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ADAS and Autonomous Driving Tier 1 Suppliers Research Report, 2024 - Foreign Companies

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Research on foreign ADAS Tier 1 suppliers: make all-round attempts to transform and localize supply chain and teams

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1. Foreign ADAS Tier 1 suppliers fall behind relatively in development of intelligent driving, with declining profitability from 2018 to 2023.

In the past few years, foreign ADAS Tier1s like Bosch, Continental, Valeo, ZF and Magna have faced unprecedented challenges. According to the data from 2018 to 2023, the compound annual growth rates (CAGR) of EBIT/operating margin of these five giants were -3.9%, -14.4%, -7%, -0.3% and -6.4%, respectively. These data not only reflect the impact of the global economic environment on traditional auto parts suppliers, but also reveal the intensified competition in vehicle electrification, connectivity, intelligence and sharing.

Comparison of Financial Performance between 8 Foreign ADAS Tier1s, 2018-2023

	(Unit: 100 million euros)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
Bosch	Total Revenue	784.6	777.2	714.9	787.5	882.0	916.0	3.1%
	EBIT	55.0	29.0	16.6	28.2	34.7	45.0	-3.9%
	Total Revenue in China	222.7	214.1	207.3	233.3	277.0	279.0	4.6%
	Revenue from Mobility Solutions					526.7	562.0	
Continental	(Unit: 100 million euros)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	444.0	444.8	318.6	337.7	394.1	414.2	-1.4%
	EBIT	40.3	-2.7	-4.3	18.5	7.6	18.5	-14.4%
	Total Revenue in Asia Pacific (Incl. China)	98.9	97.5	70.3	73.4	85.4	85.8	-2.8%
	Revenue from Automotive					183.2	203.0	
Valeo	(Unit: 100 million euros)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	191.2	194.8	164.4	172.6	200.4	220.4	2.9%
	Operating margin	12.0	10.3	-3.7	7.0	6.4	8.4	-7.0%
	Total Revenue in Asia Pacific (Incl. China)	63.0	62.2	55.1	60.2	70.6	73.4	3.1%
	Revenue from Comfort and Driving Assistance Systems					41.9	46.6	
ZF	(Unit: 100 million euros)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	369.3	365.2	326.1	383.1	438.0	466.3	4.8%
	EBIT	15.3	9.3	-2.1	14.2	11.1	15.1	-0.3%
	Total Revenue in Asia Pacific (Incl. China)	80.1	78.5	81.5	94.0	106.9	112.6	7.1%
	Revenue from Electronics & ADAS					24.3	27.0	

Comparison of Financial Performance between 8 Foreign ADAS Tier1s,2018-2023

Mobis	(Unit: billion won)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	35149.2	38048.8	38048.8	41702.2	51906.3	59254.4	11.0%
	Operating Income	2025.0	2359.3	1830.3	2040.1	2026.5	2295.3	2.5%
	Revenue from Module Core Parts		30483	29586	33265	41697	48372	

Denso	(Unit: 100 million yen)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	51083	53628	51535	49367	55155	64013	4.6%
	Operating Income	4127	3162	611	1551	3412	4261	0.6%
	Total Revenue in Asia Pacific (Incl. China)	11460	12151	10869	11341	14143	16809	8.0%
	Revenue from Mobility Electronics					13564	16156	

Aptiv	(Unit: 100 million US dollars)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	144.4	143.6	130.7	156.2	174.9	200.5	6.8%
	Net Income	11.1	10.1	18.2	6.1	5.9	29.7	21.8%
	Total Revenue in Asia Pacific (Incl. China)	39.2	38.8	39.0	48.3	52.7	57.0	7.8%
	Revenue from AS&UX					45.9	57.0	

Magna	(Unit: 100 million US dollars)	2018	2019	2020	2021	2022	2023	CAGR(2018-2023)
	Total Revenue	408.3	394.3	326.5	362.4	378.4	428.0	0.9%
	EBIT	31.1	25.5	16.8	20.6	17.1	22.4	-6.4%
	Total Revenue in China	21.5	19.5	19.3	35.3	39.0	48.4	17.6%
	Revenue from Power and Intelligent Technology					118.6	143.1	

Reasons why foreign Tier1s lag behind in development of ADAS business.

