BERYLLS BY ALIXPARTNERS

COMPETITIVENESS IN THE AUTOMOTIVE AFTERMARKET IN THE CONTEXT OF THE TECHNOLOGY SHIFT

CONTENT

Competitiveness in the automotive aftermarket in the context of the technology shift

1

EXECUTIVE SUMMARY

The automotive sector is one of the most relevant contributors to the wealth of European citizens. In the past, a highly competitive aftermarket enabled affordable and individual mobility to a large part of the population, but this might change with the ongoing shift of technology. CLEPA, FIGIEFA and Berylls conducted a study supported by Automechanika to analyze the most important influencing factors that have the potential to change the aftermarket landscape and possibly drive a shift in the existing market balance between the channels of the independent aftermarket (IAM) and the original equipment services (OES). To substantiate and draw conclusions, we identified five key influencing factors likely to drive the most significant changes and defined seven key markets in Europe to provide a thorough overview and subsequently build a market model to forecast the expected market development. We conducted interviews with highly esteemed experts across the entire aftermarket value chain to gather qualitative feedback, sustain our observations, and illustrate changes in the balance of power, price, and access to data, forming highly probable market scenarios.

1

OES DOMINANCE SCENARIO

The technology shift will lead to more captive parts, higher software content in components, more frequent software updates, and require more detailed technical information for repair and maintenance. Such information belongs exclusively to the OEMs and their OES networks. Exercising stricter control about third-party access in combination with privileged access to in-vehicle data gives the OES channel a significant competitive advantage. This scenario would lead to a EUR 36 billion increase in consumer costs in 2035, driven by higher service prices and limited repair choices due to OES dominance of control points. Consumers would face higher prices and reduced choices, leading to a decrease in affordable mobility.

2

MARKET LIBERALIZATION SCENARIO

This scenario assumes the market will undergo substantial regulatory changes aimed at ensuring fair competition. Such stringent regulations would grant access to captive parts, software updates and any replacement parts protected by cybersecurity as well as provide equal access to RMI/OBD data, remote in-vehicle data and vehicle resources, as available for the OES.

In summary, if the regulatory framework remains unchanged and does not increase its scope and depth concerning software, cybersecurity, and data access, the balance between OES and IAM channels is likely to shift towards the OES. The shift will be propelled by the introduction of newly registered vehicles with increasingly electrified components into the car parc, combined with market conditions favoring the OES, as highlighted in chapter 4.3.

In 2035, consumers will need to spend an additional EUR 36 billion more than necessary, making mobility less affordable. To promote fair competition and protect consumer interests, we recommend that all stakeholders agree on basic principles and work towards a regulatory framework that enables fair competition. The implications for consumer choice and budget are significant, highlighting the necessity for robust regulations to maintain a balanced and competitive market.

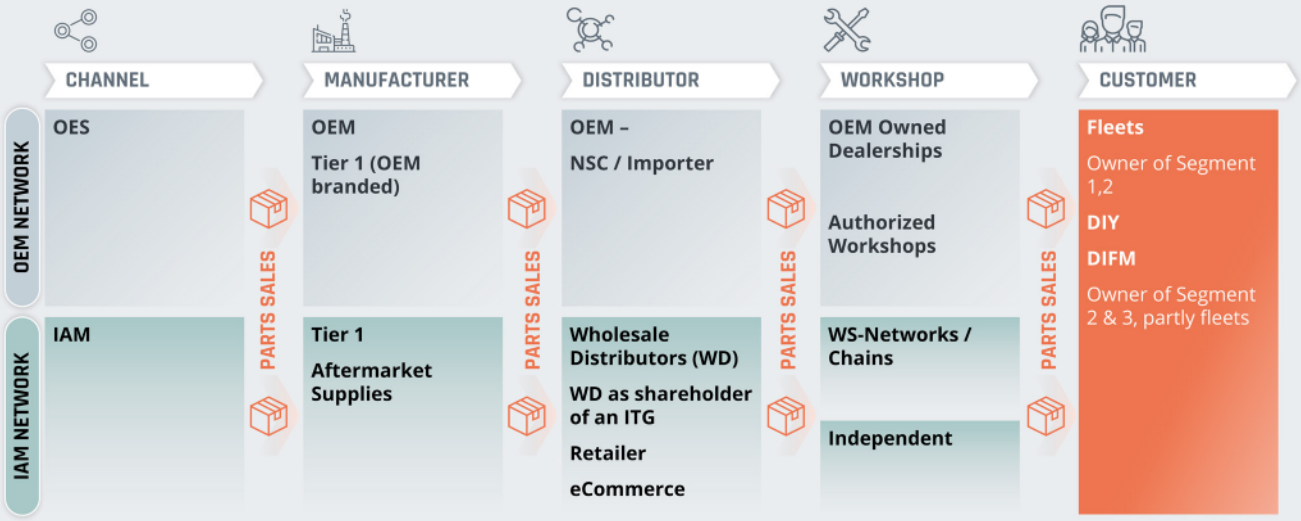
2 INTRODUCTION

2.1. Background and relevance of the automotive aftermarket

The automotive aftermarket is a robust and highly competitive market that enables millions of consumers to enjoy affordable mobility. This dynamic industry encompasses products and services related to the maintenance, repair, and collision repair of vehicles after their initial sale. Key market players include parts producers (OEMs and automotive suppliers, both Tier 1 and independent), distributors (wholesale and e-commerce players), workshop equipment providers, multi-brand diagnostic tool manufacturers, data providers, and workshops (independent and OES networks), as well as intermediaries like remote service suppliers (RSS), fleets, and insurance companies.

FIGURE 1: COMPETITIVE ENVIRONMENT IN THE AUTOMOTIVE AFTERMARKET

AFTER MARKET VALUE CHAIN



Segment 1: Below 3 years; Segment 2: 3-6 years; Segment 3: 6+ years; DIFM: Do it for me; DIY: Do it yourself
Source: Berylls by AlixPartners

The automotive aftermarket plays a crucial role in extending the lifespan of vehicles and ensuring their emission compliance, safety, and efficiency. It is driven by factors such as the total number of vehicles in operation, the increasing average age of vehicles, replacement rates, and technological advancements. The aftermarket is known for its resilience and adaptability, often experiencing growth even during economic downturns, as vehicle owners opt to maintain and repair existing vehicles rather than purchase new ones.

The market is divided into two main types of service channels: the original equipment services channel (OES) and the independent aftermarket channel (IAM). OES channels include branded and authorized workshops that are part of the vehicle ma-

nufacturers' service networks. These workshops typically offer OEM-defined services using original parts, and OEM-certified tools and equipment. In contrast, the IAM (independent aftermarket) consists of independent workshops that follow OES specifications for repair and maintenance, but are not tied to any specific vehicle manufacturer requirement regarding workshop appearance and equipment. The IAM provides consumers with cost-efficient alternatives, offering competitive pricing and a wide range of service options, while not compromising on the quality of the service. This differentiation is crucial, as it allows vehicle owners to choose based on their budget and service preferences. The IAM's competitive nature also drives innovation and improved service offerings, ensuring that vehicles remain operational and safe.

The markets analyzed in the study (Germany, France, Italy, Spain, United Kingdom, Poland, and Norway) has grown significantly in recent years, increasing from EUR 130.6 billion in 2015 to EUR 150.2 billion in 2024. IAM workshops are generally more numerous. Market reports indicate that as the age of vehicles increases, they tend to move towards the IAM channel with only 35% of cars over six years old being serviced in the OES channel.[1]

Recently, the market has been influenced by shifts towards more complex vehicles, such as electrified and connected cars with driver assistance systems, which require specialized maintenance skills and equipment.

2.2. Battery-electric and software-defined vehicles in the automotive aftermarket

The automotive aftermarket is undergoing a significant transformation with the rise of battery-electric vehicles (BEVs) and software-defined vehicles (SDVs). These technological advancements are reshaping the landscape of aftersales services, introducing both challenges and opportunities for aftermarket stakeholders.

Battery-electric vehicles (BEVs)

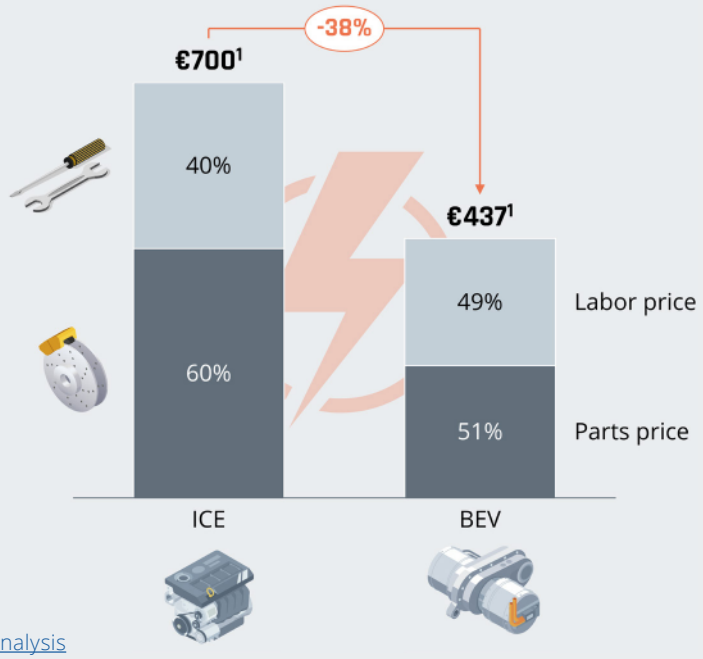
The growing penetration of BEVs in the car parc will drastically change the dynamics of the aftermarket. BEVs, characterized by their electric powertrains, require substantially less maintenance than traditional internal combustion engine (ICE) vehicles. This shift results from the simplified mechanical structure of BEVs, with significantly fewer components and wear and tear parts, eliminating the need for oil changes, spark plug replacements, and other routine services associated with ICE vehicles.

However, while BEVs reduce the frequency and complexity of maintenance tasks, they introduce new service and repair requirements, particularly related to their battery systems, thermal management, and advanced electronic components. Battery health and longevity become critical factors, necessitating specialized diagnostic tools and expertise. workshops also needs to invest in training and equipment to handle high-voltage systems safely and effectively.

1 DAT report 2023

FIGURE 2: THE AFTERMARKET REVENUE DECLINE IN BEVs

AFTERMARKET REVENUE DECLINE IN BEV



1 Without collision repair
Source: Berylls by AlixPartners analysis

The economic implications for the aftermarket are significant. As BEVs penetrate the market, traditional aftersales revenue streams will decline. Studies indicate that the average revenue per BEV is up to 40% lower compared to ICE vehicles due to fewer service needs and lower part replacement rates.[2]

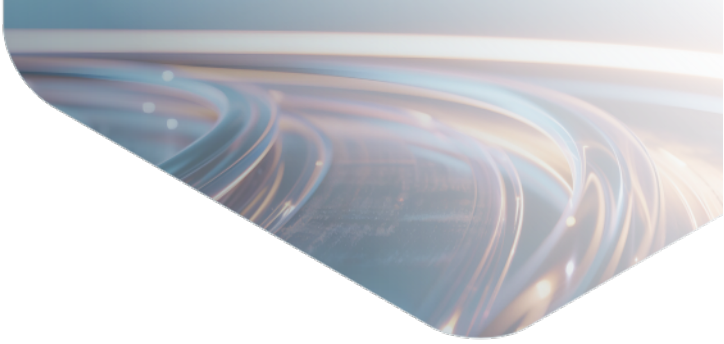
This decline poses a substantial threat to OES and IAM players who rely heavily on maintenance and repair income to finance all the necessary investments in training, tools, and equipment.

To mitigate these impacts, aftersales service providers must adapt by diversifying their offerings and applying traditional growth levers. Further information can be found in this study.

Software-defined vehicles (SDVs)

A software-defined vehicle (SDV) relies on software for its features and functions, marking a significant leap from traditional electro-mechanical components to electronic/software control. SDVs use software to manage vehicle functions, elevating the driving experience, safety, and overall vehicle performance. SDVs depend heavily on regular software updates to enable improved functionality and maintain security. This transformation enables advanced driver assistance systems, enhances safety, revolutionizes infotainment systems, and establishes seamless vehicle connectivity with other road users and infrastructure.

