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Automotive Telematics Service Providers (TSP) and Application Services Research Report, 2023-2024

Dec. 2023

Four scenario services

From January to September 2023, the penetration of telematics in passenger cars in China hit 77.6%, up 12.8 percentage points from the prior-year period. The rising penetration of telematics provides a market foundation for intelligent connected services, and consumers' connection needs and usage habits take shape. Next how to provide diversified, personalized and intelligent application services using telematics big data will become the focus of major OEMs forging brand differentiation.

At present, China's intelligent connected vehicle application services are mainly four scenario services: in-vehicle information services, after-sales information services, off-vehicle near-field services and off-vehicle remote services.

In-vehicle information services are mainly based on intelligent cockpit applications. In addition to conventional services such as infotainment, positioning, navigation, in-vehicle monitoring and rescue call, personalization, APP stores, vehicle gaming platforms, intelligent recommendations, scene engines, etc. have become hotspots of application services, which is accompanied by increasing big data applications in vehicles.

Centering on users' needs for car usage and maintenance, after-sales information services provide remote diagnosis, one-button rescue, OTA updates, maintenance prompts and reservations, energy services for used cars and new energy vehicles, etc. Off-vehicle near-field services are mainly enabled by near-field communications, such as digital keys like Bluetooth /UWB, smart watches, and off-vehicle interaction.

Off-vehicle remote services mainly use mobile phone APPs to remotely control vehicles, check vehicle conditions, detect vehicle status, etc.

Classification of Automotive Application Services

In-vehicle Information Services	After-sales Information Services	Off-vehicle Near-Field Services	Off-vehicle Remote Services
Infotainment	Remote diagnosis	Bluetooth key	Remote control
Positioning & navigation	One-button rescue	UWB	Remote vehicle condition check
In-vehicle monitoring	FOTA	Smart watch	Remote cluster
Personalization	SOTA	Off-vehicle interaction	Vehicle health detection
Rescue call (X-Call)	Maintenance prompt and appointment		Driving trajectory
APP store	Used car		Electric fence
Gaming platform	Energy services		POI push
Electronic manual			Parking security
Intelligent recommendation			
Scene engine			
Automotive health			
Travel in groups			
IVI-phone interconnection			

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IVI APP stores enhance the personalization and scalability of in-vehicle services

First, IVI APP stores enhance the personalization and scalability of in-vehicle services.

With rich ecological applications, APP stores can not only enhance the personalized and entertaining experience for users, but also enables the scalability of the application ecosystem, for example, users can work in the vehicle using office and conference software. At this stage, Chinese brands like BYD, NIO, Xpeng and Li Auto are the first to install APP stores in their IVI systems. Their foreign peers are following suit.

In February 2023, The Driven, an Australian electric vehicle website, issued an article saying that Tesla may already be working on its own Apple-like app store that would enable car owners to download and install applications to their electric cars.

In March 2023, Volkswagen Group officially announced that it would bring a new app store to its multiple auto brands and car models. Users can enjoy a mass of third-party applications via the update.

Features of IVI APP Stores of Some Brands

Brand	Features of App Store
NIO	There are more than 40 apps, including Xiaohongshu, Tencent Smart Parking, Ximalaya FM, Huxiu, and GCORES. In addition, NIO will provide exclusive Feishu Meetings, Tencent Meetings, DingTalk Conferences and other applications for NIO Phone users.
Li Auto	The total number of apps is small, mainly audio and video applications used frequently, such as Tencent Video, Mango TV, Fan Deng Reading, Kaishu Story, and Beiwa Children's Songs.
Xpeng	The IVI has its own app store, which provides 34 applications in seven categories.
AITO	The built-in Huawei App Store has a wealth of third-party apps. In addition, the IVI can call the mobile phone apps through the super desktop function.
Voyah	In October 2023, the "Voyah Store" was added via OTA updates. It integrates an app store, a service store and fast apps similar to WeChat applets.
Neta	Neta Store + applets.
Leapmotor	App center + applets, built-in rich ecosystems.

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The deep integration of mobile phones and IVI will spur more application services

Second, the deep integration of mobile phones and IVI will spur more application services.

Mobile phones offer the most contact points and the longest contact time in automotive application services, and have become a bridge connecting people with cars and other devices. Mobile phone APPs can not only be used for remote car control, but also provide social contact, test drive/car purchase services, financial services, valet services, and even customized scenes, car manual guide and user evaluation, becoming a carrier for OEMs to create full life cycle services for users.

Vehicle APP Functions		NIO	Li Auto	Xpeng	Rising Auto	IM
Off-vehicle remote control	Remote control	Door, window, trunk, horn, air conditioner, engine, charging preheating, one-button snow removal, vehicle summon, seat adjustment, etc.	Door, window, trunk, air conditioner, horn, etc.	Car lock, window, trunk, charging, horn, flashing light, air conditioner, air purifier, remote parking, pull-in/out by remote control, etc.	Door, trunk, window, car search, air conditioning, steering wheel, seat, charge and discharge management, etc.	Car lock, flashing light, horn, recharging, seat heating, etc.
	Remote vehicle conditions	Endurance range, state of charge, real condition outside the car, etc.	State of charge, tire condition, interior temperature, etc.	Endurance range, door, window, trunk, etc.	Tire pressure, endurance range and total mileage	Endurance range, vehicle state, position, temperature
	Vehicle health detection	-	√	-	√	√
	Driving trajectory	√	√	-	-	-
	Electric fence	√	√	-	-	-
	Parking security	√	√	√	-	√
Other functions	Social	√	√	√	√	√
	Information	√	√	√	√	√
	Store	√	√	√	√	√
	Test drive/car purchase	√	√	√	√	√
	Service network inquiry	NIO Center/charging and swapping location inquiry and navigation	√	√	Charging and swapping location inquiry and navigation	Charging map
	Financial services	√	-	Finance, insurance	-	Insurance
	Used car	Official used car	-	Official used car	-	-
	Valet services	Enjoyable driving services	-	-	-	IM Care services, including door-to-door fine cleaning, door-to-door power supply, maintenance and delivery, etc.
	Others	Quick scene editor	The word-of-mouth section collects users' evaluation on vehicles.	The intelligent driving section introduces the functions of Xpeng XPILOT.	Driving image, sound reproduction, scene customization	Car manual guide, prompt card, Yuanshi (a brand created with users)

