

# Conversations for tomorrow



Quarterly review  
N°3 — 2021

**Intelligent Industry:  
The Next Era of  
Transformation**

**#GetTheFutureYouWant**

# Insights from the Capgemini Research Institute

# NEXT DESTINATION: SOFTWARE



**Automotive companies are no strangers to software and new technologies. In recent decades, enterprise and industrial control systems have been implemented to support their increasingly complex global operations. Computer-aided design (CAD), engineering, and testing, supported by virtual and augmented reality (VR and AR, respectively), are now industry standards. The amount of code in vehicles has grown exponentially with the advent of electric vehicles. Now, the digitization of the industry is accelerating on multiple fronts: vehicle-specific, services-oriented, in terms of organizational structure and processes, and long-term strategy.**

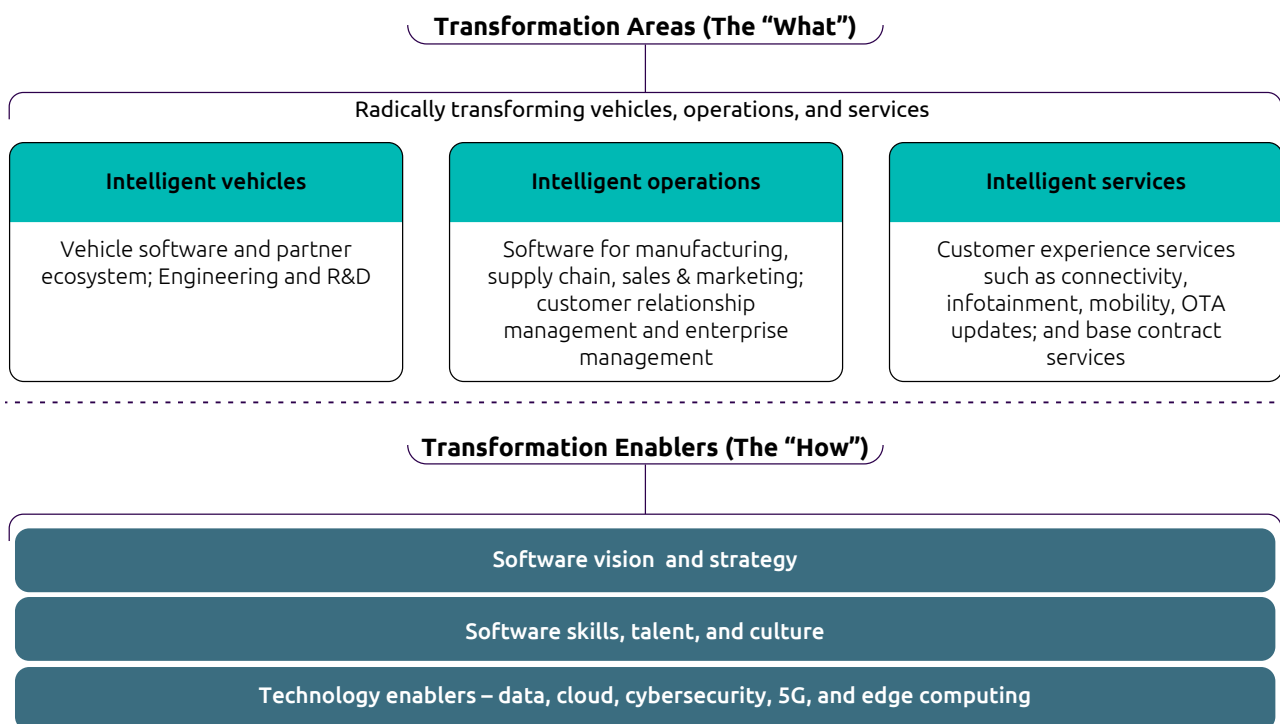
## **Software is now firmly in the driving seat of the automotive industry – a transformation driven by consumers, regulators, and business and operational benefits.**

To assess how well original equipment manufacturers (OEMs) are navigating this transformational period, we surveyed 570 automotive executives from passenger-vehicle and commercial-vehicle manufacturers, headquartered in 12 countries. We also interviewed 17 automotive industry executives. This research, coupled with our experience in automotive-industry transformation, allows us to address the following key questions:

- How is software-driven transformation changing automotive revenue streams and how big is this opportunity?
- How mature is the industry when it comes to software-driven transformation and which advantages do the highly mature enjoy?
- How can OEMs overcome critical transformation hurdles and harness the full potential of software-driven transformation?

