

## MARKET PERSPECTIVE

# Future Trends in Connected Vehicle Data Monetization

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## EXECUTIVE SNAPSHOT

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### FIGURE 1

#### Executive Snapshot: Future Trends in Connected Vehicle Data Monetization

Automotive companies are heavily investing in developing new capabilities, collectively defined as CASE — connected, autonomous, shared, and electric technology platforms. With the widescale introduction and maturity of software-defined CASE features, traditional automotive OEMs' business models are continuously evolving into "mobility and data companies" and are looking for new opportunities for revenue generation by diversifying their services portfolio.

#### Key Takeaways

- With evolving service-based business models and vertical integration, OEMs plan to internally leverage connected vehicles (CVs) and driving data to provide customized extended service contracts, leasing deals, and customized usage-based insurance plans to customers.
- There is also a growing demand for connected vehicle data from third-party buyers such as insurance companies, smart city planning companies, and fleet operators.
- Major auto OEMs currently providing phone projection technology may eventually phase out the feature in vehicles with the maturity of connected infotainment systems with the in-car app store, data monetization business models, and future vertical integration.

#### Recommended Actions

- To immediately monetize CV data, auto OEMs are partnering with data integrators on a revenue-sharing basis to leverage vehicle-specific data (by VIN number) from the OEM's cloud.
- Auto OEMs can introduce edge processing-based capabilities in vehicles to optimize the CV data transmission volumes to the cloud and lower expenses associated with connectivity, cloud, and AI usage.
- Auto OEMs can partner with tech vendors that are developing in-vehicle CV management software and platforms to empower OEMs to dynamically manage services and data flow, choose which services to connect with their vehicles, and specify which services are offered in specific vehicles by VIN number.

Source: IDC, 2023

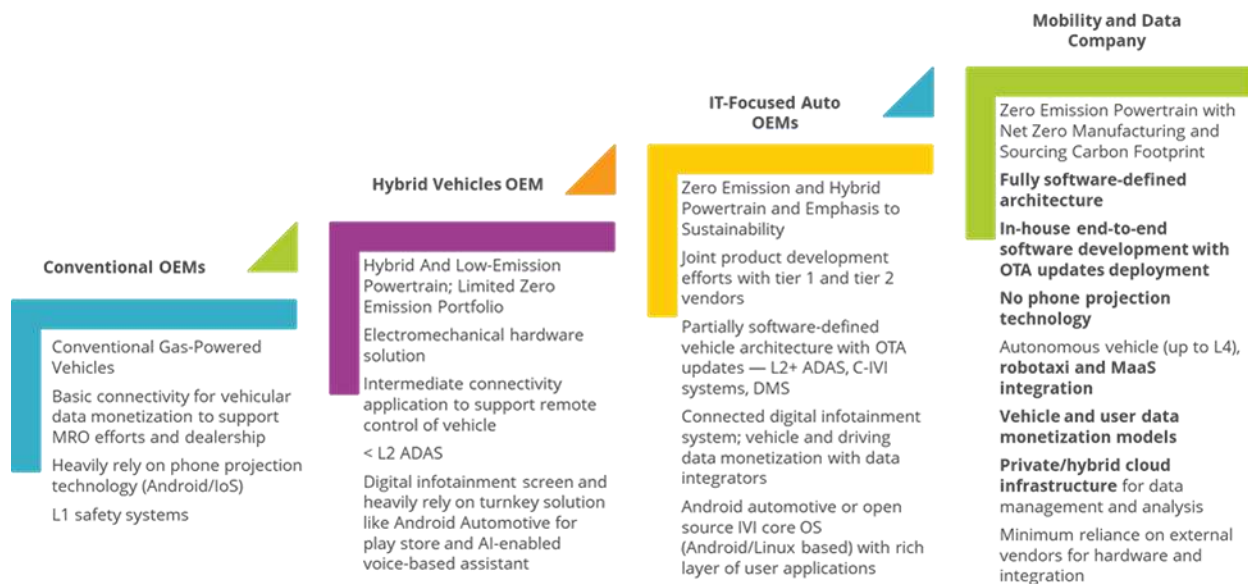
## NEW MARKET DEVELOPMENTS AND DYNAMICS

In the past decade, the automotive industry has transformed from gas-powered powertrains to zero-emission technology to drive sustainable transportation and reduce or eliminate tailpipe emissions. The technology powering these new-age zero-emission vehicles is also evolving rapidly with the introduction of software-defined features with centralized computing. With the anticipated proliferation of electric vehicles (EVs), auto OEMs are also looking to new opportunities for revenue generation and diversifying their services portfolio with the decline of traditional aftermarket sales and maintenance services. With ongoing advancements and commercialization of enabling technologies such as sensing, high-speed wireless connectivity, cloud computing, and artificial intelligence (AI), auto companies are heavily investing in developing new capabilities collectively defined as CASE – connected, autonomous, shared, and electric technology platforms.