2. Reasons why foreign Tier1s lag behind in development of ADAS business.

(1) Difficulty 1 in developing in China: There are many ADAS Tier1 players in white-hot competition.

As China's local companies soar in the field of ADAS, foreign Tier 1 suppliers are facing unprecedented pressure of competition. In the past, these foreign giants dominated the Chinese market with their leading technologies and rich experience. Yet as new technologies spring up and China's local companies rise rapidly, the market pattern is undergoing disruptive changes.

China's local intelligent driving Tier1s have been quickly accepted by the market by virtue of their deep understanding of the local market and great R&D strength. These companies are well-known for their quick response to market needs, cost-effective solutions, and excellent AI algorithm capabilities. Currently there are the following types of players:

1) Traditional established suppliers like Desay SV and Jingwei Hirain;
2) Algorithm companies that implement "L4 technology generalizing L2++", such as Momenta, WeRide, Pony.ai and Baidu;
3) Cross-border giants like Huawei: Huawei not only boasts great technical strength, but also has extensive industrial resources and can quickly integrate upstream and downstream resources to provide customers with a full range of intelligent driving solutions;
4) Full-stack self-development OEMs such as NIO and Tesla, which have also shown great innovation capabilities in the field of intelligent driving;
5) Startups including Maxieye, Hong Jing Drive and iMotion, which emerge rapidly, and encroach on the market share of conventional Tier1s through technological innovation and flexible product matrix strategies.

The emergence of these new players has not only broken the competitive edges of traditional Tier 1 suppliers, but also redefined the intelligent vehicle supply chain pattern. As electrification, intelligence and connectivity gather pace, the industry is experiencing a profound transformation. These changes bring structural increment opportunities to the market, while also making the competition among intelligent driving Tier1s in China fiercer.

Difficulty 2 in developing in China: There is a drastic involution in Chinese L2-L3 market.

(2) Difficulty 2 in developing in China: There is a drastic involution in Chinese L2-L3 market.

In current stage, the competition in the new energy market is stiff. The successful implementation of urban NOA means that OEMs have the technical strength to realize all-scenario driving assistance, which will help them take a lead in the market competition. By rolling out urban NOA on a large scale, major mainstream OEMs have acquired massive and diverse real data and built a forward cycle between data and algorithm solution iterations, thereby creating a technical moat. In addition, as the young generation becomes increasingly important consumers in the automotive market, they have ever higher expectations of intelligence and convenience. As an intelligent function, urban NOA will gradually become one of the key factors to the young generation of consumers making decisions on purchasing a car.

In 2023, urban NOA began to show growth spurt. Seen from the new vehicles launched on market, the installation rates of L2 and higher-level ADAS functions rose sharply, of which L2.5 and L2.9 enjoyed a surge. In 2022 the installation rate of L2.5 functions in newly launched passenger cars in China was 13.25%, a figure climbing to 19.86% from January to April 2024; the installation rate of L2.9 functions jumped from 12.4% in 2022 to 23.4%.

Following Xpeng and Huawei taking the lead in launching urban NOA in Shanghai, Guangzhou and Shenzhen, various automakers have been making intensive efforts in terms of technology path, urban launch scale, implementation speed and cost. The support behind this is mainly from Chinese ADAS Tier1s, and foreign ADAS Tier1s are rarely seen.

Foreign ADAS Tier1s make all-round efforts to transform

3. Foreign ADAS Tier1s make all-round efforts to transform: from strategic transformation, to redeployment of ADAS/AD product matrix, and then to comprehensive breakthroughs in intelligent driving solutions.