We define the software-driven transformation of an automotive OEM as an organization-wide initiative for transforming vehicles, organizational structure, processes, methods, and tools, to the extent that they are primarily defined, designed, and operated by software.

**Figure 1: Key elements of software-driven transformation**

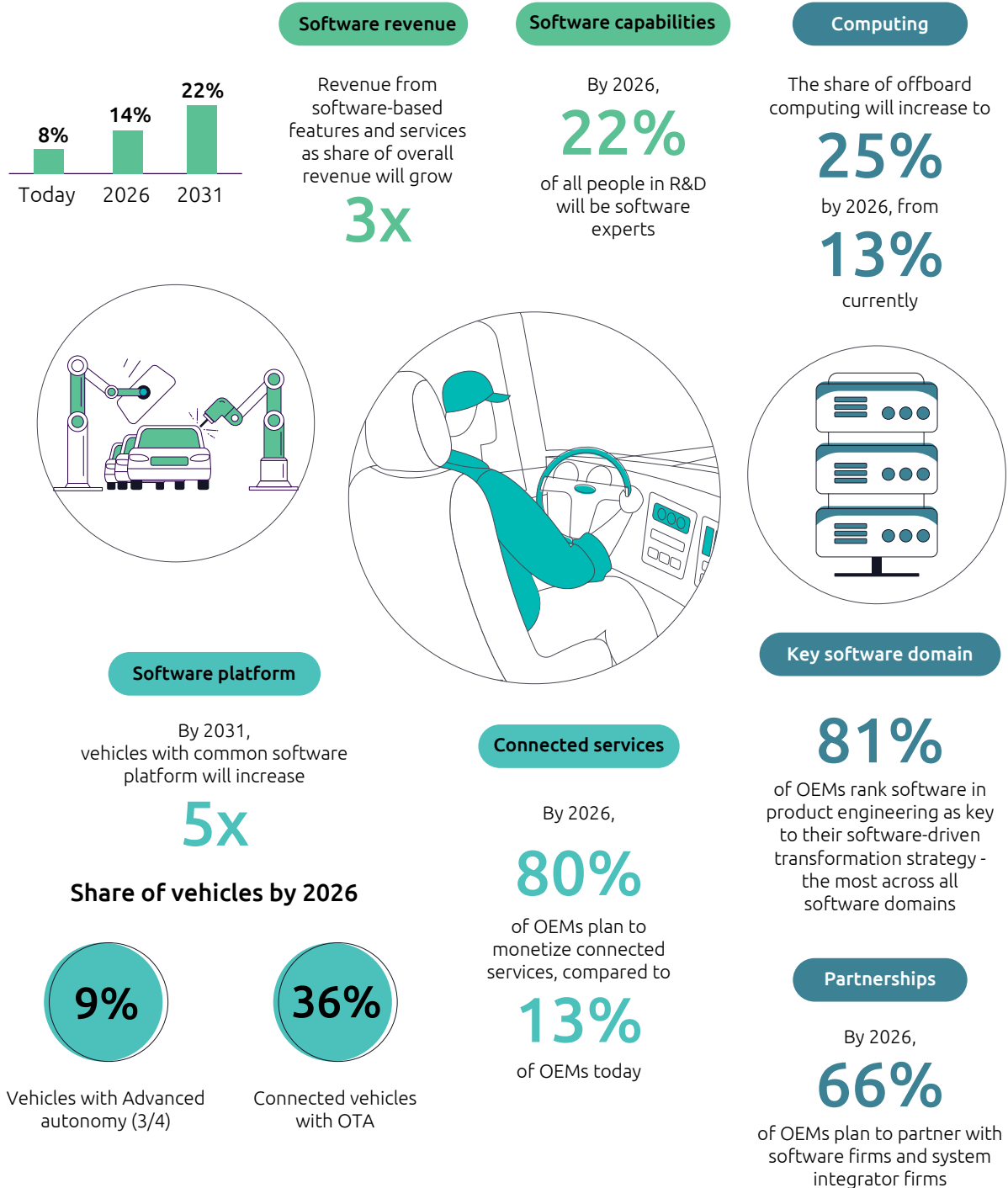


Source: Capgemini Research Institute analysis.