With the widescale introduction and maturity of software-defined CASE features, traditional automotive companies may no longer see themselves as mere vehicle suppliers. This shift allows automotive OEMs to complement their legacy business models with models like subscription-based or on-demand "as a service." Auto OEM's business models are also continuously evolving into "mobility and data companies," with a huge potential for vehicle and driver-related data monetization and connected services alongside new vehicle sales (see Figure 2).

FIGURE 2

### Auto OEM's Evolving Business Models



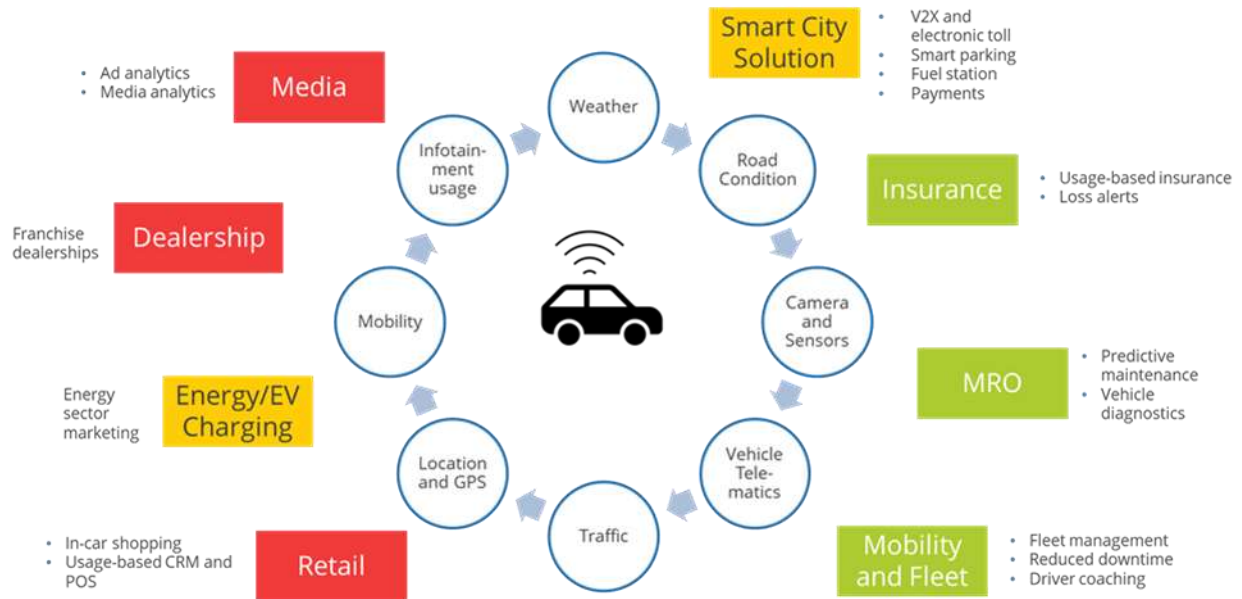
Source: IDC, 2023

With all the new opportunities arising for revenue generation from software-defined CASE features and services, OEMs are further looking into options to monetize vehicle and driving-related data. Presently, most OEMs understand the existing and forthcoming opportunities with connected services and data monetization, both internally and to third-party buyers. These OEMs are embedding their lineup of premium and luxury vehicles with standalone connectivity with hundreds of data points collected from each vehicle.

The overall connected vehicle (CV) data volume captured by OEMs is anticipated to increase significantly, with IDC's connected vehicle forecast projecting about 70% of all new vehicles sold globally by 2027 will be enabled with standalone connectivity. Major OEMs have also been vocal about their plans to vertically integrate further into the adjacent auto. With evolving service-based business models, OEMs plan to internally leverage CV vehicle and driving data to provide customized extended service contracts, leasing deals, and customized usage-based insurance plans. However, not all OEMs have a clear path toward taping the full potential of captured data and are quickly racking up costs associated with connectivity and cloud infrastructure to store and manage CV data. There is a growing demand for connected vehicle data from third-party buyers such as insurance companies and fleet operators (see Figure 3).

**FIGURE 3**

**Connected Vehicle Data Monetization Ecosystem**



Source: IDC, 2023

Table 1 lists connected vehicle data types and buyers.

