The Car As A Digital Platform: On-Demand Car Features

Data-driven business models built around on-demand car features will open up new paths to growth for the automotive industry. In an environment where customer expectations are constantly changing and disruption is putting businesses under relentless pressure, it is crucial for OEMs to make the most of this opportunity.

The automotive industry is experiencing unprecedented and radical change: technology-driven trends, changing consumer preferences, a dynamic policy landscape and new competitors from all sides. What was already a very challenging situation in some markets deteriorated further as the pandemic downturn killed demand, even as other regions – such as China – fared better in comparison. This is an adapt-or-die moment for OEMs; they need to get ahead of disruptive trends and reconfigure their business around the paradigm of the connected car. ❯

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One thing is certain, the days of carmakers as mere hardware manufacturers are numbered. We have already entered the age of the car as a digital product, or to be more precise: the age of the car as a platform for digital products. In recent years, cars are offering more and more digital services, and this trend is only going to keep growing, along with novel usage and payment models. With on-demand car features (ODCF) from augmented reality head-up displays (AR-HUD) and intuitive safety features to infotainment services and advanced battery management solutions, the sky is virtually the limit. We are long past the point where digital car features are futuristic, pie-in-the-sky gadgets. As on-demand vehicle usage continues to grow, they will soon move to center stage.

If OEMs are clever about playing the digital card and developing compelling ODCF options, they will be able to capitalize on the very trends that are threatening their conventional business models. Shared mobility, for instance, stands to benefit considerably from ODCF: As customers move from ownership to sharing, they will appreciate having an individual profile that can be activated in each car they use in the sharing model. However, as the amount of vehicle data continues to increase, it is essential for carmakers to take a holistic approach to their technology architecture for the car as a platform (CaaP) to succeed, as we will argue in this Point of View. The challenges are far from trivial. Carmakers will need to be cautious when it comes to data security and compliance and

deal with various implications along the value chain. The most critical success factor will be finding the right pricing strategy for these new business models to be sustainable. Before we outline the recommended steps and initiatives for a viable ODCF approach, we would first like to address the current environment and emerging developments in more detail.
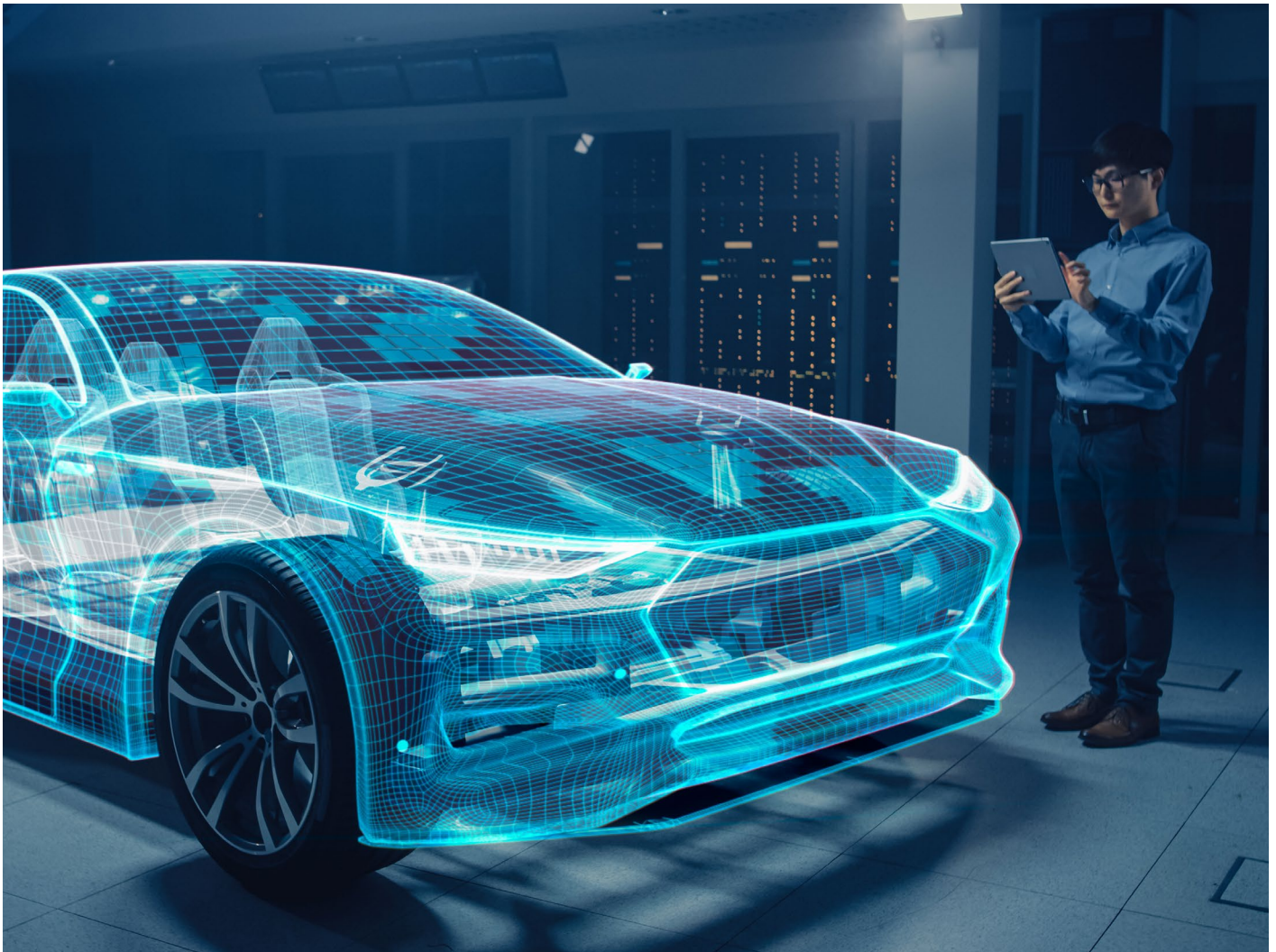
Changing customer preferences and car sharing economy

