and non-maintained)
- Minimising repair costs
- Reducing unscheduled downtime

Data elements required

- Servicing data
- Fault/maintenance data
- Service reset flags
- Breakdown events
- MIL (Malfunction Indicator Lamp) status

Vehicle data use case: Duty of Care/Insurance

What problem does this use case solve?

Problem

- Large fleet managers have a duty of care to take reasonable actions to reduce driver risk.
- It is very time consuming to monitor driver behaviour manually, without telematics.

Use case

- By using vehicle data, fleet managers can demonstrate to insurers that they are taking reasonable actions to monitor drivers and manage risk by flagging aggressive driving, speeding, long driving hours etc.
- There is potential to reduce accidents/ incidents by changing driving behaviour and reducing repair & maintenance.

KPIs involved

- Contributes to bigger picture of responsible employment & corporate governance, working time directive
- Potential to negotiate a lower insurance premium for the fleet. Plus can offer First Notice of Loss (FNOL)
- Reduced operational overhead of managing vehicle accident claims
- Fuel usage optimisation

Data elements required

- Standardised, or non-OEM specific measures on driving behavior
- Over-speed notifications
- Driver ID – preferably phone-based ID

Vehicle data use case: Mileage Management

What problem does this use case solve?

Problem

- Traditional touch points to collect mileage can be inaccurate (fuel card) or infrequent (servicing).
- Aftermarket telematics solutions for mileage reporting are prone to obsolescence – manufacturers change codes.

Use case

- Vehicle mileage data can be collected to provide semi-automated business mileage claims or to create tax-compliant mileage logs.
- Scheduled maintenance can be managed more proactively and accurately to maximise residual value of the vehicle.
- Vehicle utilisation can be tracked to optimise fleet size management.
- Fleet fuel consumption can be reduced and mileage tampering eradicated.

KPIs involved

- Lower fuel reimbursement costs for fleet manager
- Extra convenience for employees to complete their expenses
- Service schedule notification/flag automation
- Duty of care – manage driver fatigue

Data elements required

- Odometer readings
- VIN

Vehicle data use case: Management of Personal Data

What problem does this use case solve?

Problem

- Vehicles with embedded or smartphone integration can store a driver's personal data in the vehicle, OEM cloud or both.
- For companies to comply with GDPR, the vehicle user must have a means of managing and protecting their personal data.

Use case

- A convenient way for the vehicle end user, fleet manager or operating lease/rental company to 'wipe' a user's personal data from the vehicle/cloud is needed.
- The objective is to provide an automated means of erasing a user's personal data from the vehicle/cloud – eg. at the end of a rental/lease agreement.

KPIs involved

- Reduce risk of personal data privacy infringement
- Reduce operational time taken to manage vehicle user's personal data

Data elements required

- Standardised, or non-OEM specific measures on driving behavior
- OEM API to request data deletion

Data privacy and car data

The new Europe-wide General Data Protection Regulation (GDPR) is a common theme for BVRLA members, who recognise the potential for connected cars to generate reams of personally identifiable information.

Most believed that real clarity over GDPR impact in the wider fleet sector will only become apparent as the new regulation is tested in court. This uncertainty has already led to some companies shelving business plans that were reliant on driver profiling information.

European motorists organisation, the FIA, believes that "almost all car data is personal" due to the ability to combine numerous data sets to infer identity. BVRLA members are very aware of the fact that drivers must be allowed to control use of and access to their data.

Connected car and GDPR key points

- Data that can be anonymised should be anonymised as anonymous data is not subject to privacy law restrictions. Data controllers and processors must be aware of the threat of inferred identity
- Adopt 'privacy by design' practices. This means that data protection should be considered as a holistic part of all digital and service strategies
- Obtain consent under the rules of GDPR. You must tell drivers who you are, why you want their data, what you will do with it and how they can withdraw their permission

Privacy concerns hindering innovation

- BVRLA members are not even using all the data they currently have access to due to concerns over data privacy and having the right permissions
- Driver behaviour data has huge potential for delivering new services and efficiencies but members are taking a cautious approach in order not to be too intrusive
- Greater clarity over exactly what constitutes personal or non-personal data will unleash a wave of new products and use cases
- OEMs regularly update their terms and conditions, which makes it difficult for fleet operators to adopt a compliant and consistent approach to collecting or using vehicle and driver data
- BVRLA members are looking for practical solutions for resetting the personal data held on vehicles

The path forward

If vehicle manufacturers and their fleet customers can work together to eliminate the uncertainty and lack of trust surrounding the provision of connected vehicle services and data, there is huge potential for the automotive and mobility sectors to innovate and deliver new business models.

