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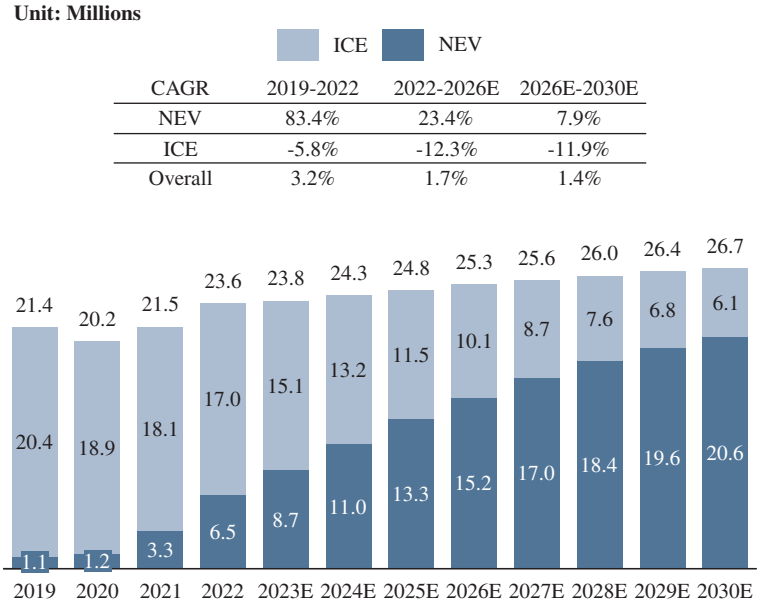
OVERVIEW OF CHINA'S PASSENGER VEHICLE MARKET

China is the world's largest passenger vehicle market in terms of sales volume in 2022, according to Frost & Sullivan. In 2022, approximately 68.7 million units of passenger vehicle were sold globally, of which approximately 23.6 million units, or 34.4%, were sold in China.

Passenger vehicles are classified into two types based on their power type: internal combustion engine (ICE) vehicles powered by fuel, and new energy vehicles (NEVs). In recent years, vehicle electrification, intelligence and connectivity have emerged as the most notable trends in the global automobile industry, contributing to the growth of the global NEV market. China, in particular, has become the world's largest NEV market, with NEV sales volume reaching 6.5 million units in 2022, accounting for 64.9% of global NEV sales in the same year. Due to changing customer preferences, favorable government policies, and increasing competitiveness of domestic NEV brands, China is also the fastest growing NEV market in terms of the growth rate of NEVs sold from 2019 to 2022. The penetration rate of NEV in China increased significantly from 4.9% in 2019 to 27.8% in 2022, and is expected to reach 60.1% and 77.3% in 2026 and 2030, respectively.

The chart below sets forth the sales volume of passenger vehicles in China, by power type, for the periods indicated.

China Passenger Vehicle Sales Volume, by Power Type



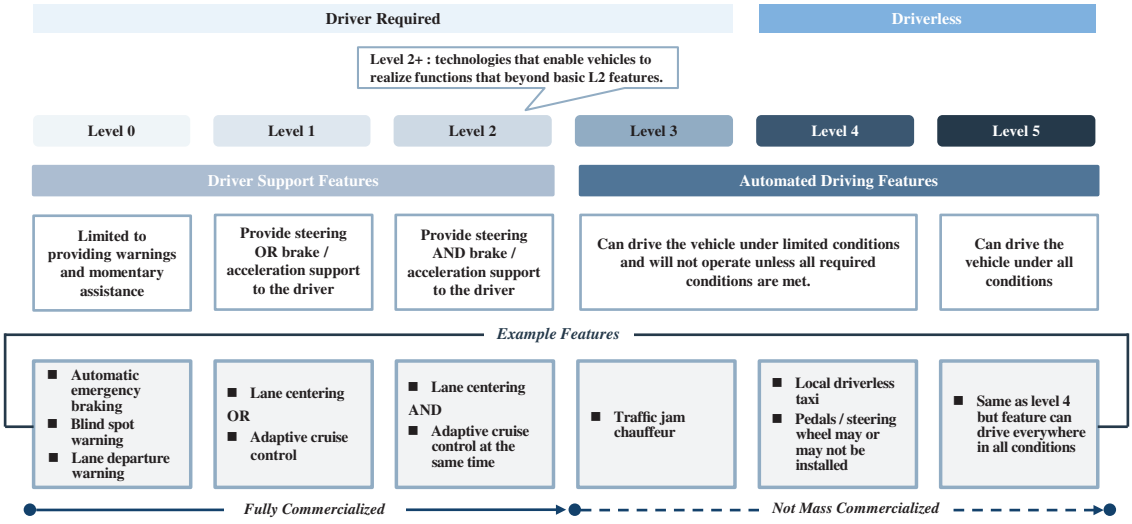
Source: Industry Association, Frost & Sullivan

OVERVIEW OF THE AUTONOMOUS DRIVING PASSENGER VEHICLE MARKET

Autonomous driving refers to the technology that allows a vehicle to operate automatically without the intervention of a human driver through perception, decision-making, and execution. An autonomous driving solution encompasses various components such as sensors (cameras, radar, and LiDARs), domain controllers, front camera modules, automotive-grade chips, algorithms, simulation tools, and any other hardware or software that supports the achievement of autonomous driving. A complete autonomous driving solution is an integration of multiple subsystems, which can be provided by different suppliers. In many cases, OEMs also contribute to the autonomous driving solution by developing their own application algorithms.

SAE or SAE International, formerly named as the Society of Automotive Engineers, is a U.S.-based global association of engineering professionals in various industries with a focus on transport industries, such as aerospace, automotive and commercial vehicles. It strives to study, enact and issue industry standards and the SAE standards of level of autonomous driving (ranging from level 0 to level 5) are widely acknowledged and adopted by the global automotive industry. SAE classified vehicle automation into six levels based on the extent of human intervention and the scope of the driving scenario. Market participants classify autonomous driving solutions into more specific categories based on the SAE classification, such as level 2+, as a practice in the industry to give users and customers a more precise idea

of the level of automation of their products. In 2022, the penetration rate of level 2+ autonomous driving passenger vehicles was approximately 6%, calculated by dividing the number of newly sold level 2+ autonomous driving passenger vehicles by the total number of newly sold passenger vehicles for the same year. The table below illustrates the six levels of autonomous driving as defined by the SAE, from level 0 (no driving automation) to level 5 (full driving automation).