Customer behaviors and expectations are undergoing radical change at the moment. Keeping this foremost in mind, OEMs stand to benefit from the many ways ODCF strategies cater to the customer of the future. One important trend we are already seeing in the marketplace is the move away from car ownership, particularly among the younger demographic. Thanks to mobility on-demand services and the evolving car sharing economy, fewer people feel the need to own a car outright. Changing social values and preferences of consumers are supporting this trend as well.

As new vehicle usage and sharing models emerge, the customer focus is shifting from the individual car as hardware to its digital features. The individualistic consumers of tomorrow expect ultra-personalized experiences, made possible through a broad range of additional on-demand features as diverse as the user base itself. They are also becoming more accustomed to smaller, recurrent transactions in lieu of large one-time purchases. This makes the financial mechanics of ODCF ideally suited to the changing payment patterns of the future, particularly in the digital services ecosystem. Cars will become a similar ecosystem in their own right, as they transform into digital platforms, or "smartphones on wheels". We expect a substantial shift in OEM revenue in favor of digital services, which, according to Deloitte's 2021 Automotive Consumer study, is expected to account for up to 30 percent of total revenue by 2030.

Mapping a landscape of technological developments

In terms of technology, this promising field is powered by major innovations that are already market-ready today or will be soon. Innovative technologies are starting to emerge in force, such as adaptive driving modes, remote services, smart in-car assistants (featuring artificial intelligence/speech recognition), vehicle-to-vehicle (v2v or v2x) communication and electromobility. Further innovations in the not-too-distant pipeline range from autonomous driving to augmented reality dashboards or even brain-to-vehicle technology.

OEMs are making these advanced features a reality through transformative state-of-the-art technology, for instance in the fields of analytics and cybersecurity, but they need to be acutely aware of new competitors in the field. The global tech giants and other "born digital" players entering the market are extremely adept at creating a seamless customer journey through personalized services. With a 360-degree view of the customer, these competitors are able to develop highly customer-centric products and services. Their business model allows them to gather and process ever increasing amounts of data from various sources and create a virtuous cycle of customer feedback, adaptation and innovation.

Leveraging on alliances and partnerships

Strong partnerships to drive automotive innovations are becoming extremely attractive for OEMs and tech companies alike; many are already in operation. We expect to see more of these alliances in the future, designed to pave the way for digital services through faster processing of information, advanced infrastructure for driving-assistance systems, autonomous driving technology and new functionalities.