2 The-final-wake-up-call-for-aftersales - spotlight on Germany



These software updates can be provided in workshops or partially delivered through over-the-air (OTA) methods. The updates play a critical role in enhancing and rectifying software issues, as well as upholding the vehicle's cybersecurity protection. This transformation demands a reconsideration of conventional maintenance and repair approaches. To maintain competitiveness, it is vital to offer compelling software updates in the workshop. Moreover, this transition also opens new avenues for service providers to engage with customers through software services. This includes the possibility to access and deploy service providers' own apps or software in the human-machine interfaces (HMI) of the vehicle, as well as scaling up to be able to install software updates as part of the service offering.

The role of software in vehicles is expanding beyond mere functionality to become a key differentiating factor. Major OEMs and suppliers are now investing heavily in developing proprietary software platforms and ecosystems. For instance, companies such as Volkswagen and Tesla are leading the charge with in-house software solutions, while others like Volvo and Ford are forming strategic partnerships with tech giants like Google to integrate software ecosystems such as Android Automotive OS.[3]

This shift towards software-centric vehicles requires aftermarket service providers to enhance their digital capabilities. Investing in cybersecurity, data management, and software development skills becomes imperative. Workshops need to adapt in order to offer services such as remote diagnostics, software updates, and enhancements, which can provide a steady revenue stream despite the reduction in traditional maintenance tasks.

Furthermore, the increasing complexity of vehicle software necessitates close collaboration between OEMs, tech companies, and aftermarket operators. This collaboration is essential to ensure compatibility and security across different systems and platforms.

Advanced driver assistance systems (ADAS) are constantly evolving with an array of safety features, including forward collision warning, intelligent speed assistance, automatic emergency braking, driver drowsiness or distraction warning, lane-keeping assistance, and reverse detection.[4] Government regulations like the General Safety Regulation (EU) support ADAS in enhancing road safety and facilitating the deployment of fully driverless vehicles in the EU.

The innovation and development process reflects the ongoing shift as it demands a considerable effort to seamlessly integrate new functions with existing hardware and software and effectively bring them to market. ADAS lay the foundation for pioneering advanced perception, decision-making, and motion control systems, all crucial elements that provide a higher degree of autonomous driving. The substantial amount of data managed by autonomous driving systems will undoubtedly catalyze a significant advancement in high-performance computing and centralized electronic control unit (ECU) architectures.

3 SW defined vehicle - a tale of incumbents, stragglers, and new kids on the block
4 Regulation (EU) 2019/2144 of the European Parliament and of the Council

These technologies also require maintenance, such as calibration, to ensure optimal functionality. Both OES and IAM must ensure that the subsequent owners of such advanced vehicles can experience the same level of safety as the initial owner.

Strategic implications for the aftermarket

The transition to BEVs and SDVs presents both challenges and opportunities for the automotive aftermarket. Traditional revenue streams from selling and installing wear and tear parts are under threat, but new business models centered around software, diagnostics, thermal and battery management, and advanced electronics are emerging.

Service providers must adopt a proactive approach, investing in training, equipment, and partnerships to stay relevant in this evolving landscape. Emphasizing customer-centric services can help maintain customer loyalty and open new revenue streams.

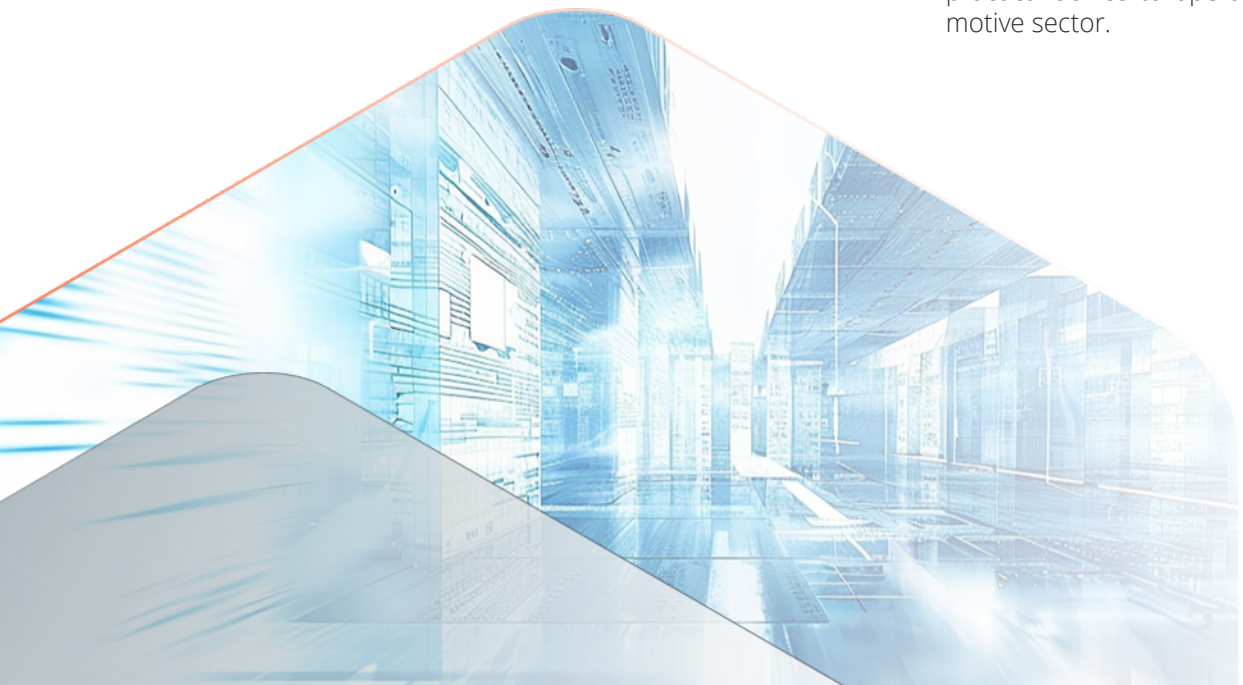
The automotive aftermarket must adapt to a service-oriented approach, focusing on continuous customer interaction and added-value services instead of traditional repair and maintenance tasks. This shift is crucial for survival amidst declining traditional revenues and positions service providers as key players in the future automotive ecosystem. It is imperative that aftermarket operators can implement software solutions on the vehicle platforms, enabling direct communication with the consumer.

In conclusion, the rise of BEVs and SDVs is transforming the automotive aftermarket, but the market actors have different starting conditions. Vehicles and their software architecture are increasingly designed by the OEMs, which have proprietary knowledge and can adapt much faster to the transforming market environment. The IAM relies on the effectiveness of the legislative framework in Europe to maintain its competitiveness and to participate in the transformation.

2.3. The legislative framework: MVBER and TAR

The competitiveness of the automotive aftermarket largely depends on two key legislative pillars. The Motor Vehicle Block Exemption Regulation (MVBER) and its supplementary guidelines (SGLs) are intended to ensure the ability of independent operators to compete with vehicle manufacturers' authorized networks, whilst the vehicle Type Approval Regulation (TAR) considers technical aspects, ensuring a level playing field in the aftermarket.

The MVBER regime has its origin in EU competition law, i.e., the EU principles of undistorted competition on the single market and the prohibition of vertical cartels. It aims to keep the distribution of vehicles, spare parts, and related repair and maintenance services fair and competitive, enabling consumers to benefit from a competitive choice between the vehicle manufacturers' networks and the independent aftermarket. It offers a combination of broad principles, strict rules, and practical advice to operators in the automotive sector.



For example, the SGLs clarify that agreements between vehicle manufacturers and authorized repairers or parts distributors are likely to break the rules if they unfairly block independent operators from the market. This can be the case if access to "essential inputs" is denied. Also, and most importantly, the MVBER enshrines the fundamental "freedom of trade" in spare parts of the first equipment suppliers, allowing them to supply these parts to the entire aftermarket. The SGLs include a fluid definition of technical information and the crucial provision that vehicle manufacturers may not generally make the vehicle's warranty contingent on maintenance and repairs within their authorized network. In other words, during the warranty period, consumers are free to revert to the workshop of their choice "from day one." The MVBER provides clarification and guidance regarding which agreements and behaviors in the automotive aftermarket sector are incompatible with EU competition law. Without this guidance, more legal uncertainty would exist.

The Type Approval Regulation (TAR) sets technical requirements and standards to ensure that new vehicles and parts meet the EU's safety, environmental protection, and competition criteria. Moreover, it contains an important chapter on "Access to Repair and Maintenance Information" for independent operators[5].

This chapter imposes certain concrete obligations on vehicle manufacturers, such as:

- To provide unrestricted, standardized, and nondiscriminatory access to vehicle OBD information, diagnostic and other equipment, tools including the complete references, and available downloads of the applicable software and vehicle repair and maintenance information – and this in a machine-readable and electronically processable format
- To make available specific informaion to parts and tool producers for the manufacturing and servicing of OBD-compatible replacement parts and diagnostic tools and test equipment
- To provide a standardized, secure, and remote facility to enable independent repairers to complete operations that involve access to the vehicle security system

As such, the TAR and the MVBER regime are complementary, each playing a distinct role within their respective legal bases. Both regulations help to create a level playing field for repair and maintenance services and the supply of spare parts in the automotive aftermarket.

2.4. Study objective, scope, and approach

Objective and scope

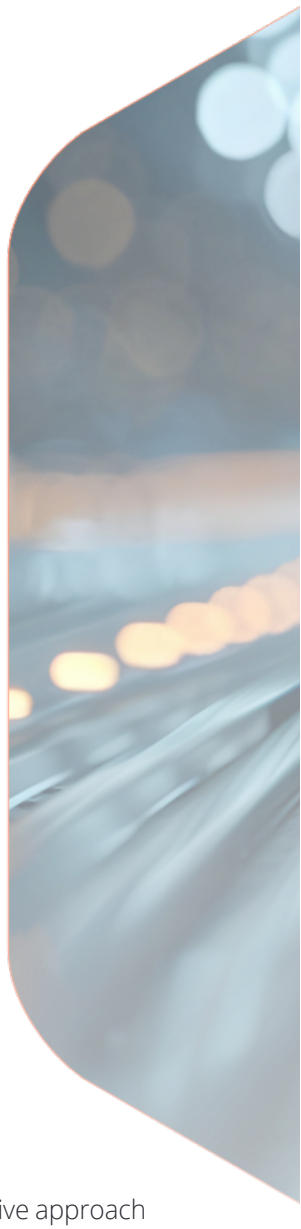
The primary objective of this jointly conducted study is to assess the potential impact of specific key influencing factors on the market size and channel balance between OES and the IAM.

5 Type Approval Regulation (TAR)

This study was developed through a collaboration between CLEPA (European Association of Automotive Suppliers), FIGIEFA (Automotive Aftermarket Distributors), Automechanika (the world's largest aftermarket trade show exhibition), and Berylls (the leading automotive strategy consulting firm). The scope was initially determined to focus on current and future market distributions without external influences and then incorporate various external factors.

5-step approach

1. **Data collection**
2. **Car parc modeling**
3. **Customer spend and repair frequency modeling**
4. **Expert feedback**
5. **Scenario development**



Result and scenarios

The study identified two notable scenarios that impact how consumers can have their vehicles serviced, considering the price of offerings, service availability, and provider choices.

In summary, this comprehensive approach allows us to quantify the impact of key influencing factors on the European automotive aftermarket, providing valuable insights for all stakeholders concerned.

3

THE BASELINE MODEL AND THE MARKET ENVIRONMENT

3.1. Baseline model assumptions

The market environment is captured by a market model designed to calculate the total addressable market (TAM) up to 2035 for the seven focus countries: Germany, France, Italy, Spain, United Kingdom, Poland, and Norway. The model comprises four interconnected components: car parc, average spend per repair (parts and labor), frequency, and channel market share. The calculations are contingent upon the three distinct vehicle segments: segment 1 (under 3 years), segment 2 (under 6 years), and segment 3 (over 6 years). Additionally, the model does not consider inflationary effects.

Car parc

The car parc plays a crucial role in influencing the TAM, with each focus country undergoing distinct changes in volume across various segments. It comprises the historical car parc per country, factoring in adjustments necessitated by, for example, the scrap rate. Additionally, integrating sales figures for new vehicles by country and propulsion type into the car parc is crucial.