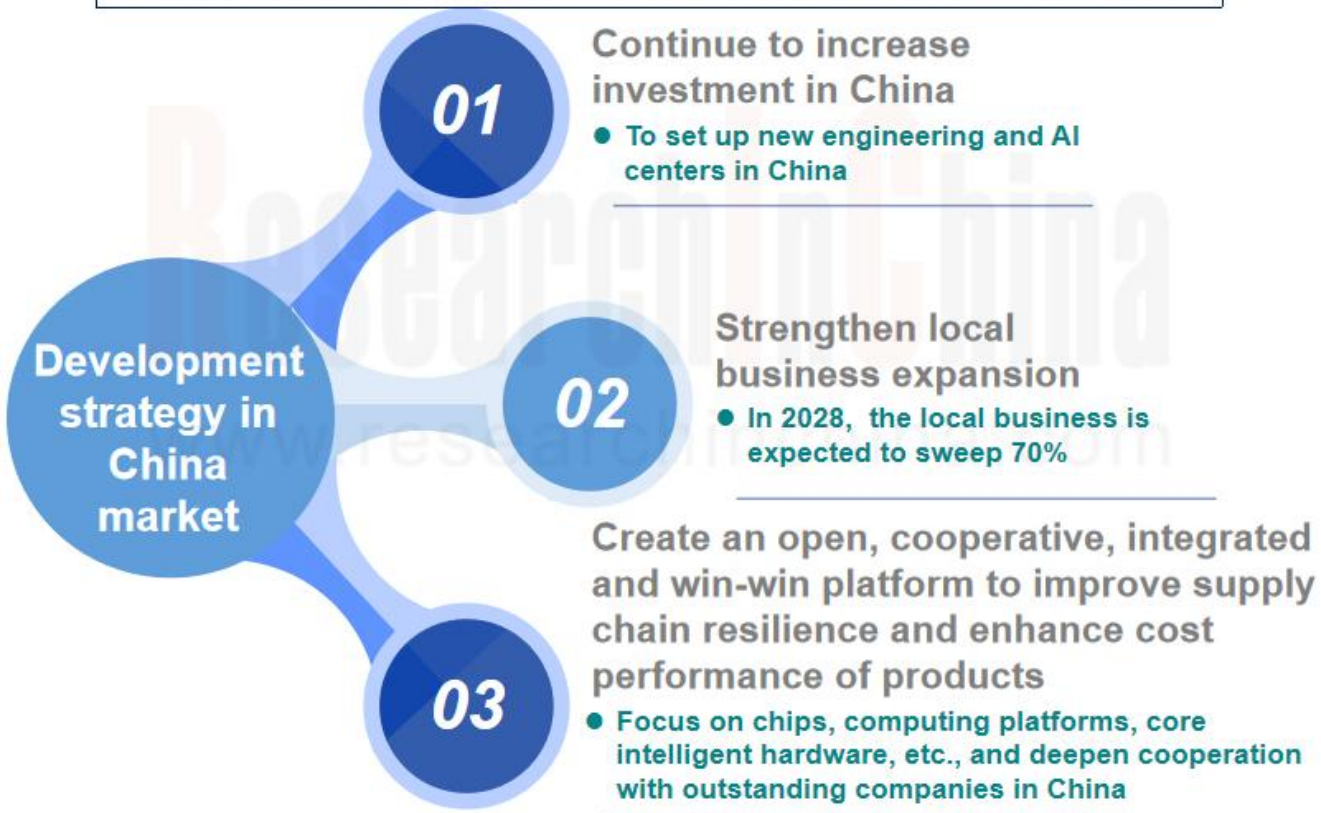
(1) Step up intelligent driving layout in the Chinese market and strive to achieve the development goal of "in China, for China".
In Aptiv's case, it increases its investment in China to deepen its presence in the local market, and plans to operate 70% of its overall business in the Chinese market by 2028. Currently, the company forges closer strategic partnerships with China's local companies by establishing and expanding R&D centers and building an automotive ecosystem in China, so as to make triple breakthroughs in intelligent driving technology innovation, penetration into the Chinese market, and localization of intelligent driving products.

At CES 2024, Aptiv showcased its seventh-generation 4D corner radar developed by a local team in China. The radar is equipped with China's first integrated radar chip. This not only marks a major technological breakthrough of Aptiv, but also reflects its determination to gain a solid foothold in the Chinese market. Aptiv also launched the first "cockpit-driving-parking" integration solution developed by a Chinese team. Based on a single SoC, the solution integrates cockpit, driving and parking functions.