In this landscape, collaborations along the value chain will offer a viable strategic pathway for traditional OEMs to grow digitally, be it internally in areas such as R&D, or externally with suppliers and partners. Partnerships enable OEMs to benefit from the expertise of other players in the ecosystem thanks to new interfaces and the "API economy" (API, Application Programming Interface). These collaborations also help both sides increase sales and access new markets, share commercial or technical risks and reduce investment costs. By monetizing on-demand services, OEMs are at a competitive advantage and have a variety of channels to target with their novel pricing models. We plan to explore these options, including dynamic pricing models and the use of automotive captives (banks) in an upcoming Point of View.

Moving towards a fully-featured car production means identifying features that reduce complexities in production if standardised and are both profitable for the manufaturers and suppliers and are value adding towards the customer if included in the on-demand catalogue. This holistic approach may include considering comfort functions such as heated/cooled seats, or safety functions such as blind spot alert and entertainment functions such as built-in Wi-Fi.

Approach and process overview

The business case for ODCF options is extremely attractive. However, as illustrated below, OEMs will have to develop and launch a wide range of processes along the value chain to succeed, while also navigating the associated risks. But before they can even begin to orchestrate such a complex process, they need a standardized, fully-featured hardware platform with a focus on software/service capabilities and ODCF potential. It is vital to address hardware contingency issues in this context, for instance the trade-off between a higher price tag for fully featured hardware and cheaper operational costs due to reduced complexity.

To successfully launch an ODCF range, carmakers have to confront a number of technological issues. They need a secure code for interaction with the vehicle in the after-sales period and, on the production side, a new development infrastructure enhanced with digital twins and comprehensive test databases. It is also important to achieve type approval, establish standards and obtain document approvals.
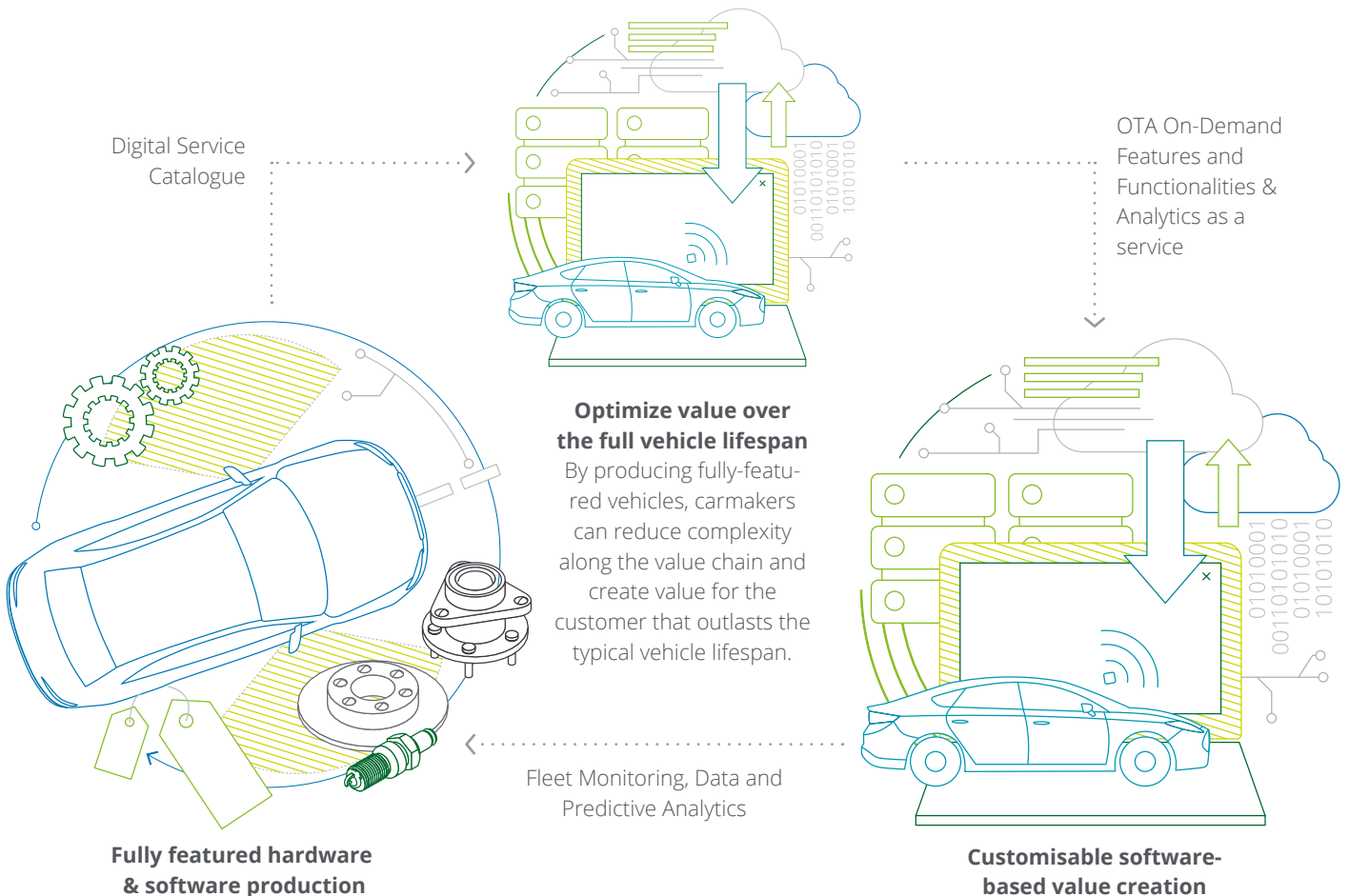
With compliance, security, update management and other vital issues on the ODCF process landscape, compliance with important new regulations such as UNECE rules for cyber security management is key. OEMs need to manage customer service and supplier contracts as well as customer relations, data tracking/analysis and end-of-life processes (erasing data, revoking licenses), in addition to establishing new software quality KPIs, quality assurance systems and retail transformation projects. Further challenges include restructuring (reducing complexity, licensing), customer experience, supply chain management, recall management and vehicle software management.