Average customer spend

Each segment engenders diverse average maintenance and repair priorities. Furthermore, repair services vary by age group, resulting in distinct prices and probabilities for each group, making it possible to track developments for each segment.

Frequency

Each segment distinctly influences the maintenance and repair frequencies. Despite this, the collision repair frequency exhibits relative constancy owing to the amalgamation of new vehicles with older cars.

Market share

The OES and IAM market shares are linked to the segment. The presupposition that the market share diverges between the age classes and thereby gravitates towards the IAM for each country as the vehicle age increases is a pivotal consideration.

Measurable impacts

The model can effectively measure four key impacts: the influence of segments, car parc, propulsion type, and additional technological developments. For example, low new car sales during the past COVID-19 pandemic are recorded and carried forward in the corresponding segments. Furthermore, the escalating impact of BEV vehicles in the car parc is set to alter the cost structure. As discussed in chapter 2.2, the propulsion type affects the cost structure of maintenance, repairs, and collision repairs. Therefore, average maintenance and repair costs in 2035 are expected to decrease. However, the influence of collision repair has the opposite effect, with BEVs resulting in higher costs than ICEs.

As discussed in chapter 2, technological change yields ambivalent effects in the aftermarket. However, the effects on the OES and IAM are markedly different. A clear distinction is made between two levers: price adjustments and shifts in market share between OES and IAM. This point is thoroughly discussed in chapter 4, with subsequent sub-chapters delving into the effects of the baseline scenario.

3.2. Baseline model forecast until the year 2035

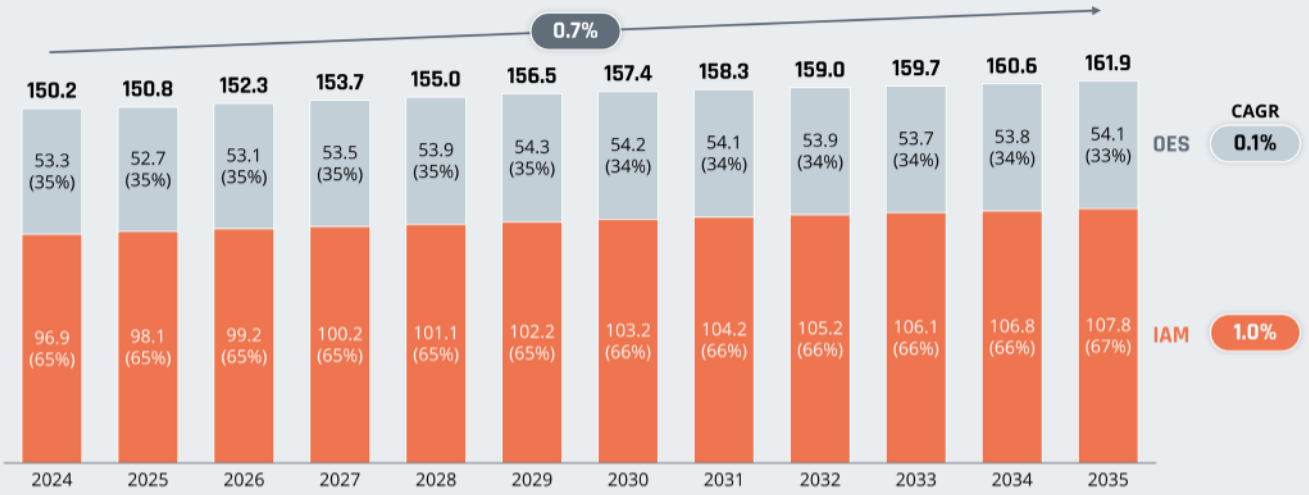
The automotive aftermarket is forecasted to experience steady growth until 2035, driven by an expanding car parc and an increasing average vehicle age. Despite challenges posed by the growing BEV segment, the overall market outlook remains positive.

Path to 2035

In the baseline scenario, assuming there is no influence from potential external factors, the automotive aftermarket is projected to grow within a period of 11 years at a CAGR of 0.7%, from EUR 150.2 billion in 2024 to EUR 161.9 billion by 2035. This forecast is based on data from seven representative European markets, accounting for 67% of the European car parc.

FIGURE 3: BASELINE MARKET FORECAST

ANNUAL AFTERMARKET SIZE INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR[1]
IN EUR BILLION



1 Excluding inflationary adjustments (2%) for parts and labor
Source: Berylls by AlixPartners

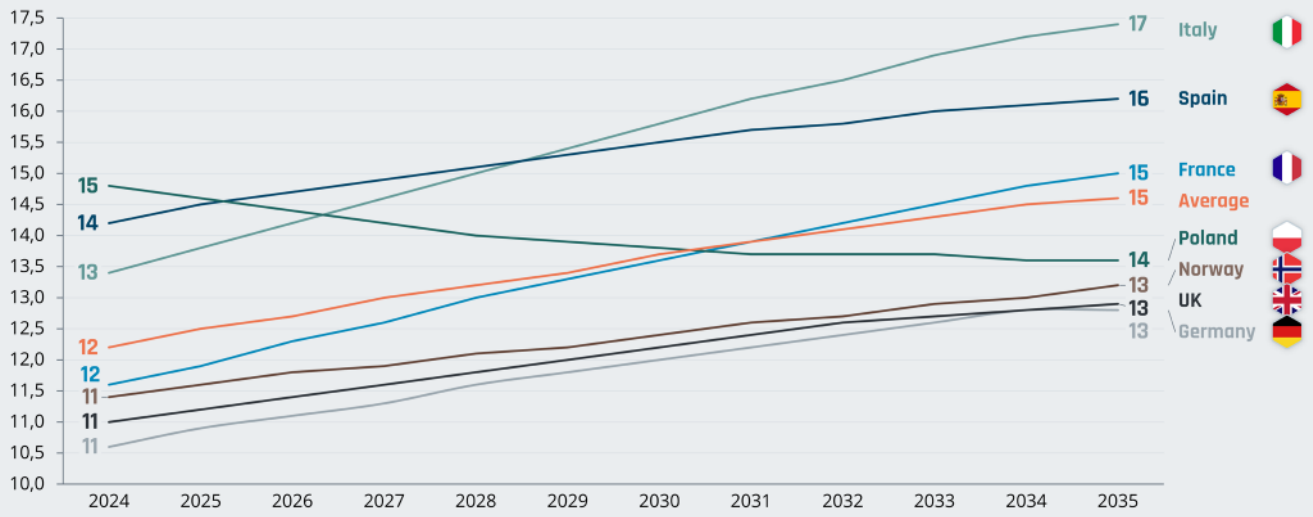
Market shares and growth

In 2024, the IAM holds a 65% market share, while the OES hold 35%. By 2035, the IAM's market share is expected to increase slightly to 67%, while the OES share will decrease by 2% to 33% accordingly. This shift is driven by consumer preference for cost-effective service options, particularly as vehicles age.

The overall car parc is projected to grow from 230 million vehicles in 2024 to 252 million in 2035, with the average vehicle age increasing from 12.2 years to 14.6 years. Older vehicles tend to favor the IAM channel due to the lower repair costs.

FIGURE 4: AVERAGE CAR PARC AGE IN YEARS

CAR PARC AGE 2024 – 2035
IN YEARS



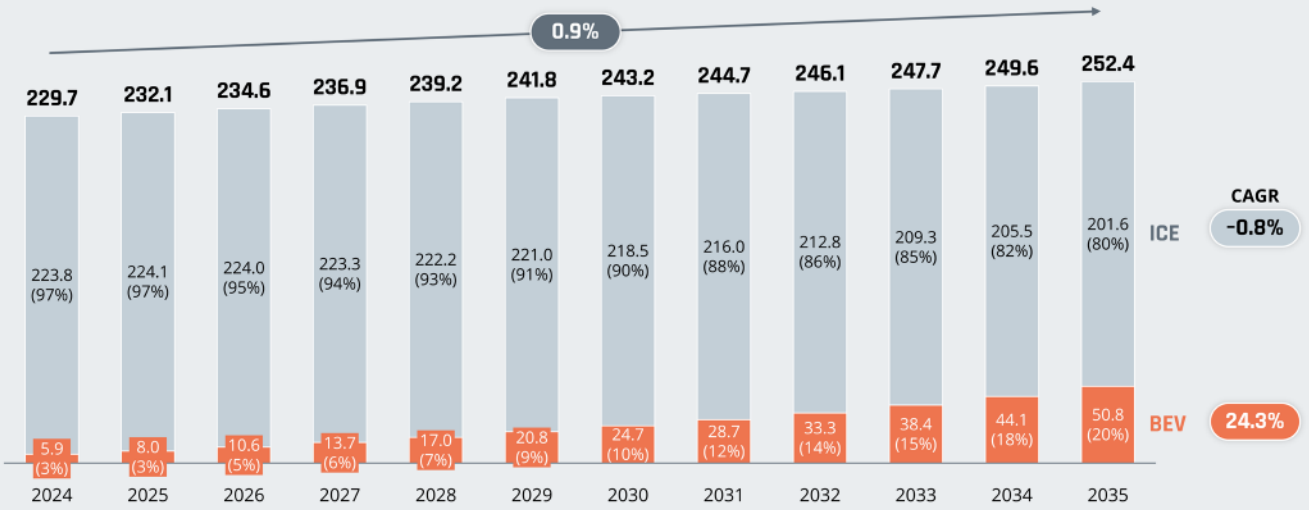
Source: Berylls by AlixPartners

Impact of battery-electric vehicles (BEVs)

The share of BEVs within the car parc is expected to grow significantly, from 3% in 2024 to 20% in 2035, with a CAGR of 24.3%. This growth varies by market, with early adopters like Norway[6] anticipating BEVs to comprise 45% of the car parc by 2035, growing at a CAGR of 6.1%.

FIGURE 5: GENERAL CAR PARC SIZE FORECAST

ANNUAL CAR PARC SIZE INCLUDING BEV ADOPTION
IN MILLION VEHICLES



Source: Berylls by AlixPartners

6 Why Norway is racing ahead on electric vehicle adoption | World Economic Forum (weforum.org)

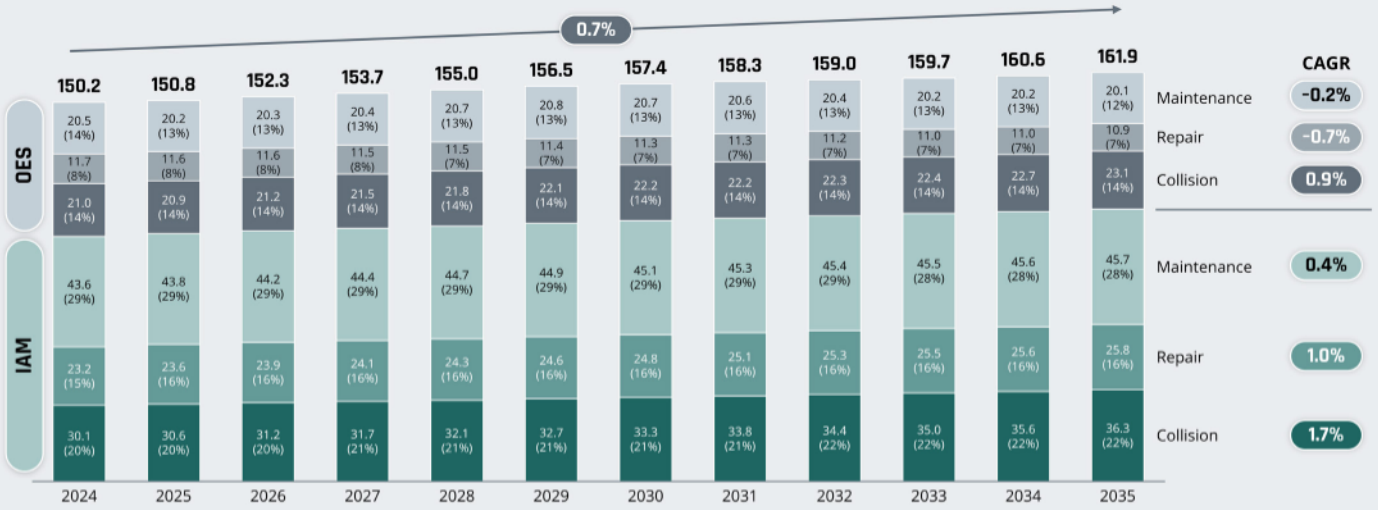
Despite BEVs generally resulting in lower service revenues per vehicle, the overall market growth remains positive due to the increasing size of the car parc and the rising average vehicle age.