Aptiv's Strategic Layout

In China, Aptiv accelerates local business growth and implements the "In China, For China" strategy.

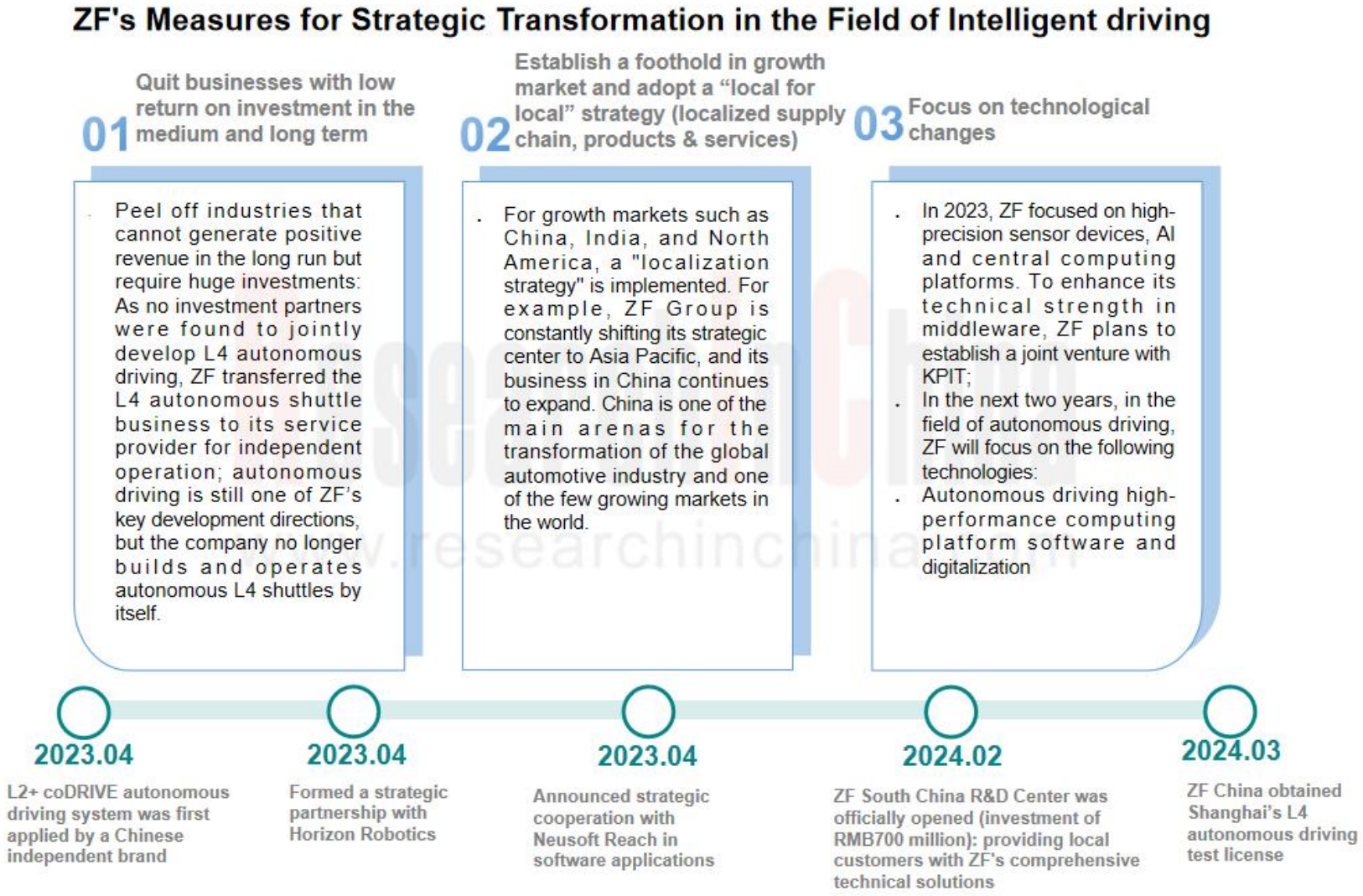
As of now, Aptiv has operated business in China for 30 years, with 34,500+ employees (11% of which are engineering and technical personnel), 7 technology R&D and engineering centers, and 22 production bases. Among the over 30,000 employees, engineering and technical personnel account for 11%, and the management and decision-making personnel has been fully localized.