## 1 – HOW SOFTWARE IS DRIVING THE TRANSFORMATION OF THE AUTOMOTIVE SECTOR

As well as redefining the driving and passenger experience, software is bringing about a sea change in how vehicles are conceived, designed, and manufactured. This research examines the impact of software across three broad areas: the vehicle, the processes (internal and external – e.g., supply chain), and the OEM organization.

Figure 2: How software will change the face of the automotive industry over the next ten years



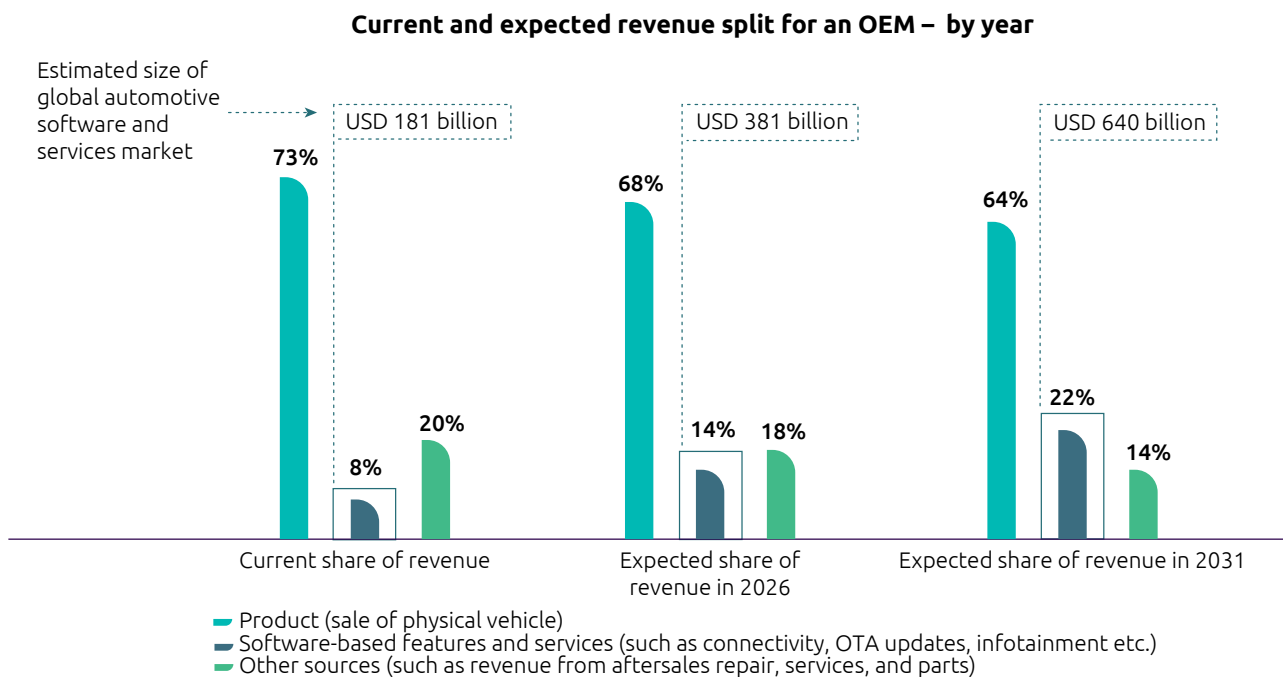
Source: Capgemini Research Institute, Software in Automotive Industry survey, July 2021; N=148 OEMs, Capgemini Research Institute Analysis.