Source: SAE, Frost & Sullivan

Typically, autonomous driving systems that can achieve level 1 and level 2 (covering level 2+) driving automation are classified as advanced driving assistance systems (ADASs), while systems that can achieve level 3 through level 5 driving automation are classified as automated driving systems (ADSs). Currently, ADAS is the most advanced autonomous driving solution widely available in passenger vehicles sold today, while ADS solutions have not been commercialized in passenger vehicles in large scale. Global autonomous driving industry is in the process of moving from level 2 to level 3 automation. With the advancing technology, automotive industry has widely adopted the terminology of level 2+ to distinguish their advanced technologies and functions from the basic level 2 function. A typical basic level 2 function is a combination of Adaptive Crusie Control (ACC) and Lane Centering Control (LCC), which helps vehicles dynamically maintain a safe following distance and keeps the vehicles centered in the lane at the same time. An example of an level 2+ function is Automated Lane Change (ALC), which actively detects vehicles in the blind spot and, when clear, performs a lane change movement at the driver's request. A more advanced function of level 2+ is Navigation on Autopilot (NoA), which provides "navigation-assisted driving" in complex road environments, allowing the vehicle to autonomously drive to the destination as requested by the driver. Currently, the mass-produced autonomous driving solutions available are primarily for level 2 autonomous driving, including level 2+. Nevertheless, there is a significant focus on high-level autonomous driving in the automotive industry, and major governments are actively promoting the development of level 3 and above autonomous technology. In China, several pilot commercial programs are underway in cities such as Beijing, Shanghai, Guangzhou, Shenzhen, and more, to allow OEMs and autonomous driving

solution providers to test and operate level 3 and above autonomous driving vehicles. As a result, there are level 3 and above autonomous driving solutions available in the market and they have been integrated into vehicles participating in these pilot programs, but in a very small scale.

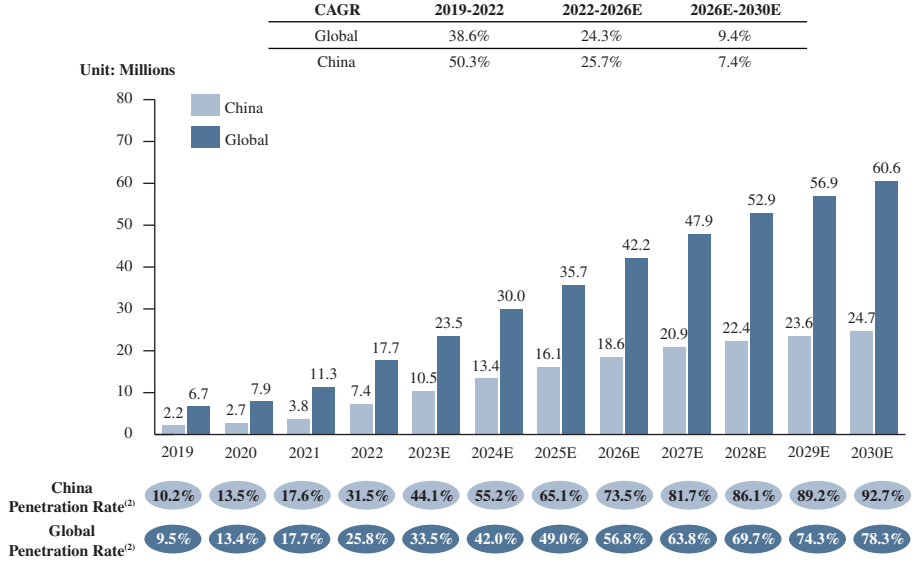
The concept of level 2+ is not defined by SAE, but it is a commonly accepted and recognized terminology in the automotive industry. Level 2+ is commonly seen in many public disclosures. In addition, the concept of level 2+ is accepted by the SAE and many global companies in this industry. The term of level 2+ has been widely used by well-known financial institutions and research institutions. Furthermore, the understanding of the concept of level 2+ remains consistent across the industry.

Overview of the Market of Autonomous Driving Passenger Vehicles

Due to rising consumer acceptance and more affordable autonomous driving solutions, the market of autonomous driving passenger vehicles is expanding rapidly. The global sales volume of autonomous driving passenger vehicles is expected to reach 42.2 million units by 2026 with a penetration rate of 56.8%, and 60.6 million units in 2030 with a penetration rate of 78.3%. Meanwhile, the sales volume of autonomous driving passenger vehicles in China is expected to reach 18.6 million units by 2026 with a penetration rate of 73.5%, and 24.7 million units by 2030 with a penetration rate of 92.7%.

The charts below set forth the sales volume and penetration rate of autonomous driving passenger vehicles in China and globally.

Global and China Autonomous Driving Passenger Vehicle[1] Sales Volume



Source: Frost & Sullivan

Note:

(1) Autonomous driving passenger vehicle refers to the vehicle featuring level 2 to level 5 automation, which has the need for AD domain controllers.

(2) The penetration rate is calculated by dividing the number of newly sold autonomous driving passenger vehicles by the total number of newly sold passenger vehicles for the same year.

Key Drivers and Trends of the Autonomous Driving Passenger Vehicle Market

The growth drivers and future trends of the autonomous driving passenger vehicle market include:

- *Vehicle electrification.* Due to the greater control precision, lower latency, and more extensive redundant systems of NEVs as compared to ICE vehicles, autonomous driving solutions are widely used in NEVs. The industry trend of vehicle electrification provides a solid foundation for the advancement of autonomous driving technologies. Increasing penetration rates of NEVs will continue to fuel the expansion of the market of autonomous driving passenger vehicles.