Service categories

Within the overall aftermarket, stronger growth is anticipated for all three service categories (maintenance, repair, collision repair) in the IAM channel. Vehicles older than six years are particularly likely to shift from OES to IAM for servicing, driven by the lower costs associated with independent service providers.

FIGURE 6: BASELINE OES/IAM MARKET SHARE FORECAST

ANNUAL AFTERMARKET SIZE SPLIT BY OES AND IAM[1]
IN EUR BILLION, INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR



1 Excluding inflationary adjustments (2%) for parts and labor
Source: Berylls by AlixPartners

However, it is crucial to acknowledge that past market trends alone cannot predict future developments. The emerging key factors, as discussed in chapter 2, are projected to have a significant influence in 2035. These factors are identified in chapter 4 and were validated with expert opinions to determine the size and balance of the channels. It is imperative to develop scenarios based on different yet realistic trend development scenarios.

4

THE KEY INFLUENCING FACTORS (DEFINITION AND IMPACT)

4.1. Key influencing factor selection rationale

In iterative consultations between CLEPA, FIGIEFA, Automechanika, and Berylls, the most important factors influencing market size and the balance between the OES and IAM channels were identified. Based on common feedback, the following factors were emphasized: "captive parts," "cyber-security measures," "technical information (RMI) and OBD data," "software updates," and "remote access to in-vehicle functions and resources." These factors were included in the interview questionnaire to obtain targeted responses, helping to evaluate their impact.

4.2. Evaluation approach and expert selection

Building on our initial research and market modeling, we conducted qualitative interviews to gain deeper insights into the impact of key influencing factors on the automotive aftermarket. This approach ensured a comprehensive analysis of market dynamics.

Expert selection

To capture a broad spectrum of perspectives, we selected experts from various segments of the automotive aftermarket value chain:

- Tier 1 and Tier 2 suppliers: insights into production and supply chain challenges
- Car parts distributors: perspectives on distribution networks and market dynamics
- International trading groups: macroeconomic viewpoints on global and local trade impacts
- Industry associations: regulatory and advocacy insights
- Workshops: ground-level views on service provision and consumer behavior, from both independent and OES-affiliated workshops

Structured interviews with these experts focused on market size, prices, channel balance, and impact on consumer choices.

Our evaluation approach, combining quantitative modeling with qualitative insights from a diverse range of experts, provided a robust understanding of the key factors influencing the automotive aftermarket. This comprehensive analysis supports reliable market forecasts and strategic recommendations.

4.3. Definition and impact

4.3.1 Captive parts

Definition

Captive parts are parts produced or controlled by the vehicle manufacturer (OEM) as the only source and/or parts that are exclusively distributed through the OEM and its network without an available alternative. For example, parts that are subject to intellectual property rights (e.g., patents, design rights) and parts that are produced for or by the OEM itself, e.g., own construction parts. Captive parts also include parts that are produced by the first equipment supplier (Tier 1), but which are made captive by the vehicle manufacturer through measures (e.g., parts coding, tooling and design rights, or proprietary software content), proprietary cybersecurity protection for which the vehicle manufacturer does not offer activation, as well as parts that parts that are exclusively produced by the Tier 1 company and supplied to the vehicle manufacturer for a certain period of time.

Market dynamics

Increasing captivity: The trend towards an increasing number of captive parts is driven by the greater complexity of vehicles and highly specialized components for which only one supplier is approved and awarded by the OEM. Additionally, the shift to central computing systems and OEM-defined operating systems results in components being tailor-made for specific vehicles. As a result, electronic parts are increasingly becoming captive, making it difficult for the IAM to compete, as experts have stated.

The increasing electrification of vehicles and their respective components is further driving captivity. Another perspective is the integration of software. Tier 1 suppliers reported in interviews that an increasing share of software in components and functions is provided by the OEM. Such software content often falls under exclusive contractual agreements and suppliers have to obtain licenses and authorization before parts for the IAM can be produced. Delayed or rejected license agreements are common business practice driving captivity.

Access to captive parts is becoming more difficult, leading to higher prices and limited consumer choices in the absence of alternatives.

Economic impact: Captive parts create a micro-monopoly scenario where only the OES or authorized suppliers can provide certain essential components, leading to higher prices and limited consumer choices in the absence of alternatives. All interviewed experts echoed that the average surcharge today lies within the range of 20–30% at consumer level.

Some experts pointed out that the increasing complexity and proprietary nature of BEV and hybrid parts make them more captive, limiting options for independent repair shops. Distributors emphasized the potential benefits of remanufacturing, which could slow the shift towards OES by providing more affordable options in the IAM. However, remanufactured parts currently need to be made available for most hybrids and BEVs due to the high complexity and low volume per individual part. Remanufacturing is not a timely or viable option at this time.

The impact is significantly dependent on the regulatory environment. Regulations such as the Motor Vehicle Block Exemption Regulation (MVBER) can significantly limit the impact of captive parts in Europe. However, the IAM is highly vulnerable in other major markets such as the US and China. This could lead to a more pronounced division between OES and IAM channels, especially if regulations such as the MVBER are discontinued.

Implications

With OEMs retaining control over the distribution of specific parts, the IAM channel faces challenges in providing comprehensive repair and maintenance services due to the lack of availability of parts in general or due to complex and costly sourcing processes. The limited availability of captive parts affects both service quality and repair times. Independent workshops may struggle to source the necessary components, leading to delays, potential dissatisfaction, and consequent customer churn among consumers. Both Tier 1 suppliers and distributors highlighted how the inability to access certain parts can promptly lead to longer repair times and increased costs for consumers. This can lead to a shift towards OES channels.

The future market scenarios indicate a potential increase in captive parts, driven by the strategic interests of OEMs. Nonetheless, stakeholders such as large Tier 1 suppliers and car parts distributors are optimistic that with the right regulatory frameworks and industry cooperation, a balanced and competitive market can be maintained.

4.3.2 Cybersecurity measures

Definition

Cybersecurity means the condition in which road vehicles and their functions are protected from potential cyberthreats. UNECE R155 requires a mandatory cybersecurity management system (CSMS) for all vehicles sold in the EU from July 2024. Additionally, ISO 21434 provides standards for implementing a CSMS and corresponding implementation measures. These instruments oblige vehicle manufacturers to implement proprietary cybersecurity measures supported by their own risk assessment processes.

Such measures have started to prevent the aftermarket from providing parts and services. With proprietary security concepts OEMs have the possibility to restrict independent repairers from offering diagnostics or replacing spare parts. Many of these concepts include the use of security gateways to restrict access to the OBD port to authorized persons only or require the activation of spare parts after replacement using proprietary OEM tools communicating with the OEM backends.

Market dynamics

Importance of cybersecurity: With vehicles being connected, protection against cyberattacks must be ensured. Regulation UNECE R155 requires a CSMS for each vehicle, which will be reviewed regularly. The individual details of these concepts are proprietary information of the OEM and the approval authorities. Independent stakeholders do not even have information on parts which require activation by OEM-specific procedures. Such increased complexity in the repair process due to cybersecurity measures affects the aftermarket.

Economic impact: The necessity to activate or code parts after installation adds costs through additional fees to the workflow of workshops. According to a 2022 survey from a large car parts distributor, approximately 20% of car parts require recoding due to cybersecurity issues. This requirement increases infrastructure costs and leads to higher prices for coding requests and software updates. Experts from large Tier 1 suppliers highlighted that authorized diagnostics data access has seen a significant cost increase in the past which is expected to further increase in the future.

Implications

Ensuring cybersecurity becomes essential for nearly every type of repair, contributing to enhanced safety and protection. However, the lack of compatibility/interoperability information and access to activation or coding schemes severely limits aftermarket operators' ability to offer parts and services, resulting in monopolistic structures that favor vehicle manufacturers. Independent workshops are facing significant challenges in conducting maintenance and repairs due to the need for a connection to the OEM backend. While the IAM is confronted with higher service fees for tools, training, and more complex maintenance and repair work, the OES channel benefits from bolstered security and control.

Future market scenarios indicate that independent workshops and consumers will encounter elevated service fees and limited choices, leading to a shift in market share from the IAM to the OES.

4.3.3 RMI/OBD data

Access to technical information, spare parts information, repair manuals, and onboard diagnostics (OBD) data is crucial for diagnosing and repairing vehicles. Although the legislator has granted independent operators in the Type Approval Regulation (EU) 858/2018 unrestricted, standardized, and nondiscriminatory access to such information, business practices applied by OEMs often do not respect current legislation. With the introduction of security gateways some OEMs restricted access to the OBD, while others reject the provision of spare parts information in an electronically processable and machine-readable format. Such practices unnecessarily increase the cost of vehicle repairs at independent repair shops due to the need for additional work in preparing spare parts catalogues and diagnostic tools and software.

Market dynamics

The increasing importance of RMI/OBD data: With increasing software content in vehicles, reading OBD information from the vehicle is the essential first step in troubleshooting and all types of repairs. Even for the replacement of mechanical wear and tear parts like brake pads, OBD access is required. Any restriction in access to vehicle OBD information must be seen as a significant market intervention, directly impacting market participants and consumers. As the complexity of vehicles increases, up-to-date RMI is essential, but its availability is becoming more challenging. Experts agreed that current practices, such as massive price increases and lack of transparency regarding access conditions, create market asymmetries. These asymmetries lead to higher prices for consumers and longer waiting times as independent workshops navigate uncertainty and cope with increased costs.

Economic impact: Workshop experts revealed significant challenges due to recent market developments. Extreme price increases for procuring necessary RMI and OBD information, sometimes up to tenfold, combined with complex access models to the vehicle data stream via the vehicle OBD connector, create competitive disadvantages for independent workshops.

Implications

To effectively perform service and repair operations, it is becoming increasingly important to have access to technical information as well as OBD data. OEMs have created numerous technical and economic control points that impose access barriers for independent operators, limiting competition and increasing costs for vehicle owners. These control points include interaction via the physical OBD connector, access to the OEM backend servers and vehicle APIs, all subject to fees and authorization. The lack of interoperability and standardization further complicates the situation, as varying data quality requires additional work from diagnostic tool providers. The introduction of security gateways has also rendered reverse engineering methods ineffective, leading to higher costs for multi-brand tool providers and independent workshops.

The financial strain on workshops when investing in diagnostic tools, licenses, and technical training is substantial. Excessive costs for infrastructure, data, and OBD access fees further limit independent workshops in the provision of competitive services. Rising complexity and transparency in obtaining correct repair information make it more difficult for independent workshops to offer services, resulting in reduced service availability. As fewer workshops can afford the necessary infrastructure investments, consumers may need to wait longer or travel further for repairs.

Future market scenarios indicate that rising prices and complexity in accessing and processing RMI/OBD data will likely shift the market towards OES channels.

4.3.4 Software updates

Definition

The usage of software updates is rapidly proliferating in the automotive industry and increasingly becoming a part of the standard repair process conducted in workshops. To provide state-of-the-art software updates, workshops must connect the vehicle via an OEM tool to the OEM backend. Although the access to the OEM tool can also be provided by a remote service provider (RSS), workshops will either need to invest in the OEM tools or pay the RSS per use. Alternatively, for independent operators the Type Approval Regulation foresees a pass-through procedure via the standardized OBD connector. Such updates are very time-consuming due to reduced bandwidth and are not competitive compared to OEM tools using faster proprietary protocols or other means of access (e.g., ethernet ports). Manufacturers of multi-brand diagnostic tools need the right to receive the necessary technical information on such protocols in order to be able to develop and offer cost-efficient solutions.

The availability of updates, information/transparency on the latest software updates, and/or updates that need to be conducted to complete a repair process are also not available to aftermarket operators.

Market dynamics

Increasing importance of software updates: The trend towards software-defined vehicles (SDVs) is evident, fundamentally changing vehicles' infrastructure and business ecosystem. Centralized electronic control units (ECUs) and software updates in the workshop are becoming standard for managing and maintaining vehicle functions. Modern vehicles rely heavily on ECUs and software, making the ability to perform updates crucial for providing quality service.