## 2 – AUTOMOTIVE OEMs' SOFTWARE-BASED REVENUE SET TO MORE THAN TRIPLE IN THE NEXT 10 YEARS

**Set to be operating in a \$640bn market in a decade's time, more than one-fifth of OEMs' revenue could be based on software features and services**

Over the next ten years, the share of OEMs' revenue that comes from software-based features and services is expected to nearly triple, from 8% to 22%. Consequently, the share of their revenue from the sale of physical vehicles will decrease over this period.

**Figure 3: Revenue share from software-based features and services is expected to increase three-fold in the next 10 years**



Source: Capgemini Research Institute, Software in Automotive Industry survey, July 2021; N=148 OEMs, respondents primarily from general management function.

### Software revenue will be driven by connected vehicles and advanced autonomy

The growth in software-driven revenue will be enabled by vehicles with connected services and advanced autonomy features. Our survey reveals that, out of all the new vehicles produced, connected vehicles supporting 'over-the-air' (OTA, i.e., software-based) updates will increase more than three times in the next five years, to reach 36%. Further, new vehicles produced with advanced autonomy features (level 3/4) are set to increase nearly fivefold in the next five years, to 9%.

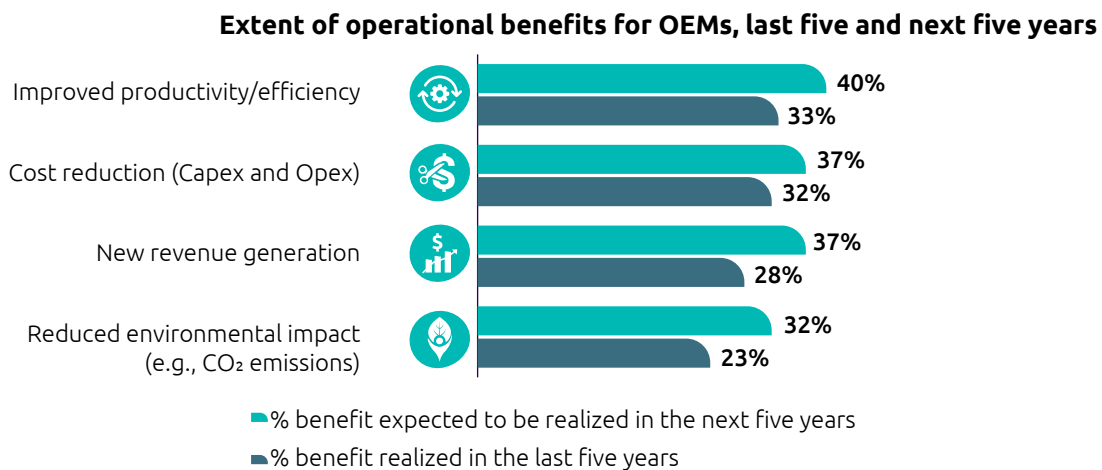
## Reports

To implement connected services and OTA updates across their fleet and enjoy the related economies of scale, OEMs will require a common software platform to be used across their vehicle lines. Our findings show that, on average, the percentage of new vehicles based on a common software platform is going to rise in the next five to ten years. More than one in three vehicles (35%) are expected to be based on a single platform by 2031, up from 7% currently.

### Software-driven transformation will yield significant benefits

Our survey findings (see Figure 4, below) indicate that the expected benefits of the next five years exceed the benefits that have been realized over the past five years.

**Figure 4: Benefits of software-driven transformation will rise in the next five years**



Source: Capgemini Research Institute, Software in Automotive Industry survey, July 2021; N=148 OEMs, respondents primarily from general management function.

### Software will provide a point of difference and a competitive advantage for OEMs

Over the next 5–10 years, half of OEMs (51%) expect to be known for providing software features such as advanced driver-assistance systems (ADAS, which help motorists with driving, parking, etc.), self-driving, connectivity, and services, as much as for their engineering excellence. Leading OEMs also expect to get a 9% larger market share than their lagging peers by distinguishing themselves from the pack by implementing unique software-based features and services.



### 3 – HOW MATURE IS THE INDUSTRY WHEN IT COMES TO SOFTWARE-DRIVEN TRANSFORMATION AND WHAT ADVANTAGES DO THE HIGHLY MATURE ENJOY?