- *Growing acceptance of autonomous driving solutions.* As the user experience and safety of vehicles can be enhanced by autonomous driving systems, vehicles that provide autonomous driving functions are preferred by consumers. In order to offer customers more competitive products, OEMs are actively seeking appropriate autonomous driving solutions that they can seamlessly integrate with their vehicle models. As a result, both supply and demand are driving the rapid growth of the market for autonomous driving passenger vehicles.

- *More affordable ADAS-equipped passenger vehicles.* The cost of sensors such as camera module and millimeter wave radar is declining due to the economies of scale and technological advancement, enabling ADAS to be available on entry-level vehicle models. It is expected that the cost of sensors will continue to decrease, making ADAS-equipped passenger vehicles more accessible and affordable.

- *Autonomous driving function advancement.* Autonomous driving solutions are founded on sensing and perception technologies and proprietary algorithms, and the safety validation of these solutions. Along with the improvement of autonomous driving solutions, it is expected that the demand of OEM customers for autonomous driving solutions and products will increase and lead to greater platform adoption. In addition, it is believed that the combination of data and intelligence will create a significant competitive advantage and differentiates innovative solutions providers, which are capable of advancing full autonomous solution capabilities based on real world data and continuous validation of the safety solution.

- *Favorable government policies.* Several governments around the world have implemented policies to promote the advancement of autonomous driving technologies. In particular, the Chinese government has issued a number of policies aimed at bolstering the R&D of intelligent vehicles and establishing a comprehensive and independent supply chain for intelligent vehicles.

Policies on Autonomous Driving Market in China

The PRC government authorities, including the State Council, the National Development and Reform Commission, the State Administration for Market Regulation and the Ministry of Transport, have issued a series of policies on the industry of autonomous driving and intelligent connected vehicles in recent years, aiming at providing policy and financial encouragement and support for strategic emerging industries at the national level: (i) the PRC government encourages enterprises in the fields of artificial intelligence and internet, etc. to develop into leading enterprises engaged in providing automobile propulsion system solutions; (ii) the PRC government optimized and upgraded digital infrastructure, especially for key emerging fields such as autonomous driving, and provided systematic artificial intelligence services; and (iii) the PRC government will strengthen the research and development of intelligent transport tools and key special equipment and promote the application of intelligent connected vehicles (such as the intelligent automobile, automatic driving, and coordinated vehicle network). In general, the PRC government regards the autonomous driving and intelligent connected vehicles industry as a national development plan and promotes its continuous development.

OVERVIEW OF THE AD DOMAIN CONTROLLER MARKET

Introduction of Vehicle Electrical/Electronic Architecture (E/E Architecture)

E/E architecture refers to the convergence of electronics hardware, network communications, software applications and wiring into one integrated system that controls an ever-increasing number of vehicle functions in the areas of vehicle control, body and security, infotainment, active safety, and other comfort, convenience, and connectivity functionality.

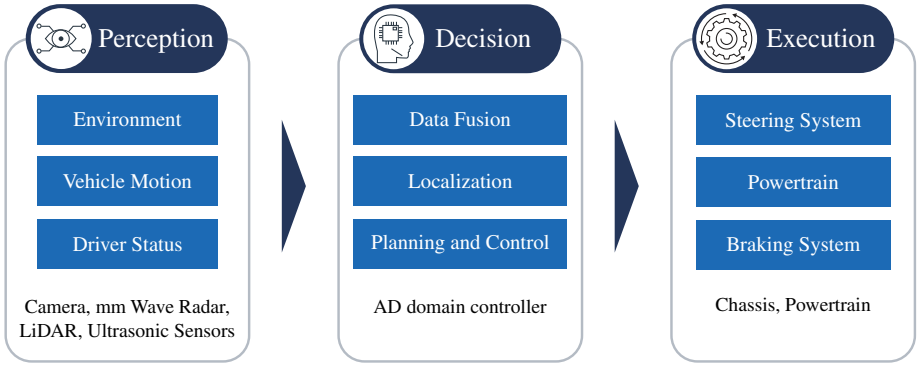
With the development of vehicle electrification and intelligence, vehicles can provide a number of functions, resulting in an increasing number of electronic components and a more intricate interaction between electronic components. Traditional distributed E/E architecture, with its disadvantages of complex layout and low communication efficiency, cannot meet the requirements of intelligent vehicles. Currently, the domain-centralized E/E architecture is evolving rapidly.

Typically, E/E architecture is divided into five functional domains: autonomous driving domain, cockpit domain, powertrain domain, chassis domain, and body domain. Automotive-grade component development and procurement cycles typically last longer than a year. For instance, it typically takes a provider of autonomous driving solutions, such as the one who offers intelligent front cameras and AD domain controllers, 12 to 24 months to develop products and solutions that can meet OEM specifications for a particular vehicle model. Advanced E/E architecture can effectively reduce the weight and material costs of vehicles, save R&D investments, shorten the development cycle, and enhance vehicle performance.