**TABLE 1**

**Connected Vehicle Data Type and Buyers**

Data Type	Description	Application	Buyers
Vehicle data monetization	Vehicle parameters telemetry includes temperature, pressure, and charge and discharge cycles of batteries and drivetrain along with instrument cluster data, time, and location for vehicle health monitoring, and diagnostics.	<ul style="list-style-type: none"> <li>▪ Fleet management</li> <li>▪ Predictive maintenance</li> <li>▪ Aftermarket spare sales</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fleet operators</li> <li>▪ Vehicle service contract provider</li> <li>▪ Dealerships</li> <li>▪ Analytics service providers</li> <li>▪ Local and state governments</li> </ul>
Driving data monetization	Driving parameters telemetry includes speeding, breaking, maneuvering, sensor feed in case of an accident along with time and locations to determine usage-based persona, driving pattern, driver coaching, premium estimation, and resolving claims.	<ul style="list-style-type: none"> <li>▪ Usage-based insurance</li> <li>▪ Driver monitoring and coaching</li> <li>▪ Fuel tax estimation</li> <li>▪ Energy-based marketing</li> <li>▪ Smart city and planning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insurance companies</li> <li>▪ Fleet operators</li> <li>▪ Local and state governments</li> <li>▪ Toll operators</li> <li>▪ EV charge point operators</li> </ul>
User data monetization	Connected infotainment usage data telemetry includes both in-car apps and voice assistants along with time and location for account-based marketing.	<ul style="list-style-type: none"> <li>▪ Ad and media analytics</li> <li>▪ Data-driven promotions and discounts to users</li> </ul>	<ul style="list-style-type: none"> <li>▪ Media</li> <li>▪ Retail</li> <li>▪ Food and beverage</li> <li>▪ Hospitality</li> <li>▪ Concierge service</li> </ul>

Source: IDC, 2023

**IDC'S POINT OF VIEW**

A few of the present and future trends and means for CV data monetization are presented in the sections that follow.

**5G Accelerating the Future of Mobility**

5G remains an integral facet for the digital transformation happening in the automotive industry and Smart City initiatives, which is changing the way the vehicles operate and communicate with other infrastructure on the street, how customers can access and interact with the new features remotely, how to manage a fleet, and how auto OEMs and tech companies can monetize vehicle and user-related data. With the introduction of CASE features, a growing part of a vehicle's functionalities is implemented in software that may be updated or even upgraded over time. With higher bandwidth and

nominal latency, 5G networks would enable a seamless experience with over-the-air (OTA) updates of software-defined features and high-speed data transmission and further enhance the potential for real-time CV data monetization opportunities among stakeholders.

## **Auto OEMs Partnering with Data Integrators to Immediately Monetize CV Data**

To immediately monetize CV data, OEMs are working with cloud companies and data integrators to manage, analyze, and generate insights with AI. Data integrators are partnering with OEMs on a revenue-sharing basis to monetize vehicle-specific (by VIN number) data lakes from the OEM's cloud. Most of these partnerships are not mutually exclusive, meaning one OEM is partnering with several data integrators and vice versa, and can sell one vehicle's data points to various buyers.

The role of data integrator includes:

- Partnering with OEMs for accessing and monetizing data on revenue sharing or commission basis
- Sourcing data from OEM's data lakes, refining, repackaging, and ensuring data integrity
- Augment the CV data with occupancy, social, surface, and mobility data to create an enriched data set
- Customized data packages based on the vertical use cases, with insight generation with the aid of AI and ML (machine learning)
- Partly or wholly responsible for ensuring compliance with regulations around customer data privacy and consent (GDPR and other privacy-related regulations)

Several new and emerging CV data integrators, such as Wejo, Cerebrum X, and Otonomo, have partnered with OEMs across regions to deliver CV data-driven insights to third-party buyers like smart city planners, insurance companies, and fleet operators.

## **Tech Vendors Developing In-Vehicle CV Management Software and Platforms to Empower Auto OEMs**

### ***In-Vehicle CV Data Management Platform with Edge Capabilities***

Auto software developing companies are working with tech vendors and cloud services providers to create connected vehicle data management platforms for OEMs to own and manage CV data services, including any revenue generated for accessing and using CV data from third-party buyers.

BlackBerry IVY, powered by AWS cloud and AI, is one such in-vehicle software platform with edge capability that helps OEMs and automotive tier 1s by creating secure, flexible, and cloud-controlled tools to access, process, and share in-vehicle data and insights with other developers from third-party buyers. The platform provides in-vehicle edge processing capability with AWS' machine learning capability to process multiple raw signals and analyze for specific behavior in the vehicle to generate shareable insights used by applications. The platform also allows OEMs to directly control and provide access and manage other CV data stakeholders, removing the need to partner with multiple data integrators.