Economic impact: Accurate diagnostics are essential for troubleshooting and to determine if a software update is needed. A Tier 1 supplier emphasized that cybersecurity measures lock the software update function for third parties unless they acquire the required certification and the OEM tools. Independent workshops depend on OEMs to update parts or the vehicle's operating system to perform service jobs and resolve fault codes.

Implications

The frequency and significance of software updates will undoubtedly increase, with OEMs presently holding a competitive advantage due to monopolistic data transfer methods and update capabilities. Third parties relying on legally granted software update procedures are not competitive due to slow transfer rates and a lack of transparency regarding information on available new software releases. Restrictive license agreements prevent the use of multi-brand tools for software updates in a competitive manner.

The forthcoming market dynamics will decisively shape the OES's advantageous position, inevitably driving a significant customer migration towards this channel. Mandatory investments in training and potential workarounds will inevitably restrict options and drive up customer prices.

4.3.5 Remote access to in-vehicle data functions and resources

Definition

Remote access to vehicle data, functions, and resources refers to the ability of service providers to exchange data and information with the vehicle. This may include access to data from the vehicle, triggering vehicle functions including diagnostic functions, setting parameters, and remotely interacting with the driver via the vehicle HMI.

Currently the legislator only regulates access to vehicle data and functions via the OBD port in workshops for the purpose of diagnostics and repairs. Since 2016, a sector-specific regulation amending the Type Approval Regulation to include remote access to in-vehicle resources and functions is under discussion, but strongly opposed by the OEMs. It will enable independent operators to compete on a level playing field with vehicle manufacturers that do have the ability to interact with connected vehicles and their drivers.

Remote access to in-vehicle data, functions, and resources enables the real-time monitoring and management of vehicle systems. This capability is essential for the provision of services to connected vehicles, enabling vehicle health monitoring, diagnostics, software updates, and data analysis. Interaction with the driver via the vehicle HMI is an important prerequisite for the development and provision of advanced and sophisticated services.

Market dynamics

Increasing importance: Connected vehicles still require traditional services throughout their life cycle. OEMs deploy the extended vehicle concept, which gives OEMs a privileged position in the data stream since all data exchange with the vehicle is routed via the OEM backend servers. The concept also includes sharing such data with third parties, which in practice is limited to an unspecific subset of data points different for each individual vehicle. At the same time, in-vehicle app platforms are becoming increasingly prelevant, particularly Google's Android Automotive. This platform offers an advanced programming interface (API) allowing vehicle manufacturers to offer applications and interact directly with drivers. The likely future growth of voice-based personal assistant solutions, particularly driven by ChatGPT and similar AI-based technologies, will undoubtedly facilitate OEMs' abilities to interact with drivers further. Consumers might be directed to OES service offerings via in-car HMI or mobile applications.

Economic impact: Data from connected vehicles can be used in many ways and supports a wide range of use cases. OEMs, for example, can gain deeper insights into vehicle status, malfunctions, and better predict service requirements or potential failures. Tier 1 suppliers have noted the value of this data for improving product quality and reducing costs, benefiting both consumers and suppliers through longer-lasting parts. Remote access to vehicle data will also be essential for independent operators, e.g., for the provision of service and maintenance to fleet operators. Dashboards fed with remote data allow fleet managers to remotely monitor vehicle health and manage repair and maintenance services. As ownership is steadily shifting to fleets, this segment of the market will be essential for independent operators to maintain market share.

Implications

Access to vehicle-generated data and the ability to directly interact with vehicle drivers are critical factors potentially affecting customer choices and repair cycles. Such abilities give the OES a competitive advantage, potentially increasing market share. Several market players along the value chain have voiced concerns that this scenario limits consumer choice and hinders fair competition by driving customers towards the OES channel.

However, doubts still exist regarding the OES fully capitalizing on this situation, mainly as fleets and major customers prefer IAM workshops for their proximity and cost advantages.

5 SCENARIOS

The preceding section describes five defined key influencing factors (KIFs) and their impact on the price development and the competitiveness of the channels IAM and OES. Depending on the deployment of actions utilizing the potential from the KIFs and the future regulatory framework, this chapter will outline two extreme but probable market scenarios, both derived as deviations from the baseline scenario in chapter 3.2. The implications from KPIs in chapter 4.3. have shown substantial impacts on the:

1. Market shares of the OES and IAM channels and
2. The average price consumers must pay for repair and maintenance services

The calculation for each scenario:

1 MARKET SHARE SHIFT UNTIL 2035

IAM and OES exhibit differing market shares within the aftermarket across various segments and services. In addition, it is essential to determine how many new cars are impacted by the KIF's penetration in the respective segment and service. For example, in chapter 4.3 each KIF is delineated based on the penetration of its technological development. After this step, it becomes possible to determine the actual shift in market share among the market participants within each segment, repair service, and KIF.

2 PRICE IMPACT UNTIL 2035

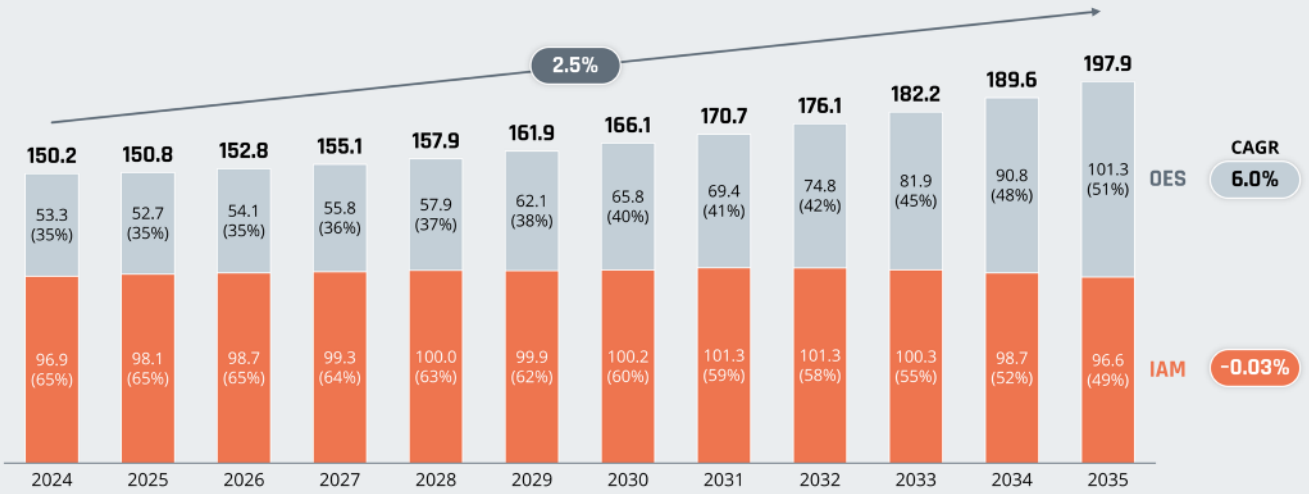
On the one hand, the price impact comprises the additional costs for parts and labor attributed to a single maintenance, repair, or collision repair. These additional costs can stem from various factors, such as the increased price of an individual part or service, increased labor costs due to complexity, or one-off service fees for the IAM resulting from required support from the OEM, e.g., the activation of cyber-protected parts. These effects need to be added to the baseline pricing either as a percentage or as an absolute fee. On the other hand, the OES is usually more expensive for consumers than the IAM, leading to an increase of average repair costs in the case of a market shift from the IAM to OES. This principle is consistently applicable, even in the scenario of liberalization with market shares shifting from OES to the IAM.

5.1 Scenario 1: OES dominance

In this scenario, OEMs assert their increased influence over the market gained from shifting vehicle technology and have no further obligations under the legislative framework, maintaining tight control over captive parts, the unrestricted deployment of cybersecurity measures, control of software updates, no further obligations to provide RMI/OBD data, and a gatekeeper role in the remote access to in-vehicle functions and resources. This assertive control grants significant advantages to the OES channel, substantially limiting opportunities for the IAM to compete effectively. Moreover, OEMs are in the position to control the prices for services and technical information (e.g., procurement of RMI/OBD information, access certificates for diagnostics, OEM tools, or software updates), which will raise costs due to a lack of alternatives primarily for the IAM network, leaving limited repair options for serving consumers. Despite the number of service operations remaining at the same level, the market size will significantly increase compared to the baseline scenario, as the following chart indicates. As a result, consumers in the target markets will be required to spend an additional EUR 36 billion by 2035 for the same number of repair and maintenance services compared to the baseline scenario. The accumulated amount of the difference between scenario 1 and the baseline scenario amounts to EUR 136 billion for the period between 2025 and 2035.

FIGURE 7: TIGHT CONTROL BY OEMS – MARKET FORECAST

ANNUAL AFTERMARKET SIZE INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR
IN EUR BILLION



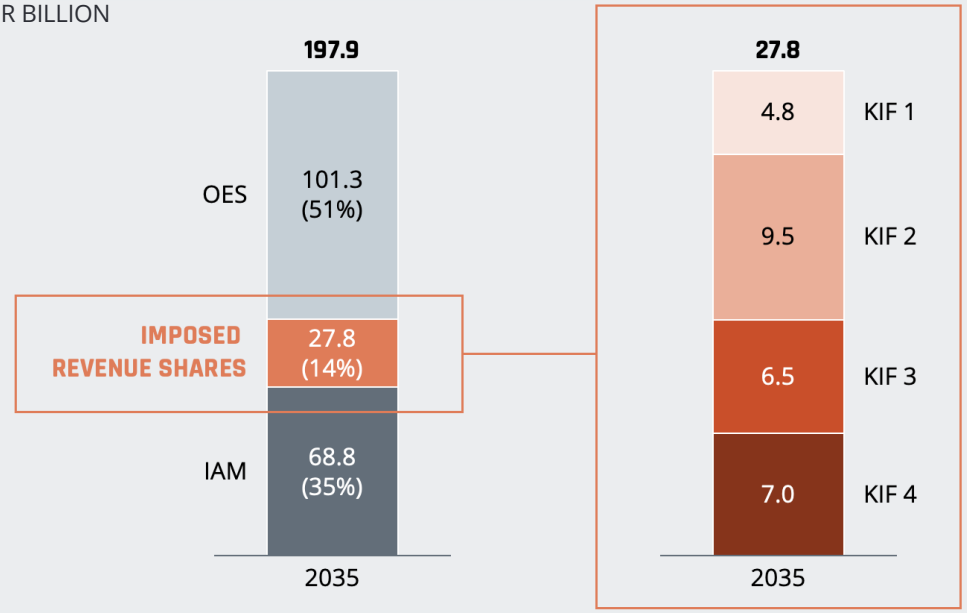
1 Excluding inflationary adjustments (2%) for parts and labor
Source: Berylls by AlixPartners

However, attention should be paid to the top-line numbers as they do not tell the full story. Especially in this OES dominance scenario, a significant fraction of the IAM revenues directly benefits vehicle manufacturers or other companies, e.g., RSS along the value chain, due to the increased reliance on captive parts, cybersecurity measures, RMI/OBD data, and software updates. In 2035, 14% of the total market (EUR 27.8 billion) will be attributable to such imposed revenue shares.

FIGURE 8: TIGHT CONTROL BY OEMS – IMPOSED REVENUE SHARES

AFTERMARKET SIZE INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR[1]

IN EUR BILLION



1 Excluding inflationary adjustments (2%) for parts and labor | Adjusted by market share and excluding OES surplus
Source: Berylls by AlixPartners

The data demonstrates that especially in segment 1 (under 3 years) and segment 2 (under 6 years) by 2035 the OES channel will gain significant market share compared to the baseline scenario. In practice, owners of newer vehicles will depend on obtaining services from authorized repairers.