Introduction of AD Domain Controllers

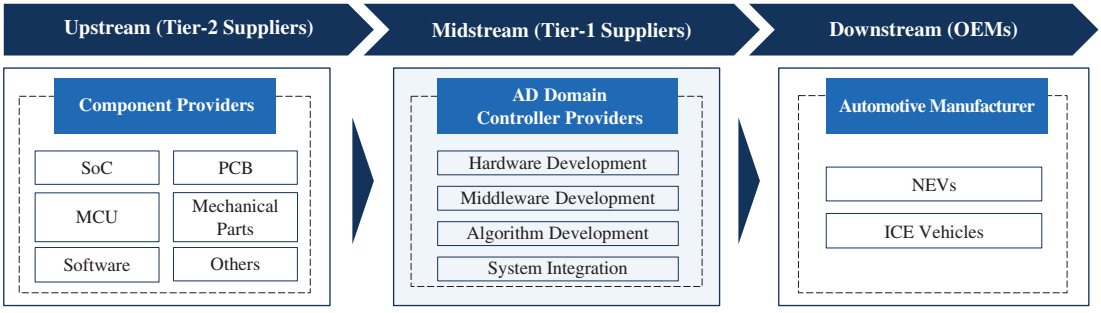
Autonomous driving functions are typically realized through a process of perception, decision, and execution. An AD domain controller functions as the brain in autonomous driving solutions. It is connected to different sensors surrounding the vehicle, such as cameras, radar and LiDAR, fusing and processing data from sensors to make driving decisions and trigger actuators in the vehicles. Currently, high level autonomous driving at or above level 3 can only be achieved with AD domain controllers. Currently, AD domain controllers are mainly equipped on vehicles with level 2 (particularly level 2+) driving automation, primarily because (i) solutions with lower costs, such as intelligent front cameras, are preferred by OEMs to achieve level 1 and basic level 2 driving automation; and (ii) ADS solutions, which can achieve level 3 to level 5 autonomous driving, have not been commercialized in passenger vehicles in large scale.

The diagram below illustrates the main components of an autonomous driving solution.



The Value Chain of the AD Domain Controller Industry

The following chart illustrates the value chain of the AD domain controller industry.



Upstream participants, such as Mobileye, are Tier-2 suppliers for components of AD domain controllers, such as SoC, MCU, PCB, and software, with SoC being the most important and valuable component that is directly related to the performance of an AD domain controller.

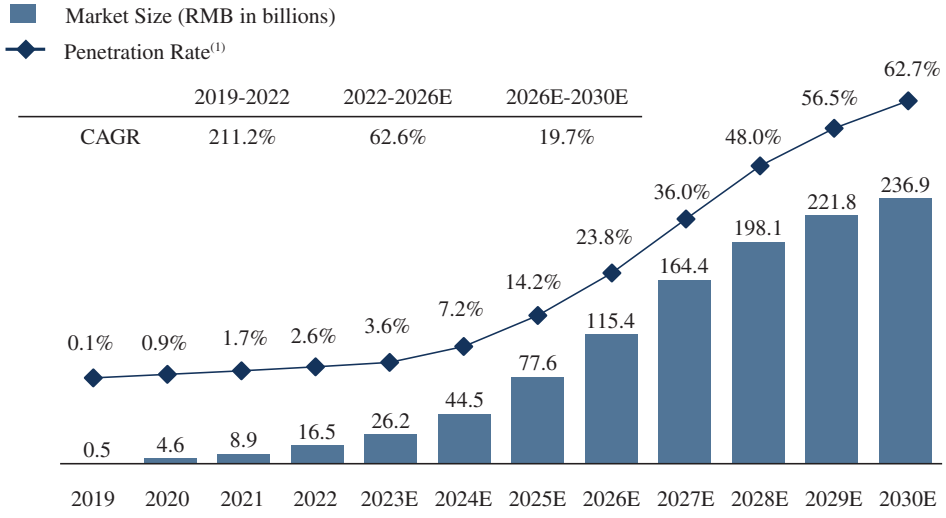
Midstream participants include third-party AD domain controller providers, being the Tier-1 suppliers, who organically integrate the necessary software and hardware based on OEMs' needs. Our Company is a midstream participant in the AD domain controller industry value chain. Third-party AD domain controller providers are required to have a deep understanding of the technologies of software, hardware, functional safety, cyber security, E/E architecture, and autonomous driving. Leading third-party AD domain controller providers also develop their proprietary middleware and algorithms as their R&D capabilities increase.

Downstream participants include OEMs in both the passenger and commercial vehicle sectors. OEMs are now actively promoting the domain-centralized E/E architecture, thereby increasing demand for AD Domain controllers.

Market Size for AD Domain Controllers

Given the increasing importance of autonomous driving, the AD domain controller market has expanded rapidly in recent years. The size of global AD domain controller market grew from RMB0.5 billion in 2019 to RMB16.5 billion in 2022, representing a CAGR of 211.2%, and is expected to reach RMB115.4 billion in 2026, representing a CAGR of 62.6%. Along with market expansion, the penetration rate of AD domain controllers for passenger vehicles increased from 0.1% in 2019 to 2.6% in 2022, and is expected to reach 23.8% and 62.7% in 2026 and 2030, respectively. The chart below sets forth the global AD domain controller market size and penetration rate for passenger vehicles for the periods indicated.

Global AD Domain Controller Market Size and Penetration Rate for Passenger Vehicles



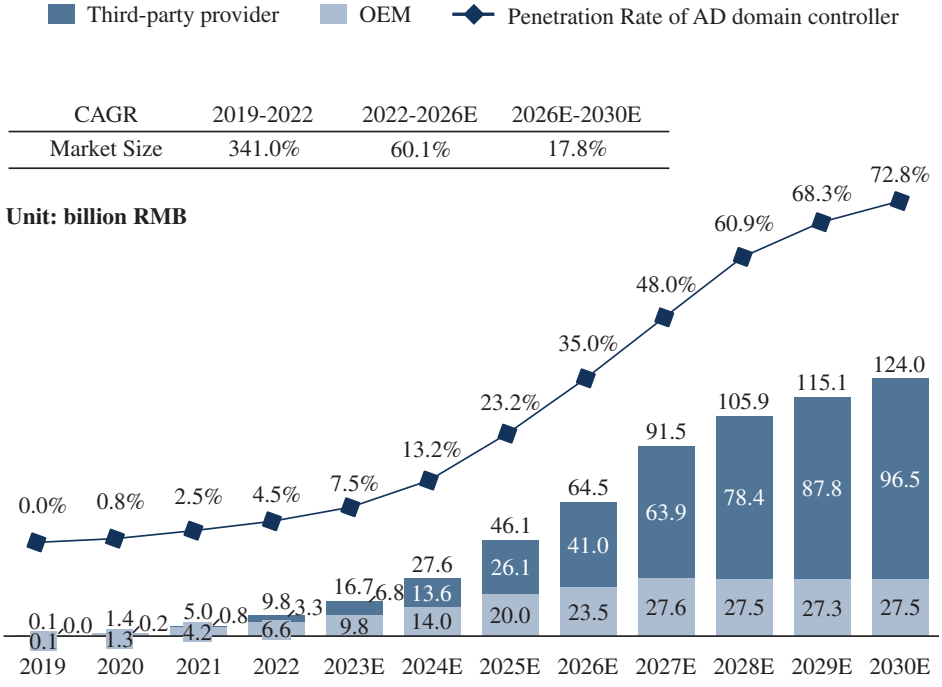
Source: Frost & Sullivan

Note:

(1) The penetration rate is calculated by dividing the number of newly sold passenger vehicles equipped with an AD domain controller by the total number of newly sold passenger vehicles for the same year.