## ***Software-Only Solution for Android- and Linux-Based Connected Infotainment OS***

Tech vendors are developing off-the-shelf software to aid OEMs in monetizing CV data operating on Linux- and Android-based connected infotainment OS.

Aiden Automotive is one such connected vehicle start-up working with auto OEMs housing Android Automotive as the connected infotainment OS. The company's solution offers real-time communication capability, ensures privacy compliance, and enables digital services. The software solution enables OEMs to dynamically manage services and data, choose which services to connect with their vehicles, and specify which services are offered in specific vehicles by VIN number.

## **Auto OEMs Phasing Out Phone Projection Technology**

Phone projection technology such as Google's Auto Android and Apple's CarPlay is prevalent among auto customers and is one of the most preferred features available in most new vehicles, across major OEM brands. The auto OEMs providing standalone connected vehicle technology aim to completely own and manage every aspect associated with the vehicle and driving data monetization. IDC views the high customer dependency on phone projection technology for accessing the in-phone application, especially Google Maps for navigation, will be the biggest impediment for auto OEMs. The dependence of drivers on in-phone apps for navigation is leading to gaps or limiting OEMs from completely owning and monetizing all vehicle and driving-related information.

Understanding the existing dependency, some of the newer EV companies like Tesla and Rivian housing connected infotainment systems with in-car app stores never provided phone projection to start with. Several auto OEMs with connected infotainment systems have recently partnered with navigation, entertainment, and communication companies to host Android- and Linux-based in-car apps. Traditional OEMs that aim to be a "mobility and data" company and currently provide phone projection technology will eventually phase out the feature, with the maturity of connected infotainment systems with in-car app store, data monetization business models, and future vertical integration.

## **IDC Recommendations**

- Auto OEMs can partner with data integrators to immediately monetize CV data captured in the auto OEM's cloud and offset some of the costs associated with connectivity and CV data management. However, for the upcoming vehicle launch, auto OEMs can enable in-vehicle software and data management platforms to interact directly, enabling access and managing CV data buyers and eliminating the need to partner with multiple data integrators.
- Auto OEMs recognize that the rapidly growing volumes of sensor and vehicle data sent between cars cannot be processed centrally but need to be processed locally. The key is the edge cloud integration and 5G connectivity to enable high-volume data transfer and zero latency. The introduction of edge-based capabilities and leverage AI to optimize the CV data volumes would also lessen costs associated with connectivity and cloud-based data management.
- When dealing with user-related information in connected cars, it is imperative for tech companies in user-related data monetization to comply with GDPR and any other privacy-related regulation applicable in the region. Tech companies providing connected vehicle data services need to develop a single-point consent management system to manage and ensure full compliance to user information-related privacy law.

- To reduce customer dependency on phone projection technology, auto OEMs can partner with B2C companies in smart navigation (Google Maps), entertainment (Netflix and Spotify), and communication (Zoom and WhatsApp) with in-phone applications for introducing in-car apps for their connected infotainment system.

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### Related Research

- *Digital Transformation of U.S. Tollway Operations* (IDC #US50744423, June 2023)
- *Top Trends in Digital Automotive and Transportation Technology, 2023* (IDC #US48739522, April 2023)
- *5G Accelerating the Future of Mobility* (IDC #US49843322, December 2022)
- *North America Public Electric Vehicle Charging Network Forecast, 2022-2026* (IDC #US49233022, December 2022)
- *Salesforce Launches Automotive Cloud, a Platform Tailored for Auto Companies to Deliver Better Customer Experience for Connected Car Users* (IDC #lcUS49782722, October 2022)
- *Worldwide Autonomous Vehicle Forecast, 2022-2026* (IDC #CA49221622, June 2022)

### Synopsis

This IDC Market Perspective elaborates on the connected vehicle data monetization ecosystem by mentioning various stakeholders, both enablers and buyers, working with auto OEMs to source and leverage insights driven from vehicle operational, driving, and user data from connected cars. It also provides ways OEMs can partner with tech vendors or data integrators to manage data outflux from vehicle/OEM cloud and access to third-party buyers.

"With the introduction of connected services and other CASE-related software-defined features, auto OEM's business models are continuously evolving into 'mobility and data companies' with a huge potential for vehicle- and driver-related data monetization alongside new vehicle sales." – Sandeep Mukunda, Research Manager, Digital Automotive and Transportation Strategies

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