For a new business model to succeed in this extremely complex and varied process landscape, it is essential for OEMs to take a comprehensive, end-to-end approach to integration with a clearly defined set of steps, as we will discuss in more detail below. Consult the checklist at the end of this Point of View for a practical guide to the initial key considerations.

Fig. 1 – On-Demand Car Features

ODCF is a novel approach that identifies the vehicle as a platform and offers end customers software-based mobility, flexibility and value creation

Digital Service Catalogue

OTA On-Demand Features and Functionalities & Analytics as a service

Optimize value over the full vehicle lifespan
By producing fully-featured vehicles, carmakers can reduce complexity along the value chain and create value for the customer that outlasts the typical vehicle lifespan.

Fleet Monitoring, Data and Predictive Analytics

Fully featured hardware & software production

Customisable software-based value creation

Creating a new digital business models
The end-to-end approach we are recommending comprises four distinct dimensions. The first two dimensions are prerequisites for an ODCF business model and provide the architectural design for the CaaP. The following two dimensions relate to ODCF enhancements that make the end-to-end process more stable but also offer scope for further innovation – we will address these in the final section.

In the first dimension, OEMs need to develop their new ODCF business model. This process is all about understanding the commercial potential of ODCF and the associated services as well as assessing the OEM's own readiness. They should derive insights from reliable data gathered in this process, factoring in the strategic perspective related to the ODCF market as well as the company perspective in terms of its financial, technological and structural capabilities and constraints. This will help identify existing opportunities and conceptualize the right implementation parameters.

In this dimension, it is up to stakeholders to gain all relevant information, identify gaps by testing system readiness and integrate the business model into a strategic roadmap. The readiness gap analysis should focus on the supply chain dimension and the establishment of a "Harmonized-Software-Hardware" requirement engineering, followed by a risk analysis exercise to assess technological, regulatory and process-based risks as well as pricing models. These efforts help OEMs define the complete set of measures required to develop ODCFs, from establishing key milestones and drafting internal budgets to implementing plans post-approval. In doing so, they can finalize the transformation roadmap, set up expert teams and necessary strategic partnerships, and take the project structures live.