Driven by the preference of Chinese customers for more advanced autonomous driving functions, as well as the rapid iteration of vehicle models by Chinese OEMs, the market size and penetration rate of AD domain controller in China increased significantly and is expected to continue to grow in the future. The growth rate of AD domain controller market in China from 2019 to 2022 was significantly higher than the global average. The size of AD domain controller market in China grew from RMB0.1 billion in 2019 to RMB9.8 billion in 2022, representing a CAGR of 341.0%, and is expected to reach RMB64.5 billion in 2026, representing a CAGR of 60.1%. Meanwhile, the penetration rate of AD domain controllers for passenger vehicles in China reached 4.5% in 2022 and is expected to rise to 35.0% and 72.8% in 2026 and 2030, respectively. The chart below sets forth the AD domain controller market size and penetration rate for passenger vehicles in China for the periods indicated.

China AD Domain Controller Market Size and Penetration Rate for Passenger Vehicles, Breakdown by Third-party Provider and OEM



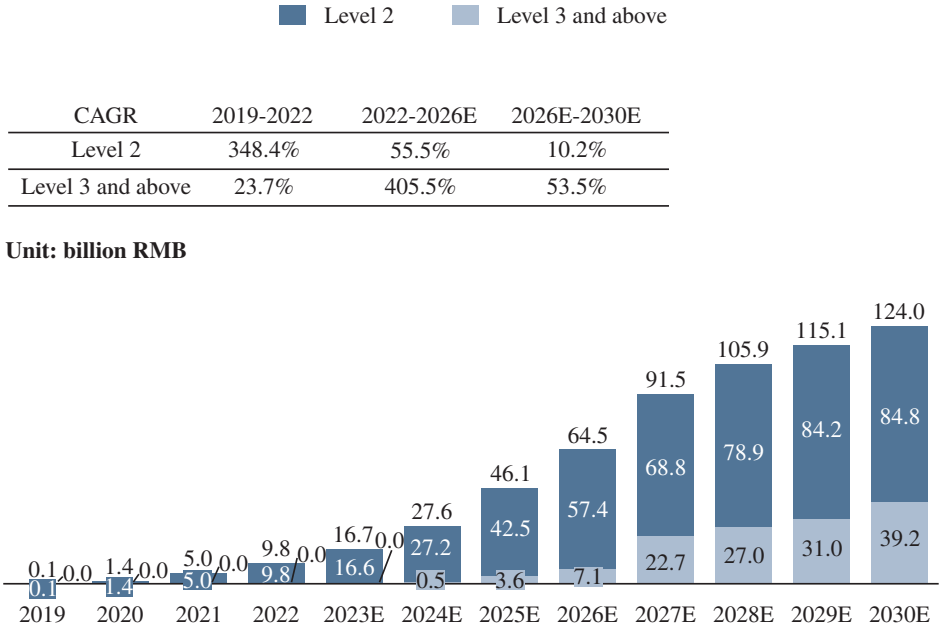
CAGR	2019-2022	2022-2026E	2026E-2030E
Market Size	341.0%	60.1%	17.8%

Source: Frost & Sullivan

Note:

(1) The penetration rate is calculated by dividing the number of newly sold passenger vehicles equipped with an AD domain controller by the total number of newly sold passenger vehicles for the same year.

China AD Domain Controller Market Size, Breakdown by Level of Autonomous Driving



CAGR	2019-2022	2022-2026E	2026E-2030E
Level 2	348.4%	55.5%	10.2%
Level 3 and above	23.7%	405.5%	53.5%

Source: Frost & Sullivan

Growth Drivers of the AD Domain Controller Market

The growth drivers for the AD domain controller market include:

- *Sustained growth of autonomous driving passenger vehicle market.* The development of the AD domain controller market is highly consistent with the sales of autonomous driving passenger vehicles. Global sales of autonomous driving passenger vehicles are rapidly increasing due to trend of vehicle electrification, technological advancements, comprehensive cost reductions, and changing consumer preferences. Therefore, the increasing investments of OEMs in this area result in a rapid increase in the penetration rate of AD domain controllers and a rapid expansion of the AD domain controller market.

- *Automotive E/E architecture transformation.* Advanced E/E architecture is necessary for OEMs to keep their competitive edge. Therefore, OEMs have prioritized the transformation and upgrade of automotive E/E architecture from a distributed to a domain-centralized system. Domain controllers offer numerous advantages over traditional distributed ECUs, such as lower overall vehicle cost, reduced wiring complexity, lighter weight, lower software development complexity, and shorter vehicle verification cycles. Furthermore, domain controllers improve the efficiency of the subsequent OTA updates, which are becoming increasingly important nowadays. With OTA updates, autonomous driving solution providers and OEMs can provide drivers with up-to-date autonomous driving functions throughout the

lifecycle of their vehicles. Moreover, the development of AD domain controllers has become critical in realizing high performance autonomous driving functions. Going forward, an increasing number of automotive models with advanced E/E architecture are expected to be introduced, supporting the rapid expansion of the AD domain controller market.