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Note: √ means confirmed installation;
- means uninstallation or uncertain installation.

Source: ResearchInChina

Special services offered by OEMs

At this stage, the special services offered by OEMs through mobile phone APPs mainly include:

1.Valet services
The enjoyable driving services of NIO are 7*24h customized services directly provided by NIO's road service team according to users' demand. Using NIO APP, users can enjoy various valet services such as valet driving and accompanying, for example, accompanying the elderly to see a doctor and sending them to the hospital for physical examination, and accompanying children to do homework.

IM Care provides users with such services as door-to-door fine cleaning, door-to-door power supply, maintenance, and pick-up and delivery.

2. Feedback
Li Auto has set up a "word-of-mouth" section on its mobile phone APP, which enables users to evaluate vehicles in three dimensions: functions (appearance design, riding space, extended-range electric mode, chassis suspension, smart space and intelligent driving), services (after-sales service) and others (reasons for buying a car, satisfaction and expected improvements), thus creating a feedback channel for users.

3. Function introduction
Xpeng introduces the functions of Xpeng XPILOT to users via the intelligent driving section of the mobile phone APP. IM provides the manual guide for users via on the mobile phone APP.

4.Custom scenarios
NIO and Rising Auto set up scenario editors on their mobile phone APPs to enable users to add custom scenarios according to their preferences.

5. Brand co-creation
The Yuanshi Plan launched by IM encourages users to share mileage data, participate in interaction tasks and official co-creation activities on the APP, so as to enhance users' brand loyalty and achieve the effect of brand co-creation by way of issuing "original stones" (Yuanshi) and product redemption.

In addition, cross-terminal system applications such as HarmonyOS, and mobile phone vendors like OPPO, VIVO, Meizu and NIO Phone have entered IVI, bringing deeper integration of mobile phones and IVI. Cross-terminal data flow applications offer a bigger imaginable space to OEMs and suppliers, which may help to create more new services.

The next-generation application service platform will build all-scenario service capabilities covering intelligent driving, cockpit and connectivity

Third, the next-generation application service platform will build all-scenario service capabilities covering intelligent driving, cockpit and connectivity.

As E/E architectures tend to be centralized, automotive operating systems develop along the path of "IVI → cockpit → vehicle". In the era of vehicle operating systems, OEMs need to be based on SOA to realize cross-domain scheduling and functional integration among communication domain, cockpit domain and intelligent driving domain. There are two paths for OEMs to achieve cross-domain software integration: self-developing operating system platforms and application service platforms, represented by NIO, Xpeng and Li Auto; self-developing application service platforms but outsourcing operating system platforms to Neusoft, ThunderSoft and the like, represented by coventional automakers.

Therefore, emerging automakers such as NIO, Xpeng and Li Auto integrate the next-generation application service platforms with vehicle operating systems.

SkyOS, NIO's next-generation operating system platform (including an application service platform), is an all-domain vehicle operating system, involving vehicle systems, driving assistance, intelligent cockpit, connected energy replenishment services and mobile Internet. It is applied to telematics, vehicle control, autonomous driving and digital cockpits.

LiOS, Li Auto's next-generation operating system platform (including an application service platform), coupled with the self-developed LEEA 3.0 (a "central computing platform + zone controllers" architecture), combines intelligent driving domain, intelligent cockpit domain and vehicle control domain as a complete central domain.

Planning of Some OEMs for Next-generation Vehicle Operating System Platforms

Planning of Some OEMs for Next-generation Vehicle Operating System Platforms (Incl. Application Service Platforms)

		NIO	Li Auto	Xpeng
Operating system history		NIO OS→Aspen, Banyan, Alder→SkyOS	Li Auto IVI→LiOS	Xmart OS→XOS
The next-generation operating system	Name	SkyOS	LiOS	XOS
	Features	The vehicle operating system includes vehicle systems, driving assistance, intelligent cockpit, connected energy replenishment services and mobile Internet.	Coupled with the self-developed LEEA 3.0 (a "central computing platform + zone controllers" architecture), enable intelligent vehicle control, HMI and intelligent driving.	The cockpit system is developed in deep combination with intelligent driving capabilities and next-generation intelligent cockpit application scenarios, greatly improving vision, dynamic effects upgrade, and interaction efficiency. The intelligent voice is connected to XGPT, a foundation model developed by Xpeng.
	Time node	SOP in 2024	Launched in Dec. 2023	Launched in Nov. 2023
	Typical models	NT 3.0-based models, such as ET9 and the first model of Alps Alpine.	Li MEGA	Xpeng X9
	Development model	Independent R&D	Independent R&D	Independent R&D

Source: ResearchInChina

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Contact

Beijing Headquarters

TEL: 13718845418
Email: report@researchinchina.com

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659

Website: ResearchInChina

WeChat: Zuosiqiche

zuosiqiche