Fig. 2 – The Process Landscape and Deloitte Services

For the business model to function as a whole, OEMs need to strive for end-to-end integration as part of a well-orchestrated process that addresses both risks and opportunities. The time to act is now!

Dimension 1:
New Business Model
This dimension is about the OEMs and suppliers understanding the concept and opportunities of ODCF, including conceptualizing parameters and identifying the future catalogue of features.

Dimension 2:
Architectural development
This is the critical dimension for implementation of the process from hardware integration to systems and software development, with a focus on data and regulatory compliance. This is also the time to define the future roles played by R&D, suppliers, marketing, sales, after-sales and dealers.
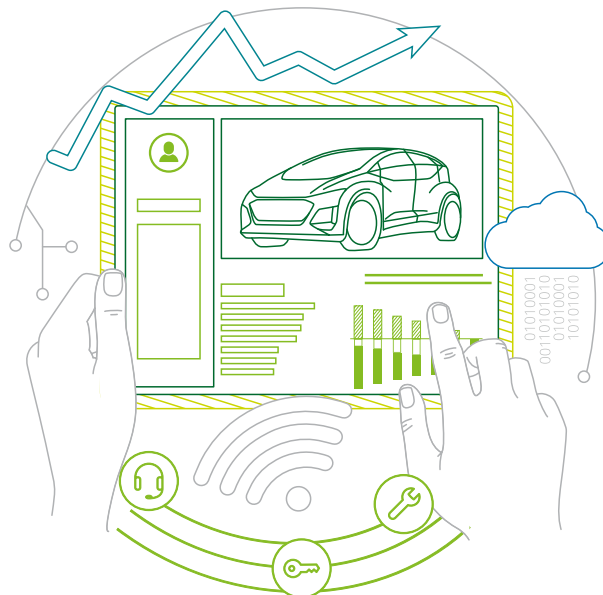
Dimension 4:
Data-driven innovation
OEMs use data to create further mobility services including analytics as a service. Continuous testing and further systems development are essential to ensure sustainable CX.

Dimension 3:
Operational E2E integration
This dimension involves end-to-end operationalization of the digital services along the value chain, including contractual amendments, new agreements and a production readiness review.

Architectural design and development

The second dimension of the ODCF implementation process is of critical importance, as it involves developing and implementing the technology and operational architecture. This includes very technical processes, such as hardware integration or systems and software development with a special focus on data and regulatory compliance, but also strategic issues, such as determining and aligning the roles suppliers and dealerships will play.

This dimension starts with designing the ODFC architecture and drafting type approval checklists as well as integrating the legal and compliance requirements into new and existing processes. Providing a breakdown of the features and the relevant vehicles enables OEMs to bundle ODCFs into potential package offerings based on customer requirements and profitability. At this stage, OEMs engage in concept prototyping (digital twins) for quality assurance and testing, establish software quality KPIs for the parties involved (R&D, production, suppliers) and define the guiding principles for data handling, governance and privacy. There needs to be appropriate structures in place to oversee project steering, communication and reporting for top management and relevant stakeholders.

The second dimension comprises a large set of individual processes and sub-dimensions. In addition to detailed strategic risk profiling with type approval in mind, user experience mapping integrates all of the touch points for future customer journeys. This aspect is of particular importance, considering the new usage and distribution models of platform-based ODCF services; OEMs will need to align their customer care processes with sales and marketing accordingly. By grouping customers in different segments, OEMs can gather actionable insights based on either a persona approach or data-driven clustering (demographic factors, sales data, etc.) to better understand and assess customer value. Assigning a unique ID to each customer will allow OEMs to achieve a 360-degree view of their customers. However, in order to improve customer insight, they will need to leverage their own data, collaborate with markets and identify customers even at anonymized touch points.

The focus on early vehicle enrollment is essential, because enrollment acts as a key enabler for every interaction in the continuing customer journey. After developing new infrastructure with agile methods, dedicated training modules with suppliers and dealerships make sure all stakeholders are on board. One essential intermediate step in this dimension is setting up a start-up factory that acts as an interface between R&D and production. OEMs make the final decisions on operationalization and prepare for production with over-the-air (OTA) update strategies and roll-out plans. Proactive management of data analytics and simulations based on real vehicle data is key for continuous monitoring, improvement and innovation long after the production and sale of each vehicle.