- *Development of level 2+ autonomous driving functions.* A growing number of OEMs are actively working to integrate autonomous driving functions that are close to level 3 automation, especially for premium vehicle models. Taking NoA as an example, several OEMs have launched vehicle models equipped with Highway NoA functions in recent years and have also announced plans to launch Urban NoA functions that will support driving in more complex urban environments. Such advanced autonomous driving capabilities require AD domain controllers with powerful built-in hardware and software. OEMs will continue to introduce vehicles providing level 2+ autonomous driving functions in the future to improve the competitiveness of their products. This will continue to drive the continuous increase in needs of high-performance AD domain controllers.

- *Technological advancement and cost reduction of key components.* The SoC is the most important piece of hardware in the AD domain controller, and its performance determines, to some extent, the overall performance of the AD domain controller. Computing power is the ability of a SoC to process data in a unit of time. Typically, AD domain controllers with high-computing-power SoCs are able to perform more complex autonomous driving tasks, such as NoA. In recent years, international and domestic chip manufacturers have increased their investment in the development of SoCs. In addition, as a result of the advancement in SoC technologies and increase in production scales, the unit cost of computing power continues to decline. Furthermore, due to the increasing number of SoC suppliers, a variety of SoC types are available to third-party AD domain controller providers and OEMs. As a result, third-party AD domain controller providers can develop different products catering to the needs of various vehicle models based on different SoC types.

Future Trends of the AD Domain Controller Market

The future trends for the AD domain controller market include:

- *Integration of driving and parking functions.* Driving and parking assistance are the two main parts of autonomous driving functions. In traditional solutions, driving and parking functions are managed separately by two independent controllers. The driving controller can only access driving-related sensors, such as front cameras and millimeter wave radar, whereas the parking controller can only access parking-related sensors, such as fisheye cameras and ultrasonic radar. Compared to the traditional solution, the driving-parking-integrated AD domain controllers enable systematic integration of driving and parking sensors, which can achieve better

performance, improve the development and iteration efficiency of AD domain controllers and save manufacturing costs. With these benefits, integrated AD domain controllers for driving and parking functions are expected to become the mainstream.

- *Cockpit integration.* With the advancement of automotive E/E architecture, the integration of different functional domains via cross domain collaboration has emerged as a new target in the development of intelligent vehicles. The integration of intelligent cockpit and autonomous driving domains has emerged as the next focus of the automotive industry. An intelligent cockpit is a vehicle system that uses smart features such as displays, audio systems, and seats to cater to personalized user needs. It acts as a bridge between the vehicle, the driver, and the passengers, and it improves driving experiences by creating a comfortable and interactive environment. A domain controller that can manage both the cockpit domain and autonomous driving domain can effectively reduce manufacturing costs and improve communication efficiency.

- *Decoupling of software and hardware.* AD domain controller is a complicated system that combines a number of software and hardware components. Traditionally, the development of AD domain controllers requires a close integration of software and hardware, resulting in relatively high development costs. Following the trend of decoupling of software and hardware with the development of middleware, software and algorithms will be able to switch between different hardware more efficiently. As a result, it improves the adaptability of AD domain control solutions to various vehicle models, effectively lowering development costs and increasing development efficiency. Therefore, the software-hardware decoupling of the AD domain controller has become an important trend in the industry.

Entry Barrier to the AD Domain Controller Market

The entry barriers to the AD domain controller market include:

- *Technical Capabilities.* Developing an AD domain controller is a complex system engineering task that requires knowledge in different areas, including a comprehensive understanding of various automotive functions, and expertise in operating systems, middleware, functional safety and cyber security. However, it can be difficult for new entrants to assemble a competent team with extensive knowledge and experience, and any deficiency can negatively impact their market competitiveness.

- *Capabilities for providing services.* Software and hardware development for an AD domain controller is complex, demanding, and time-consuming. OEMs are aggressively shortening the development cycle for domain controllers as competition on the automotive market intensifies. To remain competitive, third-party AD domain controller providers need to have strong service capabilities,

technical proficiency, development experience, and resource allocation skills to quickly resolve issues during the development process. In contrast, new entrants may have difficulty establishing this comprehensive capability, putting them at a disadvantage in attracting new customers.

- *Customer Relationship.* Autonomous driving technologies have a significant impact on the driving experience and safety performance. Therefore, OEMs and suppliers need to work closely together during the entire development process of AD domain controllers, which are the core of autonomous driving solutions. It is unlikely that an OEM will quickly switch suppliers after selecting an autonomous driving solution for a specific vehicle model. As a result, it is challenging for new players to replace existing suppliers for a particular vehicle model.

Cost Structure

The AD domain controller is a complex system comprising both hardware and software. Generally, the software contributes to 20%-40% of the overall cost of an AD domain controller, while the hardware includes SoCs, MCUs, PCBs, resistors, capacitors, and structural parts, accounting for approximately 60%-80% of the total cost. Among them, SoCs are the most valuable component and have a great impact on the performance of an AD domain controller. Generally, automotive-grade SoCs account for 20%-40% of the overall cost of an AD domain controller. The price of the automotive-grade SoC varies greatly, with computing power measured in Tera Operations per Second ("TOPS") being the most important factor. The cost of automotive-grade SoC has reduced dramatically due to technological advancements and economies of scale, from RMB60 to RMB120 per TOPS in 2019 to RMB20 to RMB65 per TOPS in 2022, and is expected to decrease over time and reach RMB10 to RMB30 per TOPS by 2030. Due to technological advancements and increased production scale, the cost of AD domain controllers is expected to decrease over time. In addition, it is common for AD domain controller providers to annually reduce their average selling prices as a means to enhance their competitive edge.

Competitive Landscape of the AD Domain Controller Market

Currently, the AD domain controller market for passenger vehicles in China primarily includes two types of players, OEMs and third-party AD domain controller providers. OEMs develop AD domain controllers on their own, which are applied to their own vehicle models and are not sold to third parties. Third-party AD domain controller providers in China are companies that design, develop and produce AD domain controllers for OEMs. There is a high degree of market concentration for AD domain controller market for passenger vehicles in China, with the largest player, an OEM, holding a 51.7% revenue share in 2022. Revenue generated by third-party AD domain controller providers amounted to RMB3.3 billion in aggregate in 2022, accounting for 33.1% of the overall AD domain controller market for passenger vehicles in China.