Shift the strategic focus to mass production solutions with higher actual output and commercial value

(2) Shift the strategic focus to mass production solutions with higher actual output and commercial value, and peel off high-risk low-return L4 business, to ensure steady business growth.

ZF exhibited a new L4 autonomous shuttle and its previous autonomous shuttle models at CES 2023. Despite being a promising market, autonomous shuttles develop slowly, delaying the expected return on investment. The current economic crisis and the transformation to e-mobility have increased cost pressures, forcing the industry to re-evaluate investment strategies. ZF has decided to reduce high-risk investments, optimize allocation of resources, and focus on projects with clear market demand and a shorter payback period, in a bid to ensure financial health and sustainable development.



Supply chain localization, team localization, cost-effective intelligent driving solutions + faster cross-domain integration

(3) Supply chain localization, team localization, cost-effective intelligent driving solutions + faster cross-domain integration

Foreign Tier1s speed up the launch of more cost-effective intelligent driving solutions for the Chinese market by way of supply chain localization, team localization, strategic cooperation, investment in innovative Chinese intelligent driving companies, and continuous technological innovation. In addition, one of ultimate goals in developing intelligent vehicles is to achieve cross-domain integration, that is, seamlessly integrate various vehicle functions to enable all-around intelligent experiences. The concept of cockpit-driving integration has now entered the substantive implementation stage of quite a few foreign Tier1s, and is evolving towards "integrated chip" solutions.

A more comprehensive ADAS/AD product matrix allows foreign ADAS Tier1s to stay competitive

4. A more comprehensive ADAS/AD product matrix allows foreign ADAS Tier1s to stay competitive.

In terms of product matrix, Bosch, Continental, ZF and Aptiv have the most comprehensive product matrix, and all the eight international Tier 1s have deployed front-view cameras and autonomous driving solutions. In 2023, Bosch abandoned development of LiDAR and put more resources in development of radars. 4D radar and front/rear radar have become the deployment focus of foreign Tier1s during 2023-2024.

As the core component of central EEA, cross-domain/central computing platforms have been deployed by Aptiv, Bosch, Continental and ZF. Between 2023 and 2024, Aptiv, Bosch, Valeo and Magna accelerate R&D of cockpit-driving cross-domain integration, and presented a demo at CES 2024 or Auto China 2024. Following the new industry trend towards supply chain localization and localized cost-effective products or solutions, Aptiv launched the localized intelligent driving solution of Gen 6 ADAS, and ZF rolled out Pro AI based on Chinese chips.

As for high-level intelligent driving solution (NOA), Bosch has successfully achieved mass production and installation in vehicles through its local teams. Continental and Horizon Robotics established Continental Smart Core Technology (Shanghai) Co., Ltd. and launched the Driving-Parking Integration 3.0 solution. They will soon unveil a high-level intelligent driving solution. ZF made a strategic investment in CalmCar, and they jointly rolled out a cost-effective parking solution.

Comparison of ADAS/AD Product Matrix between Foreign ADAS Tier1s

	Aptiv	Bosch	Continental	Denso	Hyundai Mobis
Classification	**Product Name/Model**	**Product Name/Model**	**Product Name/Model**	**Product Name/Model**	**Product Name/Model**
Front view camera	IFV410	MPC3	MFC500	Vision Sensor, Compact Stereo Vision Sensor (front-view stereo)	MFC
Surround view system		MCS, 3D surround view system (AVM/SVS)	SVC210	Surround Monitoring Camera	SVM
Rear view camera		near-range camera	RVS3XX		Rear-view Camera
CMS			Mirror Replacement	Digital Outer Mirror ECU	

Source: ResearchInChina

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Contact

Beijing Headquarters

TEL: 13718845418
Email: report@researchinchina.com

Website: ResearchInChina

WeChat: Zuosiqiche

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659

zuosiqiche