**The software-driven transformation agenda is being backed by substantial levels of investment**

To implement a software-driven transformation, OEMs, on average, plan to invest ~2.2% of their annual revenue every year for the next five years. Over three-quarters (79%) of OEMs are focusing on software in operations, with 74% of OEMs focused on software for product engineering. The top functions receiving significant budget include engineering/R&D and IT, at 23% each.

**However, the vast majority of OEMs are only at the initial stage of their transformation journey and only 15% are mature frontrunners**

- 71% have only gone as far as identifying application areas/use cases
- Just 28% have graduated to a pilot/proof of concept based on use cases
- No OEM has fully scaled the identified use cases based on their software-driven transformation for at least one model/production

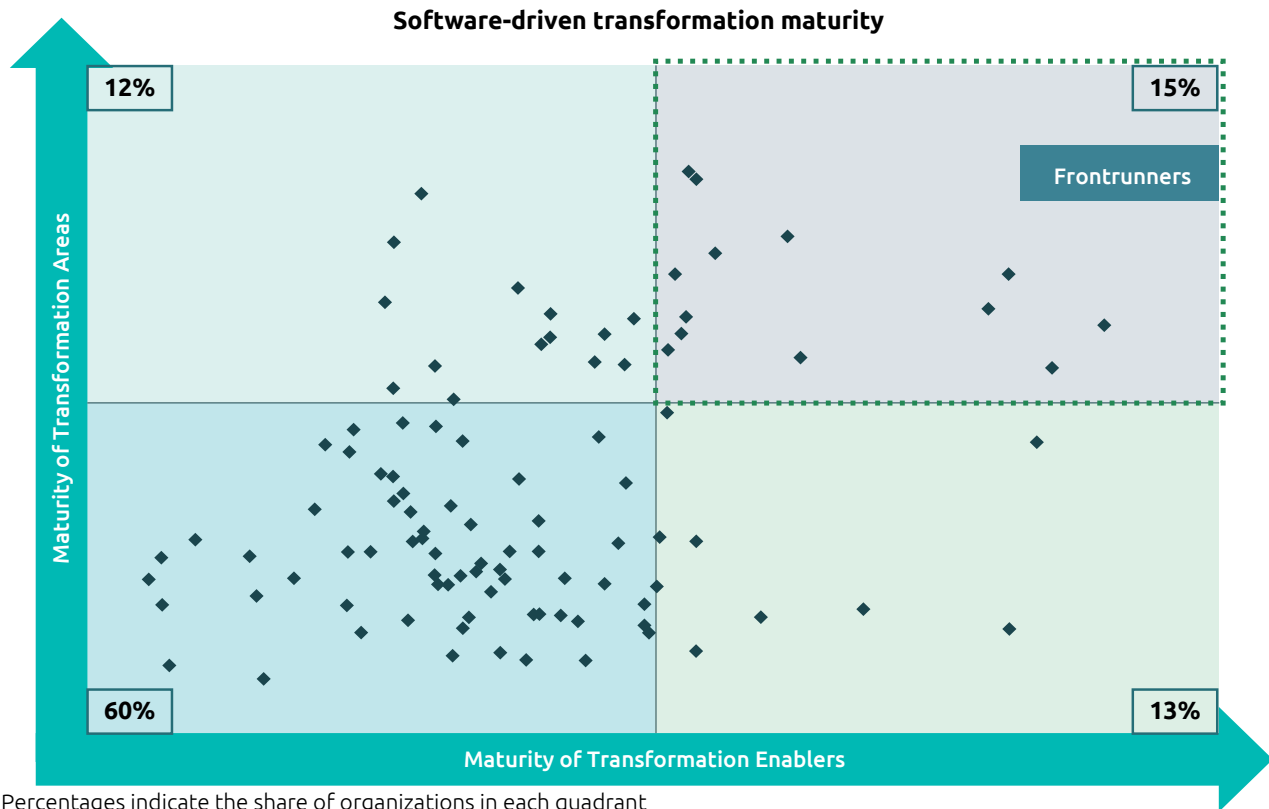
In order to understand the maturity of OEMs, we analyzed their current maturity in terms of two criteria:

- The intrinsic capabilities to develop, create, and implement use of software (which we call 'transformation enablers')
- The extent to which software is transforming the various operational areas, including manufacturing, the vehicles themselves, and internal administration systems

Only 15% emerged as highly mature frontrunners. On average, frontrunners tend to be twice the size of their peers in terms of annual revenue.