OEMs consider a number of factors when deciding whether to develop a component in-house or outsource it to a third party, including technical barriers, cost-effectiveness, and the initial investment required, among others. In general, OEMs are more likely to procure components with high development and production costs and high technological barriers from third-party suppliers rather than developing and producing in-house.

One key advantage that third-party suppliers possess over OEMs is their ability to achieve cost efficiency through large sales volume. For instance, when OEMs self-develop AD domain controllers exclusively for their own vehicles, it becomes challenging to achieve economies of scale. However, third-party providers can supply their products to multiple OEMs without any limitations, enabling them to benefit from larger economies of scale and cost advantages.

In addition to cost efficiency, the development of automotive components, such as AD domain controllers, demands comprehensive R&D capabilities, technical expertise, and access to skilled talent. While only a limited number of OEMs may possess the necessary resources for in-house development, third-party AD domain controller providers have a distinct advantage. They can invest more resource and leverage collaborative relationships with various OEMs to pool their expertise, accumulate technical know-how, and enhance their product performance through shared knowledge and experiences.

Furthermore, OEMs are willing to procure from third-party suppliers to maintain their technological competitiveness, especially for components that require continuous improvement and rapid iteration. Third-party providers, with their large customer base, have the opportunity to be at the forefront of market demands and access advanced technologies. This allows them to engage in quick and effective technological iterations and product updates, providing OEMs with advanced solutions. Consequently, by choosing third-party suppliers, OEMs can tap into a vast network of innovative solutions and remain competitive in the rapidly evolving automotive industry.

Some OEMs began developing and manufacturing AD domain controllers at an early stage in the industry, when there were few third-party companies focusing on AD domain controllers and traditional auto parts suppliers were unable to meet the OEMs' unique requirements. These OEMs used their self-developed products to demonstrate their R&D capabilities, expand their customer base and gain competitive advantages at the early stage in the industry, therefore they were willing to invest significantly in R&D. With the development of the autonomous driving industry it is expected that to enhance cost efficiency and technological competitiveness, most of OEMs will adopt a strategy to outsource the development and production of AD domain controller to third parties. Therefore, it is anticipated that third-party AD domain controller providers will occupy a larger market share in the future by offering more diverse and cost-effective solutions to OEMs.

Although Tier-1 suppliers in automotive industry tend to lower the selling prices to compete in the market, third-party AD domain controller providers maintain their profitability by continually reducing their production cost based on (i) their increasing economies of scale, (ii) technological advancements and innovation, (iii) cost reduction of components, and (iv) production efficiency improvement. First, large-scale production typically leads to higher

output and more efficient production processes, resulting in lower unit costs. With increasing production volume, third-party AD domain controller providers can benefit from economies of scale and lower costs in raw material procurement, manufacturing, among others. Second, AD domain controller technology will continue to advance and evolve over time. New manufacturing technologies and processes, like smaller sized and more integrated chip designs and advanced manufacturing processes, will be introduced to make production more efficient and cost-effective. Third, due to the progress in technology and economies of scale, the cost of automotive-grade SoC has decreased significantly, from RMB60 to RMB120 per TOPS in 2019 to RMB20 to RMB65 per TOPS in 2022. It is expected that the cost of automotive-grade SoC would continue to decrease in the future due to improving technologies. Finally, measures such as the application of automation technology, lean manufacturing, and improved quality management can reduce labor costs, enhance production processes and efficiency.

The top five market participants accounted for 87.1% of all third-party AD domain controller providers' revenue in 2022. We are the second largest third-party AD domain controller provider in China in terms of revenue generated from sales of AD domain controllers in 2022, with a market share of 26.2%. The following chart sets forth the top five third-party AD domain controller providers in China by revenue in 2022.

Ranking	Third-party AD Domain Controller Providers	Background Information	Market Share
1	Desay SV	A provider of automotive electronics that specializes in offering comprehensive solutions for intelligent cockpits, autonomous driving, and connected services. Desay SV was established in 1986 and is listed on the Shenzhen Stock Exchange.	44.6%
2	**Our Company**	–	**26.2%**
3	Hongjing Drive	A provider of autonomous driving solutions, including software, hardware and AD domain controllers. Hongjing Drive was established in 2018 and is headquartered in Hangzhou.	7.1%
4	Technomous	A provider of autonomous driving solutions that specializes in AD domain controllers. Technomous was established in 2018 and is headquartered in Shanghai.	4.9%
5	FreeTech	A provider of autonomous driving solutions that specializes in AD domain controllers. FreeTech was established in 2017 and is headquartered in Hangzhou.	4.3%
	Others		12.9%
	Total		100.0%

Note:

The revenue used to calculate market shares is solely based on AD domain controller sales, excluding any sales from sensors integrated in the autonomous driving solutions provided to OEM customers.

We are the fourth overall largest AD domain controller provider in China in terms of revenue generated from sales of AD domain controllers in 2022, with a market share of 8.6%. The following chart sets forth top 10 AD domain controller providers in China, including OEMs and third-party AD domain controller providers, by revenue in 2022. These companies' AD domain controllers can be used in level 2 (including level 2+) autonomous driving solutions, and all competitors are developing autonomous driving solutions of level 3 and beyond.

We are one of the few companies in the industry to achieve large-scale commercialization in China for autonomous driving solutions. The market for AD domain controllers experienced rapid growth in recent years. Nevertheless, in 2022, only five third-party providers in China, including our Company, attained AD domain controller revenues exceeding RMB100 million. According to Frost & Sullivan, this threshold serves as an indicator of companies achieving large-scale commercialization.