End-to-end integration and data-driven expansion

Once the business model and the architecture are in place, the ODCF rollout can begin. That does not mean, however, that the work is done. Dimension 3 (operational end-to-end integration) and Dimension 4 (data-driven innovation) depend on the output of dimension one and two, adjusted to align with each OEM's specific strategy and the relevant regulations. Operational end-to-end integration that is harmonized along the value chain ensures efficiency, while data-driven innovation allows OEMs to think and act like a software company, focusing on sustainable customer experience and analytics as a service (AaaS) derived from data insights obtained in the fleet. The challenges associated with operational end-to-end integration of a new business model in Dimension 3 are ongoing, as OEMs attempt to establish and maintain production readiness. It is important to map the digital services along the value chain and organize the entire implementation process in a seamless, efficient manner, including data exchange among partners in the ecosystem. OEMs can address evolving organizational questions about marketing and dealerships with data-driven insights. Continuous data gathering also highlights the implications for supplier networks, different markets and production strategies, which often involve amendments to existing contracts.

Further out, in Dimension 4, the vehicle data forms the backbone of future business expansion and innovation in the ODCF space, for example analytics as a service and other mobility services. Continuous testing and UX improvements help to optimize services and launch new products, securing the long-term viability of the ODCF revenue stream for the OEM. Beyond the immediate business case, ODCF initiatives play a significant role in the success of the digital transformation process many carmakers are embarking on right now, by introducing digital capabilities and structural flexibility, breaking down functional silos and improving interaction with stakeholders. Whichever way you look at it, ODCF business models will be a decisive strategic building block for any OEM.

Checklist: Get ready for ODCF business models

OEMs need to build a successful business case for ODCF to avoid the perils of unintended consequences – you will not be able to win the ODCF game without proper preparation. Our experts at Deloitte have identified five crucial issues to address before embarking on this promising new venture.

1. Customer groups

Who are the customers for your on-demand features and what are they willing to pay? Will you target mainly already existing customers or are you also planning to appeal to new customer groups by offering a flexible and open model for car features? What insights are available about these customers?

2. Quo vadis, car features?

OEMs and suppliers need an action plan for further vehicle developments in the aftermarket. How are the different cars positioned? What features are on the horizon over the next couple of years, and which ones have been available from the very beginning? Consider the key differences between state-of-the-art music system vs. high-end massage seats and other ODCF offerings.

3. Software runs on hardware

Every ODCF requires a fully-featured hardware infrastructure, which – in the worst-case scenario – some customers may never use. That's why it is so vital to factor in aftermarket development plans and make sure you take well-informed decisions based on the following questions: Where does it make sense to invest in hardware (functional and performance)? At what point does additional hardware become too expensive and make it potentially impossible to break-even with your on-demand feature offerings? Of course, you can still include these features on the list of special add-ons for your customers. Another important aspect to consider: You may be able to offset additional hardware costs by reducing complexity in the production process, e.g., offering fewer variants and more standardization.

4. Get suppliers on board

The majority of today's supplier contracts fail to specify software updates for cars after start of production (SOP) or to accept accountability for incidents (e.g. cyber-security), licensing and data ownership. This may suggest that suppliers have no incentive to take on the duties associated with ODCF offerings, with regard to UNECE regulations, for instance, or to leverage the business opportunities in the aftermarket. Besides amending contracts to reflect the business reality, one promising solution could be to open a path to customers for suppliers. That would enable suppliers to offer their own products and features directly to the OEM's customers, while the OEM takes a commission for handling the platform (the car/the fleet).

5. Is your sales team ready?

We expect the sources of future margins for OEMs to expand significantly beyond initial vehicle sales. The aftermarket business will pave the way for your new sources of revenue, but you will need to redefine your sales organization to benefit from these developments. Traditional dealerships selling cars – the current business model – is not really set up to serve diverse customer groups, to say nothing of maintaining contact with them to market new functionalities and services. For OEMs to leverage the success of ODCF, they need to provide support for car dealerships with a dedicated sales team for the aftermarket.

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