

# Analysis of Intelligent Networked Vehicle Technology

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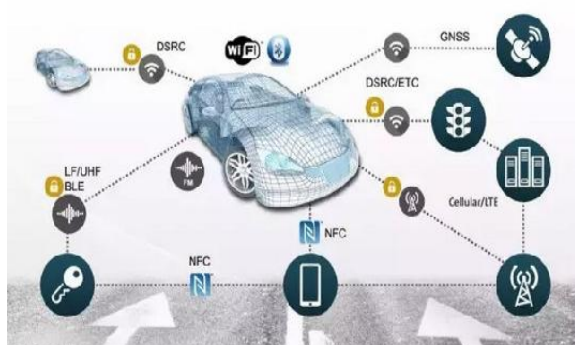
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**Abstract:** At present, with the development of Internet technology, intelligent networked technology based on the Internet of Things is on the rise. In this context, intelligent networked vehicles have emerged, and new energy vehicles can be intelligent and networked with traditional fuel cars both. This paper introduces the concept of intelligent networked vehicles and the current situation of domestic and foreign research, and analyzes the future development direction.

**Keywords:** Intelligent Networked Vehicles; Research Status; Development

## 1. Introduction

The rapid development of Internet of Things (IoT) technology in the context of the Internet has led to significant changes in many fields, including automobiles and transportation. With the development of driverless and autonomous driving technology, IoT technology has started to be used in automobiles, which has led to the emergence of smart connected cars. As shown in Figure 1.



**Figure 1. Schematic Diagram of the Smart Networked Vehicle**

## 2. The Concept of Intelligent Networked Vehicles

Smart connected car is a new type of car that can be operated by carrying advanced sensors, controllers, and actuators on the car, using the car's environment perception, intelligent

decision making, executive operation and other related functions, and realizing information interaction and sharing among people, vehicles, roads, and backstage through modern network and communication technologies[1], so as to achieve safe, comfortable, energy-saving, and efficient driving of the car, and eventually replace the driver to operate it. As shown in Figure 2 and 3.



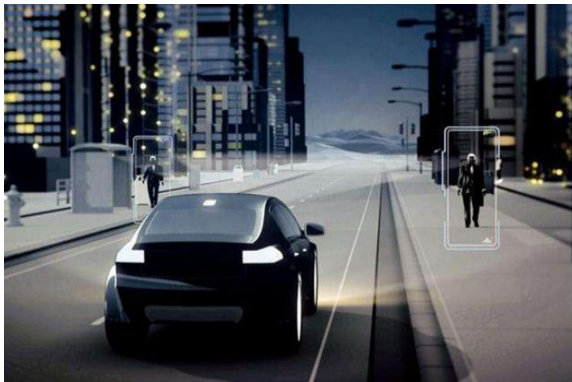
**Figure 2&3. Smart Internet-Connected Vehicle**

## 3. Characteristics of the Intelligent Networked Vehicle

Intelligent networked vehicles through the Internet of Things, vehicle networking technology can achieve real-time interaction of information between people - vehicles - roads - background, access to the driving status of vehicles around the road, road information and various traffic signal control status[2]. At the same time, it can monitor the surrounding pedestrians and non-motorized vehicles in real

time and predict the potential traffic accident hazards to truly realize intelligent transportation and safe transportation. As shown in Figure 4 and 5.

In addition, through the corresponding control strategy, the intelligent networked vehicle can also automatically adjust the following state to



**Figure 4&5. Common Features OF Smart Internet-Connected Vehicles**

achieve green wave passage, thus reducing the number of sharp acceleration and deceleration of the vehicle and the number of traffic light starts and stops[1], to achieve energy saving and emission reduction, as shown in Figure 6.



**Figure 6. Common Functions of Smart Connected Cars**

## 4. The Current Development of Intelligent Networked Vehicles

### 4.1 Status of Foreign Research

Around 1940, Germany and the United States successively put forward the concept of autonomous driving of cars and successfully launched driverless concept cars, but did not mass production. However, in the decades since then, the development of intelligent networked cars has been in the concept stage without substantial progress due to the constraints of communication and electronic information technologies. Later, with the development of Internet technology, intelligent networked vehicles entered a rapid development stage, especially in Japan, developed countries in Europe and America.

The U.S. has made research on smart connected vehicles a priority, guiding industry development through the development of national strategies and regulations. The Japanese government promotes the implementation of smart connected vehicle projects by formulating various related policies. Japan has now allowed driverless cars to be tested on the road. In 2017, the German Federal Ministry of Transport Commission submitted the world's first driverless guideline[3].

Subsequently, famous automobile manufacturers in Europe, the United States, Japan and other developed countries have started to develop smart connected cars as a strategic development goal. Until today, companies such as Mercedes-Benz, BMW, Audi, Toyota, Nissan, Honda, Ford, Lincoln and Tesla have launched smart connected cars and successfully mass-produced them.

### 4.2 Status of Domestic Research

In 2015, the establishment of the Intelligent Networked Vehicle Industry Technology Innovation Strategy Alliance marked the beginning of a new level in the field of intelligent networked vehicle technology in China.

To date, domestic independent brands like Great Wall, Changan, Geely, Chuanqi, BYD, Azera, Xiaopeng and Ideal have developed more mature intelligent networked car products and successfully mass-produced them, achieving a better market response.

## 5. Development Trend of Intelligent Networked Vehicles

The development of smart connected cars can be divided into two stages: primary and ultimate. At present, limited by the cost, the netlink cloud platform, the type, quantity and quality of radar, cameras and sensors[4], the development of intelligent netlinked cars is still in the primary stage, that is, they are equipped with driver assistance systems and various kinds of automatic driving systems, but they cannot completely realize unmanned driving. With the continuous maturity of radar and sensor technology and the continuous improvement of the Netlink cloud platform, the future smart netlinked cars will be completely driverless. It will not only free the driver's hands and feet, but also reduce the incidence of traffic accidents, and truly achieve intelligent network connection and intelligent transportation.

## 6. Conclusion

The development of intelligent networked vehicle technology can not only change the

mode of human transportation participation, but also promote the reform of the traditional automobile manufacturing industry, so that the future of automobiles will develop in the direction of safety, comfort, energy saving and intelligence. It effectively alleviates traffic pressure, environmental pollution and other problems, and brings a more comfortable travel experience for people.

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