Ranking	Entity	Company Name	Market share
1	OEM	Tesla	51.7%
2	Third-party	Desay SV	14.8%
3	OEM	NIO	14.2%
4	**Third-party**	**Our Company**	**8.6%**
5	Third-party	Hongjing Drive	2.3%
6	Third-party	Technomous	1.6%
7	Third-party	FreeTech	1.4%
8	Third-party	Hirain Technologies	0.8%
9	Third-party	Bosch	0.7%
10	Third-party	Continental AG	0.5%
		Others	3.2%
		Total	100.0%

Note:

The revenue used to calculate market shares is solely based on AD domain controller sales, excluding any sales from sensors integrated in the autonomous driving solutions provided to OEM customers.

OVERVIEW OF THE INTELLIGENT FRONT CAMERA MARKET

An intelligent front camera is capable of collecting and analyzing environmental data, identifying road conditions and navigating vehicles. The intelligent front camera is installed in the front of a vehicle and monitors traffic ahead, allowing the vehicle to maintain a safe speed, stay in lane, maintain a safe distance from vehicles ahead, and respond to emergencies. Intelligent front cameras are equipped with one or multiple camera modules, and have limited autonomous driving function coverage, typically including Adaptive Cruise Control (ACC), Lane Centering Control (LCC), and Autonomous Emergency Braking (AEB). The vehicle models that intelligent front cameras target are entry-level vehicles to achieve level 1 or basic level 2 autonomous driving functions.

The following table illustrates main differences between an AD domain controller and an intelligent front camera.

	AD Domain Controller	Intelligent Front Camera
Sensors	An AD domain controller is connected with multiple sensors in the vehicle (including cameras, ultrasonic sensors, radar, etc.)	An intelligent front camera is equipped with one or multiple camera module
Target Vehicle Model	Mid- to high-end vehicle with L2+ or beyond autonomous driving functions	Entry-level vehicle with level 1 or basic level 2 autonomous driving functions
Functions	Cover the functions of intelligent front camera, and can also achieve other functions such as Navigate on Autopilot (NoA), and Home-zone Parking Assistance (HPA)	Limited autonomous driving function coverage, typically including Adaptive Cruise Control (ACC), Lane Centering Control (LCC), and Autonomous Emergency Braking (AEB)

The market for intelligent front cameras has been rapidly growing, due to the increasing penetration rate of level 2 autonomous driving passenger vehicles. The global market for intelligent front cameras grew at a 21.6% CAGR from RMB8.7 billion in 2019 to RMB15.7 billion in 2022. The intelligent front camera market in China increased at a 30.0% CAGR from RMB2.9 billion in 2019 to RMB6.3 billion in 2022. The following chart sets forth the top five intelligent front camera providers in China by revenue in 2022. Since we only began series production of iFC 2.0 in August 2021 and sales were still in a ramp-up period, our market share was only approximately 0.05% based on revenue in 2022.

Ranking	Company Name	Market Share
1	Bosch	24.9%
2	Denso	18.6%
3	Aptiv	8.7%
4	ZF	6.2%
5	Veoneer	5.2%
	Total	63.6%

Key Drivers and Trends of the Intelligent Front Camera Market

- The growing adoption of level 2 autonomous driving solutions will promote the development of intelligent front cameras. The penetration rate of global autonomous driving passenger vehicles is expected to reach 56.8% in 2026 and 78.3% in 2030. Meanwhile, the penetration rate of autonomous driving passenger vehicles in China is expected to reach 73.5% in 2026 and 92.7% in 2030. As the intelligent front camera is widely accepted in level 2 autonomous driving solutions, there is still plenty of room for growth in the market. For intelligent front camera providers, it is an industry norm to annually reduce their average selling prices as a means to increase market share.

- Adding intelligent features (such as intelligent front cameras) to a vehicle is, on the one hand, more in line with consumer demand for safety and intelligence, and, on the other hand, can result in a higher score in the relevant vehicle tests (such as the C-NCAP) for OEMs. Therefore, we believe intelligent front cameras, as one of the most cost-effective safety assistance solutions, have the potential to become a popular choice for OEMs to include in their vehicle models in the future.

- An intelligent front camera can replace the traditional one camera one millimeter wave radar (1V1R) combination to reduce the material costs of vehicles. The vehicle lateral control and longitudinal control are primarily accomplished by using the millimeter wave radars and cameras. An intelligent front camera can achieve comparable performance to traditional 1V1R combinations at a lower cost, and thus have a higher market acceptance.

- Intelligent front cameras with dual camera lens and multi camera lens become more popular in the market. Products with two cameras can achieve detection of distance and wider field of view. Some companies which adopt camera system as main perception system, like Tesla, have used products with three cameras.

SOURCE OF INFORMATION

In connection with the [**REDACTED**], we have engaged Frost & Sullivan to conduct a detailed analysis and prepare an industry report on the markets in which we operate. Frost & Sullivan is an independent global market research and consulting company which was founded in 1961 and is based in the United States. Services provided by Frost & Sullivan include market assessments, competitive benchmarking, and strategic and market planning for a variety of industries. We incurred a total of RMB500,000 in fees and expenses for the preparation and update of the Frost & Sullivan Report. The payment of such amount was not contingent upon our successful [**REDACTED**] or on the results of the Frost & Sullivan Report. Except for the Frost & Sullivan Report, we did not commission any other industry report in connection with the [**REDACTED**].

We have included certain information from the Frost & Sullivan Report in this document because we believe such information facilitates an understanding of the markets in which we operate for [**REDACTED**]. Frost & Sullivan prepared its report based on its in-house database, independent third-party reports and publicly available data from reputable industry organizations. Where necessary, Frost & Sullivan contacts companies operating in the industry to gather and synthesize information in relation to the market, prices and other relevant information. Frost & Sullivan believes that the basic assumptions used in preparing the Frost & Sullivan Report, including those used to make future projections, are factual, correct and not misleading. Frost & Sullivan has independently analyzed the information, but the accuracy of the conclusions of its review largely relies on the accuracy of the information collected. Frost & Sullivan research may be affected by the accuracy of these assumptions and the choice of these primary and secondary sources.