**OEMs plan to invest ~2.2% of their annual revenue every year for the next five years to implement a software-driven transformation.**

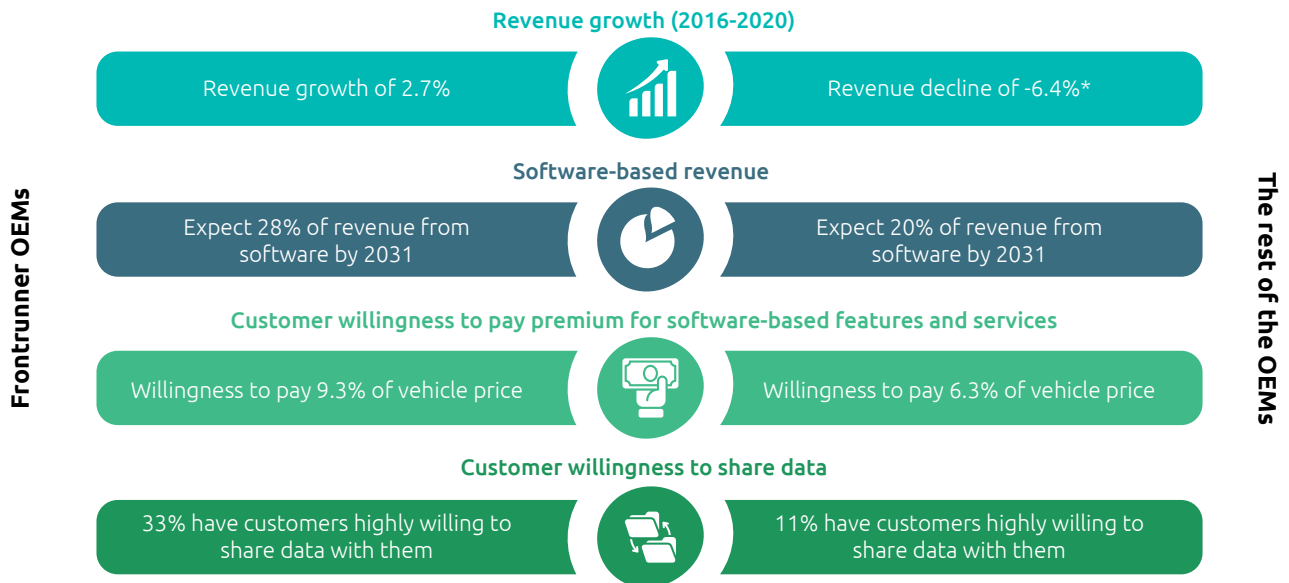
Figure 5: Very few OEMs have the maturity to implement software-driven transformation



Note: Percentages indicate the share of organizations in each quadrant. Source: Capgemini Research Institute, Software in Automotive Industry survey, July 2021; N=100 OEMs with both General Manager and Engineering representative roles.

## Software-driven transformation frontrunners are likely to achieve better results

Figure 6: Frontrunners are likely to achieve better results from their transformation initiatives than their peers