The goal is a 'win-win-win' solution that enables OEMs to recoup the cost of developing their connected vehicle platforms; provides fleet operators with fair and competitive access to data; and allows end customers to manage their personal privacy while enjoying an ever-growing range of connected services and mobility options.

Achieving these goals requires engagement, common understanding and compromise on all sides.

Here are some important considerations for fleet operators and OEMs to keep in mind when devising their connected vehicle and data strategy.

(See opposite page)

Top three connected vehicle trends in the next 12-36 months

Pretty soon nearly every fleet car will be connected

By 2020, new cars with embedded modems are set to reach a 73% penetration in Europe, compared to 37% in today's market. This explosive growth is due to the eCall Mandate that took effect in March 2018.

Automakers look to roll out global connected car platforms

OEMs are increasingly planning to partner with telematics services providers and mobile network operators on a global level so that they can roll out a coordinated connectivity and data strategy. This will result in most OEMs abandoning any bespoke, regional approaches.

OEMs seek to identify new B2B data use cases

Vehicle manufacturers with well-developed connected car platforms are increasingly aware of the value that they can provide to third parties through the sharing and sale of vehicle data. Outside of their traditional automotive supply chain, they are likely to begin selling data to retailers, advertisers, city authorities and a range of other Internet of Things (IoT) stakeholders.

Top three connected vehicle data mistakes

Line up data needs with use cases

Having a detailed understanding of specific data needs can help speed-up discussions with OEMs. Connected vehicles have many thousands of data points, most of which are of no value to a fleet operator. Being more specific about which data is required and on what terms can reduce costs and time when making a request.

Accept that some business models must change

Achieving a 'win-win-win' scenario for OEMs, fleets and end-customers will require all sides to make certain investments as well as adjusting their expectations and business models. Compromises need to be made if a mutually beneficial agreement is to be reached.

Make sure the whole organisation is prepared

Sales, marketing, accounts or operations – different data sets can have dramatically different implications depending on what department you are in so make sure your whole business is prepared. You could ask a specific business unit to champion the value of data within the organisation and convince others from there. Alternatively, senior management can take on the role of challenging each business unit to include the use of connected car data as part of their business plans.

Top three vehicle data market barriers

Lack of competition regulation or guidance

Current competition law and regulation has not kept pace with the emergence of the data economy. This has given OEMs almost complete control over how vehicle data is accessed and on what terms. This puts the rest of the automotive supply chain at a significant disadvantage.

Lack of data standardisation

Rental and leasing companies are wasting valuable time engineering interfaces to the proprietary data platform APIs of each OEM. The data that comes out can be similarly bespoke, which makes deriving even more of a challenge. More data standards are required.

Unestablished pricing models

BMW (with its BMWCarData service) has taken a lead here, but other OEMs have been very slow in producing price lists of available vehicle data. BVRLA members are reporting wide variations in the cost and availability of data they are requesting, which is making any negotiations long and painstaking.

Top three tips for dealing with OEMs

Find the right way in

Identifying an entry point into an OEM's vast multi-national structure can be challenging – should they be approached via the national sales company or at head office level? Ultimately, each OEM is organised differently but the aim doesn't change – find someone who can sign off on your proof-of-concept (POC) and move things forward!

Understand OEM KPIs

Automakers are laser-focussed on internal targets around margins, market share and sales volumes. If your idea can help their value proposition and demonstrate an upside for them, they will be much more enthusiastic about supporting your request.

Help OEM's to understand core fleet competencies

OEMs have designed many of their connected services with the retail market in mind. Fleet management is not a core competency and they may need some persuading around the value of producing new connected vehicle services or datasets for business customers.

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