The IAM is losing competitiveness due to three reasons:

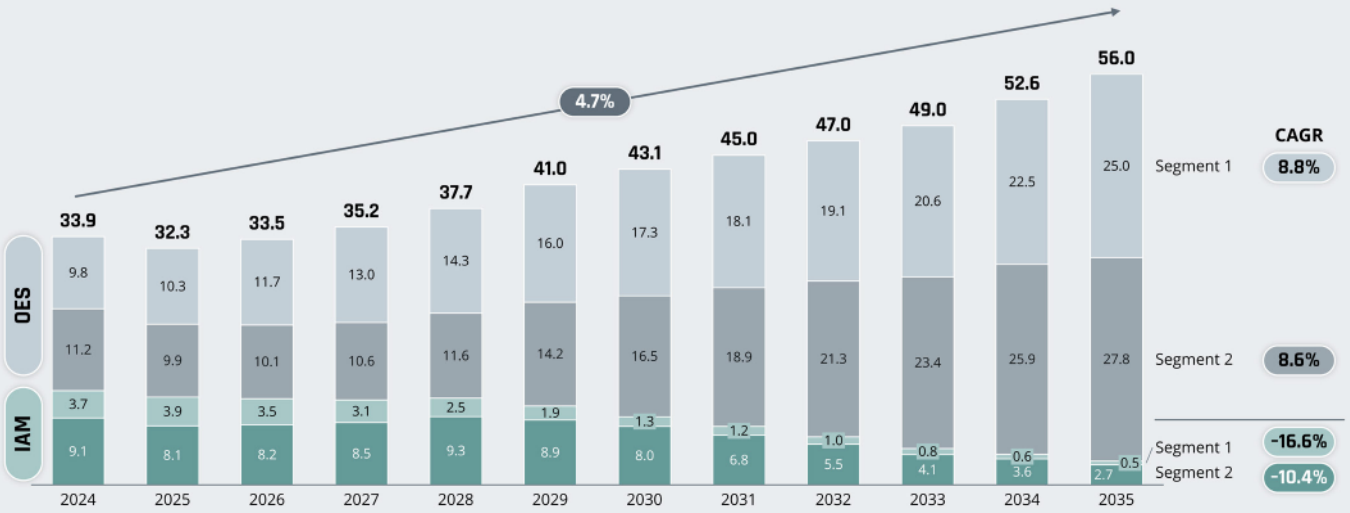
Firstly, the scope of service which can be provided by the IAM is limited due to insufficient parts availability or the lack of repair capabilities. The IAM is thus forced to decline services and repairs and send consumers to the OES channel.

Secondly, services and repairs in the IAM channel potentially become economically no longer feasible, e.g., due to the need to contract specialized service providers (cybersecurity). Furthermore, parts must be sourced via alternative channels, which leads to extended waiting times or multiple appointments. Consequently, customers decisively switch to or remain with the OES channel.

Thirdly, prices in the IAM will increase due to the additional costs, making the IAM less attractive to the consumer.

FIGURE 9: TIGHT CONTROL BY OEMS – MARKET FORECAST FOR SEGMENTS 1 AND 2

ANNUAL AFTERMARKET SIZE BY AGE SEGMENT (1 AND 2) AND MARKET SHARE[1]
IN EUR BILLION, INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR



1 Excluding inflationary adjustments (2%) for parts and labor | Segment 1: Below 3 years, Segment 2: 3-6 years, Segment 3: 6+ years
Source: Berylls by AlixPartners

The total of EUR 36 billion in unnecessary additional costs can be divided into maintenance + EUR 13.9 billion, repairs + EUR 7.3 billion, and collision repairs + EUR 14.8 billion.

The impact of additional costs varies among the services. Software updates have the greatest impact on maintenance at around + EUR 3.4 billion, while the impact of cybersecurity measures is the main driver for the increase in repairs at + EUR 2.7 billion. Captive parts have the greatest impact on collision repairs.

Across the entire car parc, the average cost of maintenance will see an increase of + EUR 58, of repairs by + EUR 68, and collision repairs will increase by + EUR 545 per average repair case in 2035.

The key influencing factors (KIFs) will drive the shift from the IAM to OES across all segments. By 2035, this scenario will bear the risk that the IAM loses relevance for vehicle owners within the first six years. The IAM will focus on segment 3 as the core segment, but will be forced out of business in the long term due to the volatile market environment and lack of investments.

5.2 Scenario 2: market liberalization

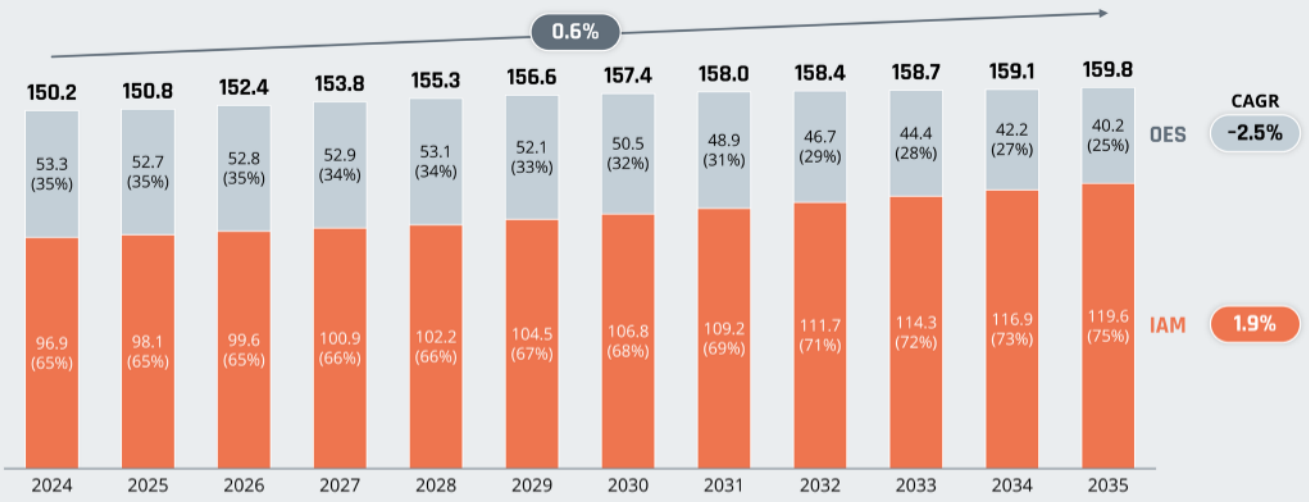
This scenario assumes the market will undergo substantial regulatory changes aimed at ensuring fair competition. Such stringent regulations provide increased access to captive parts, enable competitive software updates, the replacement of parts protected by cybersecurity measures, and enhance access to RMI/OBD data as well as remote in-vehicle data and resources. This assertive regulatory environment empowers the IAM to compete at a similar level with the OES.

For the same number of repair and maintenance services compared to the baseline scenario, the overall market size sees a slightly lower growth rate due to eliminating price premiums imposed by OEMs. The IAM can maintain its share in the overall market and consumers will benefit from lower repair costs.

Access to critical information and parts will slightly increase the attractiveness of the IAM in segments 1 and 2. The main drivers are competitive pricing and the service options offered by the IAM.

FIGURE 10: OPEN ACCESS – MARKET FORECAST

ANNUAL AFTERMARKET SIZE INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR[1]
IN EUR BILLION



1 Excluding inflationary adjustments (2%) for parts and labor
Source: Berylls by AlixPartners

However, attention should be paid to the top-line numbers, as they do not tell the full story. Even in this market liberalization scenario, a significant fraction of the IAM revenues will directly benefit vehicle manufacturers or other companies along the value chain, as the increased reliance on captive parts as well as cybersecurity measures with the accompanying fees will generate new revenue sources for vehicle manufacturers and other companies. In 2035, 4% of the total market (EUR 7.1 billion) will be attributable to imposed revenue shares.

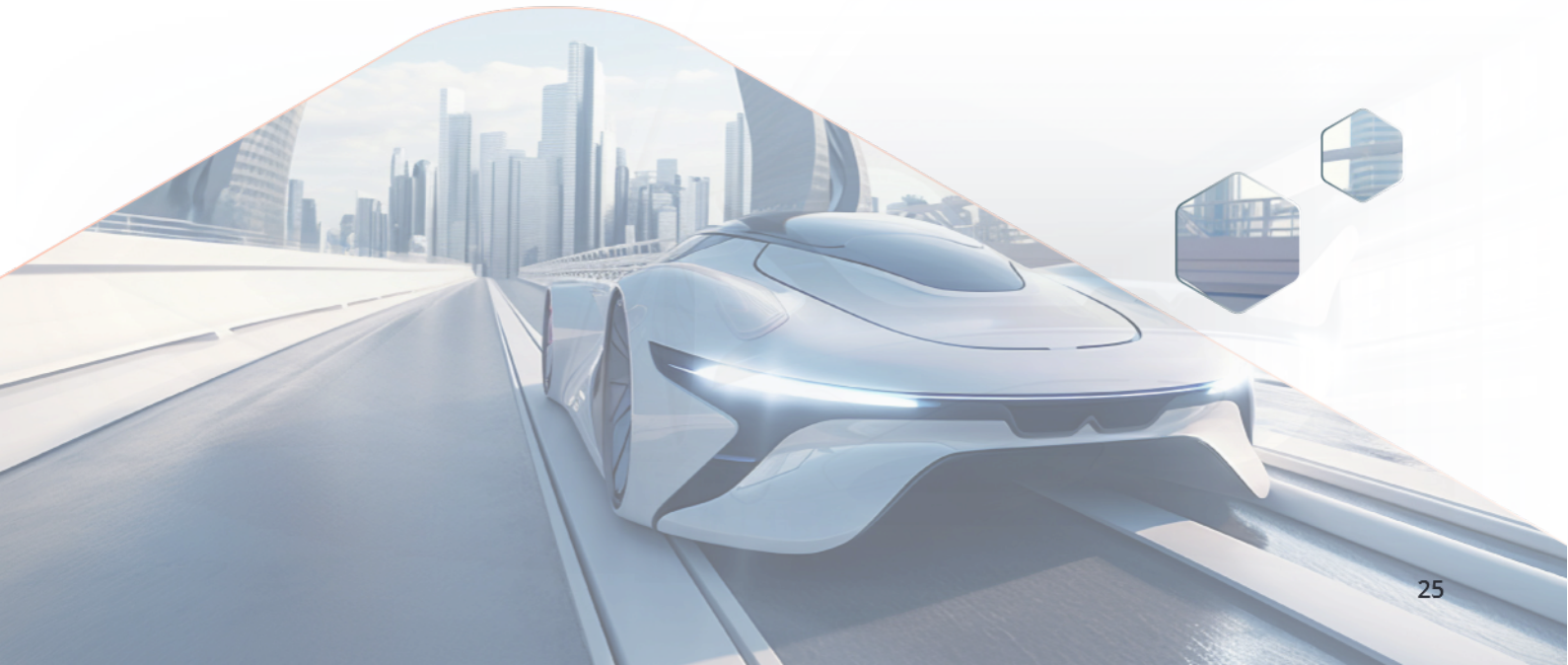
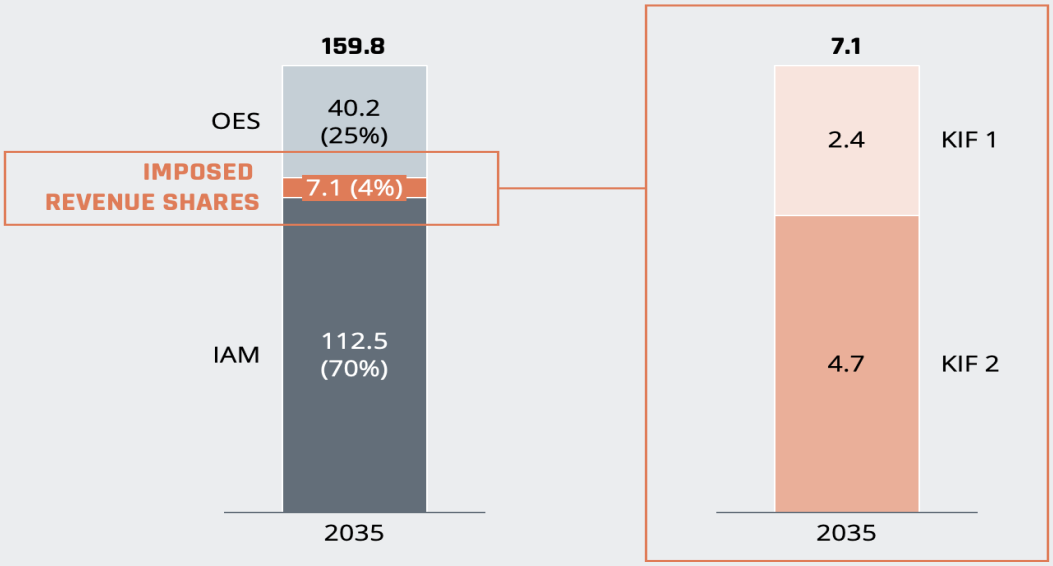