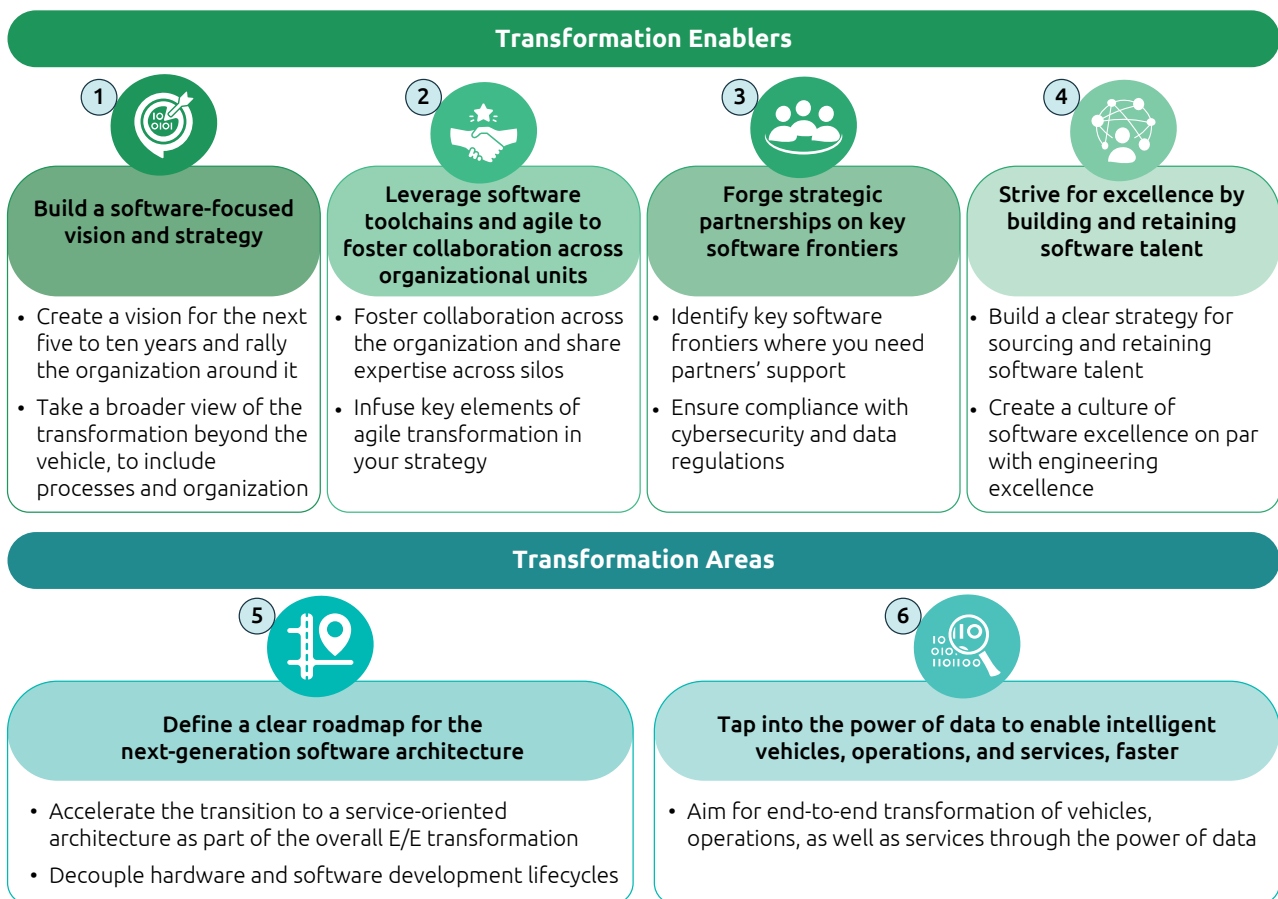
Source: Capgemini Research Institute, Software in Automotive Industry survey, July 2021; N=100 OEMs with at least both General Manager and Engineering representative roles. \*Global automotive data from MarketLine.<sup>1</sup>

<sup>1</sup> Marketline, "Global Car Manufacturing – Market Summary, Competitive Analysis and Forecast to 2025," June 2021.

## 4 – HOW CAN OEMs OVERCOME TRANSFORMATION HURDLES AND HARNESS THE FULL POTENTIAL OF SOFTWARE-DRIVEN TRANSFORMATION?

Drawing on our experience in working with leading OEMs globally, as well as insights from this research, we have identified a number of critical success factors for software-driven transformation.

**Figure 7: A six-point framework to assist OEMs in making the best of their software-driven transformations**



Source: Capgemini Research Institute.

**For details on the research methodology and to read the full report, please visit:**  
<https://www.capgemini.com/research/software-the-new-battleground-of-the-automotive-industry/>



[www.capgemini.com](http://www.capgemini.com)