FIGURE 11: OPEN ACCESS – IMPOSED REVENUE SHARES

AFTERMARKET SIZE INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR[1]
IN EUR BILLION

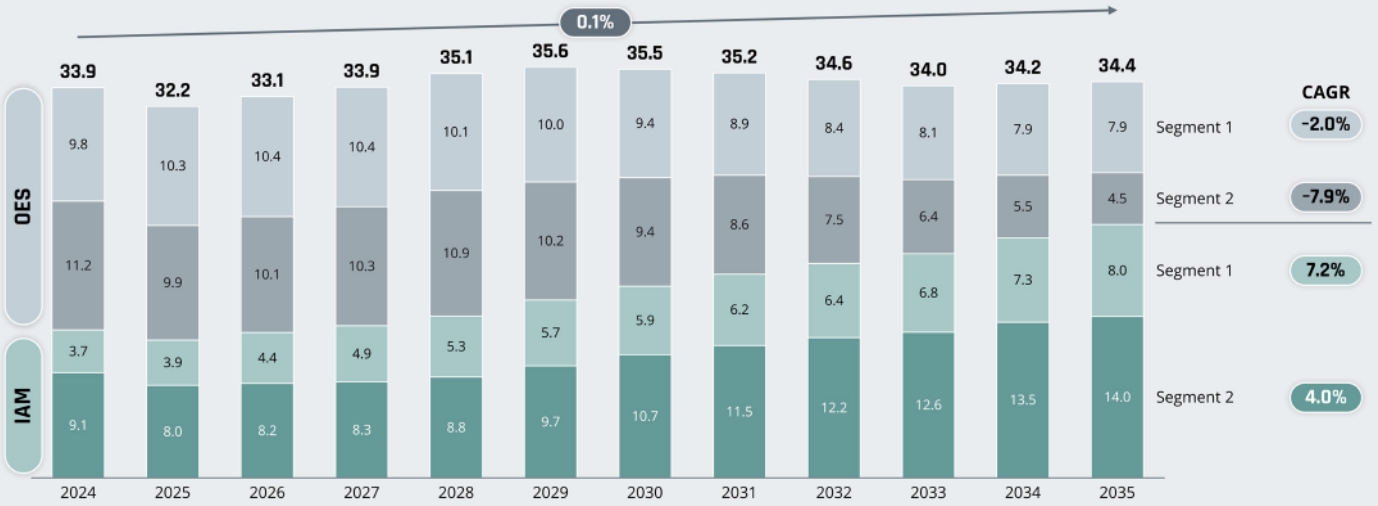


1 Excluding inflationary adjustments (2%) for parts and labor | Adjusted by market share and excluding OES surplus
Source: Berylls by AlixPartners

In this scenario consumers have access to a broader range of repair and maintenance options. Intensified competition has resulted in improved service coverage and reduced prices, ultimately leading to increased consumer satisfaction and more affordable mobility.

FIGURE 12: OPEN ACCESS – MARKET FORECAST FOR SEGMENTS 1 AND 2

ANNUAL AFTERMARKET SIZE BY AGE SEGMENT (1 AND 2) AND MARKET SHARE[1]
IN EUR BILLION, INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR



1 Excluding inflationary adjustments (2%) for parts and labor | Segment 1: Below 3 years, Segment 2: 3-6 years, Segment 3: 6+ years
Source: Berylls by AlixPartners

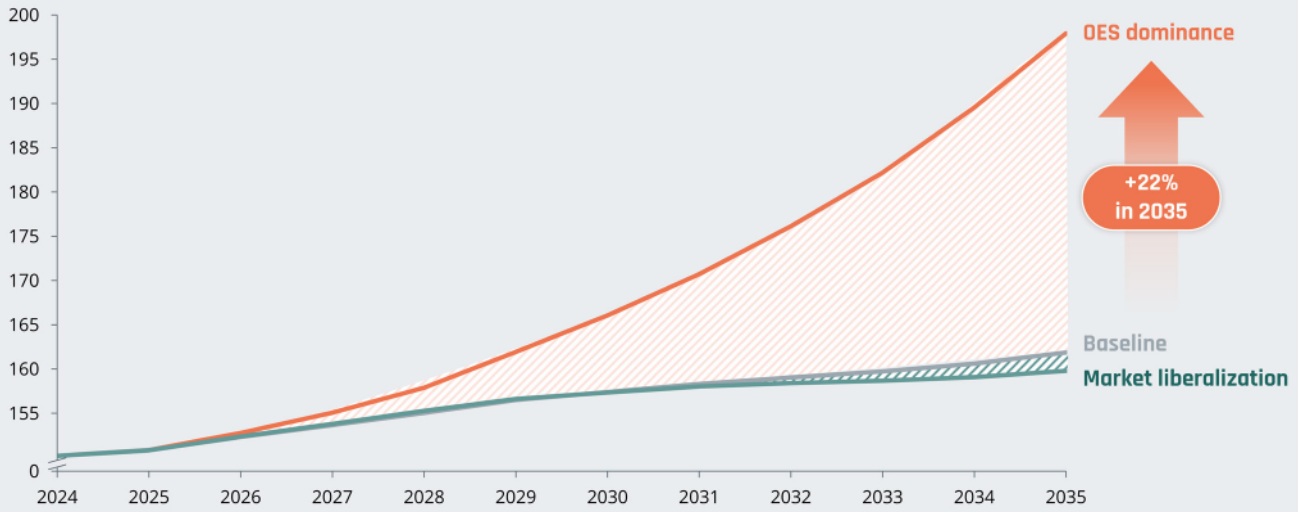
The analysis of these scenarios highlights what substantial impact a robust regulatory framework can have on the automotive aftermarket. The OES dominance scenario poses risks of increased consumer costs and limited service options, while the market liberalization scenario promises enhanced competition and better outcomes for consumers. Consumers in the target markets are projected to spend EUR 2 billion less in 2035 compared to the baseline scenario. Throughout the entire period between 2025 and 2035, customers are expected to spend EUR 5 billion less.

5.3 Comparison and implications

Upon comparing the two scenarios, it becomes evident that the OES stand to gain significantly as opposed to the IAM. Even if there are substantial shifts in the market towards the IAM, it only results in a marginally lower TAM compared to the baseline scenario. This is driven by the additional fees and costs incurred by IAM players through higher prices for captive parts and fees related to cybersecurity measures and parts activation or coding. While related revenue is attributed in the first instance to the IAM, in practice vehicle manufacturers reap a large portion of the benefit by selling captive parts to the IAM and from the fees they levy for their activation.

FIGURE 13: OES DOMINANCE VS MARKET LIBERALIZATION

ANNUAL AFTERMARKET DEVELOPMENT BY SCENARIO[1]
IN EUR BILLION, INCLUDING MAINTENANCE, REPAIR, AND COLLISION REPAIR

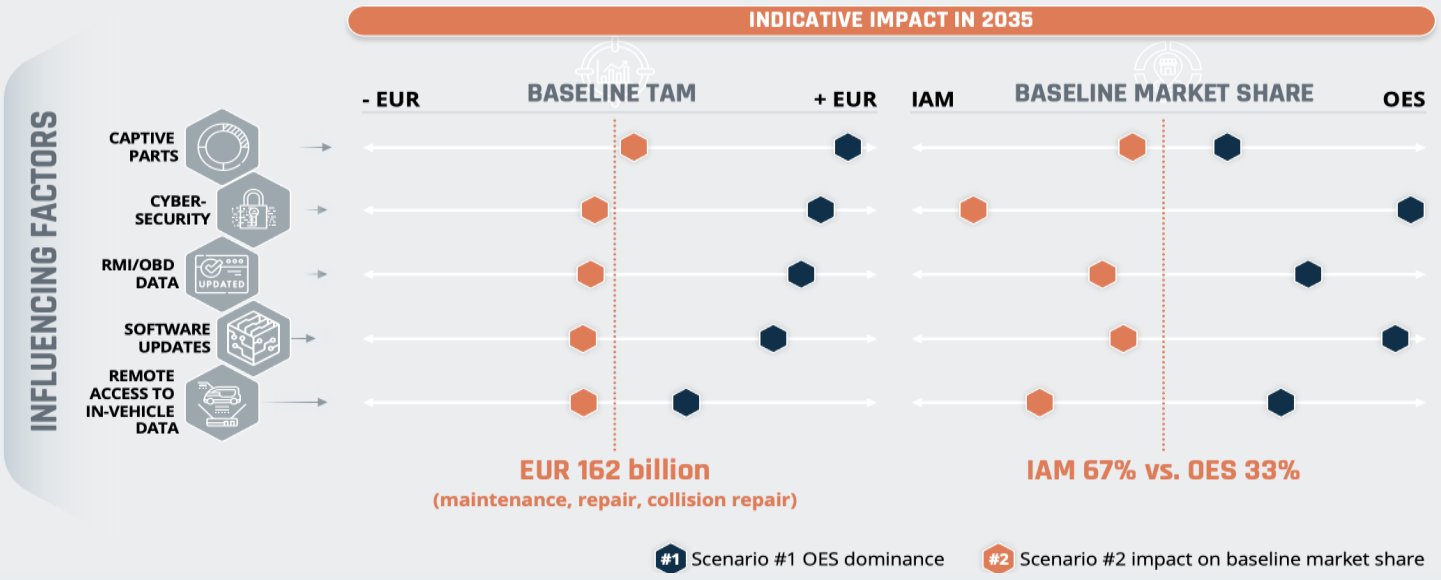


1 Excluding inflationary adjustments (2%) for parts and labor
Source: Berylls by AlixPartners

In scenario 1, the highest price increases are driven by the KIFs captive parts, cybersecurity measures, RMI/OBD data cost, and software updates. In scenario 2, the price levels are expected to remain at the baseline level except for services and repairs involving captive parts. A price increase is expected for captive parts due to the assumption of an increased overall share of these parts by 2035. Revenue and fees related to such captive parts will nonetheless contribute to vehicle manufacturers' profitability, as IAM players rely on them for access, even under a regulated market liberalization scenario.

Regarding market shifts, the specific implications associated with these influences are detailed below.

FIGURE 14: INDICATIVE IMPACT OF KEY INFLUENCING FACTORS IN 2035



Source: Berylls by AlixPartners

Impact from captive parts:

Captive parts will drive up costs for consumers. Although both scenarios foresee identical accessibility and price premiums for such parts, the total impact differs substantially. In scenario 1, it is assumed that parts are exclusively available in the OES channel, which leads to an overall cost increase of EUR 9.3 billion in 2035 compared to the baseline scenario. Scenario 2 assumes that suppliers are not limited in the distribution of such parts and reverse engineering to a certain level is technically and economically feasible, leading to a 50% lower share of captive parts across all repair types. The projected cost increase of EUR 1.3 billion in scenario 2 is moderate and covers primarily additional handling processes.

The highest share of captive parts is expected in segment 1. Common practice as assumed in the baseline scenario is a gradual decrease of captive parts in segments 2 and 3 due to alternative product offers from aftermarket suppliers using reverse engineering processes. While scenario 2 assumes such practices will be continued, scenario 1 assumes these as no longer feasible.

Across all segments, the impact from captive parts remains highest for collision repairs but is also significant for repair and maintenance parts.

Impact from cybersecurity measures:

The mandatory implementation of cybersecurity measures by OEMs will have a significant impact on the selected channel for almost every repair type across all segments. In scenario 1, OEMs actively use cyber protection measures to limit third-party access to OBD information and the ability to replace spare parts. Independent repairers will have to pay additional fees for authentication, OBD access certificates, OBD data, and part activation. Currently, diagnostics tool providers report that one-time handling fees for OBD access per repair case vary from EUR 25 for maintenance to EUR 75 for performing repairs. Scenario 1 offers OEMs the possibility to generate an additional EUR 8.8 billion compared to the baseline scenario.

In contrast, scenario 2 assumes a robust regulatory framework granting independent operators equal access to vehicle OBD information, limiting excessive fees, and enabling the use of multi-brand tools for diagnostics and the activation of replaced spare parts if required. This scenario will make the IAM even more attractive for newer vehicles and potentially decrease the consumer expense for repairs related to cybersecurity-protected components by EUR 0.3 billion below the baseline.

Impact from technical information (RMI) and OBD data:

Access to technical information and OBD data is a prerequisite for all service and repair types across all segments. The source of that information is always the OEM, and with increasing complexity, the granularity of such information is increasingly relevant. In scenario 1, substantially raising the cost of licenses for accessing RMI information and leasing or subscription fees for diagnostic tools and testers are included. Repair prices in the IAM channel will have to cover such costs, which will reduce the price gap between IAM and OES. Overall, scenario 1 offers a potential of EUR 8.1 billion in additional consumer spending above baseline.

Scenario 2 assumes similar needs but, in practice, discrimination-free access to RMI and OBD information as already foreseen in the existing regulation. Regarding content and the way of making such data available (machine-readable and electronically processable) without excessive pricing, such a scenario might even show an effect with costs of EUR 0.7 billion below the baseline. The IAM achieves minor market share gains from OES, especially in segments 2 and 3, as vehicles are no longer under the manufacturer's warranty and consumers are more price-sensitive. Overall, scenario 2 leads to a slight cost decrease for consumers.

Impact of software updates:

Software updates at workshops are becoming a standard repair method and increasingly important for all types of repairs, especially for cars in segment 1. All software versions are subject to release by the OEM and are available only from the OEM backends. Independent repairers depend on access to OEM servers, which usually charge one-time handling or service fees up to EUR 100 per update. Scenario 1 assumes that OEMs continue to fully leverage advantages, such as information on recommended updates, transparency on available software versions, and the possibility to use high-speed data transfer protocols to ensure timely uploads. Consumers will be forced to get repairs that include software updates exclusively for the OES channel. This will lead to a cost of EUR 7 billion above baseline.

Scenario 2 is based on a scenario in which the multi-brand tools can be used for competitive software updates by independent repairers. OEMs are obliged to offer transparency on software versions and license agreements to all legitimate tool manufacturers, including information on the high-speed protocols, in a nondiscriminatory way.

Such enabling of the IAM channel shows significant effects with costs EUR 1.3 billion below baseline for the same number of software updates in both scenarios. The IAM gains market share from OES, particularly in segment 2 and especially in segment 3. Overall, scenario 2 leads to a cost decrease for consumers.

Impact of remote access to in-vehicle data and functions:

Connected vehicles are becoming standard. The use of in-car generated data and the possibility to directly interact with the driver provides a wide field for offering additional services and is a source for first noticing an upcoming service requirement.

In scenario 1 the OEMs leverage their gatekeeping role in the data stream and continue to make proprietary use of such data from the vehicle. The OES channel is targeting vehicles of segments 1 and 2, which are serviced by the IAM. Collision repairs will remain difficult to attract since these are widely controlled by insurance companies. Access to in-vehicle data will primarily result in better access to consumers, and less in price increases. However, due to changing market shares and higher OES price levels, the total market grows slightly. Overall, scenario 1 can influence the balance of power between OES and the IAM with an impact for consumers of EUR 2.7 billion above baseline.

In contrast, assuming a level playing field in terms of access to in-vehicle data, scenario 2 shows the strongest effect of all KIFs, with EUR 1.3 billion below baseline. The penetration of interactions remains at the same level as in scenario 1. The IAM gains market share from OES, especially in segment 2, as cars slip out of the manufacturer's warranty period and the IAM channel can reach out to consumers with proactive and attractive service offers. Overall, scenario 2 leads to a cost decrease for consumers.

6 STRATEGIC RECOMMENDATIONS

The KIFs and their mode of action will significantly disrupt the power dynamics between OEMs and the IAM. The strategic recommendations are driven by two key levers from the analysis.

Firstly, in the market share shift, each KIF in scenario 1 has the potential of long-lasting lock-in effects binding vehicles and their owners (all vehicle segments) to the services of the OES channel. Therefore, it is vital for consumers or vehicle owners that the ability of IAM channels to compete or provide services is maintained.

Secondly, KIFs 1 to 4 significantly impact consumer prices. The price development must remain moderate in the long term to ensure that vehicles with new technologies continue to be serviced in the IAM channels as soon they enter segment 3.

Considering the evolving technology shift and resulting impact on the aftermarket landscape, substantial effort from the legislative side but also from the independent aftermarket will be needed to ensure competition in the best interest of consumers.

IAM

Improve service availability and efficiency: To effectively compete with OEMs and to overcome the inherent advantages of the OEMs, given their privileged access to technical information, software updates, etc., the IAM needs to invest in improving its key advantages of service availability and efficient, affordable repair.

Invest in advanced diagnostic tools and training: Investing in state-of-the-art diagnostic tools and providing continuous training for IAM technicians is essential to cope with the increasing complexity, including SDVs and BEVs. Leading diagnostic tool manufacturers already offer advanced solutions to bridge the gap between independent and OES-related workshops.

Adapt to cybersecurity protection measures: As cybersecurity implementations impact directly on access to vehicle OBD, spare parts development, installation, and activation, the IAM needs to invest in solutions which respect the cybersecurity needs of vehicle manufacturers, while ensuring that the ability to provide cost-effective, multi-brand services is maintained.

Utilize business models based on in-vehicle data: All vehicles will become connected and theoretically offer opportunities for utilizing in-vehicle generated data. As of September 2025, European legislation such as the Data Act will mandate the sharing of data with the objective of fostering investments in data-based services. This may be complemented by a sector-specific regulation providing more clarity and additional rights to independent operators in the automotive sector. Independent market players must prepare to leverage enhanced access to vehicle-generated data and to consider use cases where such access would provide benefit, including new digital business models in fleet management, remote diagnostics solutions, or workshop booking systems to drive workshop business and generate additional revenue streams.

Strengthen industry collaboration: Forming alliances between independent workshops, parts suppliers, and diagnostic tool manufacturers to share best practices and resources to decrease costs. Industry associations can play a pivotal role in facilitating these collaborations, fostering an environment where knowledge and resources can be shared to enhance the competitiveness of independent workshops and streamline operations within the aftermarket industry. Collaboration with OEMs is crucial, particularly regarding coding and cybersecurity aspects. Engagement by sectorial representatives with other stakeholders, including the OEMs and regulators, focusing on the exchange of vital information, tools, and processes between aftermarket operators and OEMs to ensure vehicle safety and the correct use and operation of aftermarket parts and services will be essential.

Regulator

Access to cybersecurity-relevant information: Aftermarket operators need to have access to all information, tools, and processes, including access to the coding/activation and interoperability/compatibility information required to develop and install replacement parts.

Access to RMI/OBD data: Aftermarket operators need access to vehicle OBD and RMI in the same manner as the vehicle manufacturers and their OES service networks (e.g., OBD information, if available at the OEM backend server or other interfaces) in addition to the currently prescribed access on the vehicle OBD port. Access to RMI portals and diagnostic information needs to be monitored for compliance to ensure that all vehicle manufacturers comply with the type approval requirements. Technical information should be checked for completeness and usefulness, especially repair information related to ADAS systems, traction batteries, and BEVs.

Software updates: Aftermarket operators must have access to OEMs' software update processes and the vehicle resources (e.g., Ethernet connection) to conduct software updates in workshops in a competitive manner. Security needs, including authorization needs, should be facilitated though the use of a harmonized independent authorization scheme.

Remote access to in-vehicle data: Following the logic of the RMI legislation, aftermarket operators must receive access to in-vehicle data, functions, and resources through all integration points supported by the vehicle, including remote access, in the same manner as the OES. In addition to read access, aftermarket operators also need write access capability (e.g., to trigger vehicle functions) and access to the vehicle driver/user through the HMI. Such capabilities would need to be ensured through updating the current Type Approval Regulation for technical progress.

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Berylls by AlixPartners – Our management consultants' expertise extends across the complete value chain of automobility, from long-term strategic planning to operational performance improvements. Berylls by AlixPartners' outstanding thought leadership draws on broad experience, profound industry knowledge, and innovative problem-solving competence to deliver entrepreneurial solutions to clients around the world.

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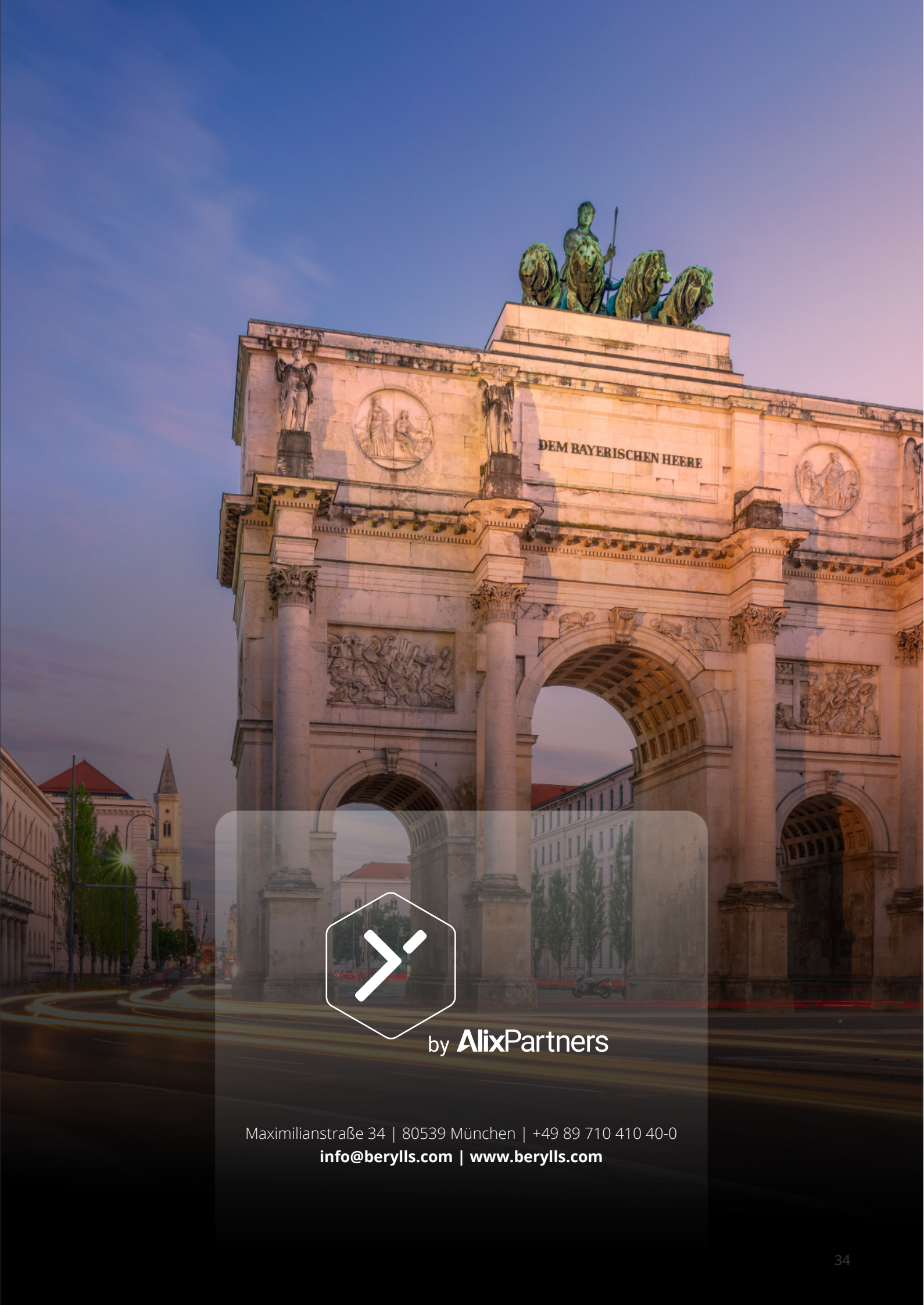

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