The Fifth Generation of Mobile Communication Technology and Its Development Trend

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Abstract: With the passage of time, it has now entered the 18th century of the new century, and with the continuous improvement of China's policies, the country continues to develop, so that China's science and technology are constantly developing and progressing, the fourth generation of mobile Communication technology has been implemented for many years, and research work is working for the new fifth-generation mobile communication information technology, and has made some progress. The fifth-generation mobile information technology is mainly large-scale MIMO technology, direct communication technology between devices and five key technologies, such as dual-worker technology, the arrival of the 4G era has changed people's lifestyles, and the fifth-generation mobile communication technology will also cause some changes in China's production and lifestyle. Based on this, this paper analyzes and develops China's fifth-generation mobile communication technology in the future, analyzes the current research situation, discusses the development prospects, and puts forward corresponding opinions in this process. It is hoped that through the analysis of the crude penguin of this paper, China has a little discrimination on the road of the development of the fifth generation of mobile communication technology, promoting the development of communication technology of China.

1. Introduction

Around 1980, China's first generation mobile communication technology was discovered, and nowadays, mobile communication technology has begun to use the fourth generation, and the future is a new technology, a new starting point, 5G network will replace 4G to fill people's lives. The fifth generation of mobile communication technology will be a more complete intelligent system. The development of science and technology, the progress of the times, this mobile communication technology is initially estimated to be put into use in China in 2020, and can meet the fundamental requirements of the growing Internet. The future fifth-generation mobile communication technology will give China a better and smarter environment. Among them, such as: car networking, smart terminals, smart cities and so on. When the fifth generation of mobile communication technology is fully used, users in China will have a new experience. Based on this, this article analyzes and discusses the fifth generation mobile communication technology. In this process, it analyzes the characteristics of the fifth generation mobile communication and its key technologies, and the development trend of the fifth generation mobile communication technology. Explain, its main purpose is to make the fifth generation mobile communication technology better to the user experience, but also to meet the basic requirements of the future mobile Internet.

2. Characteristics of the fifth generation mobile communication technology

Nowadays, the largest bases of connected devices are mobile phones, tablets, laptops, etc., which are complicated. After 2020, the number of connected devices will increase substantially. It is estimated that the number will increase by 100 times, from 500 million to 50 billion, and the coverage will increase greatly. To some extent, The five generations of mobile communication technology will undergo earth-shaking changes compared with the fourth generation of mobile communication technology.

From the current point of view, the scale, traffic, and business volume of the fifth-generation mobile communication technology will be multiplied. Therefore, it can be inferred that in the future,

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the frequency multiplication technology will be highly valued. Compression technology, etc., will be further developed, so that the frequency application efficiency can be continuously improved and continuously improved.

Because the economic growth will lead to the deterioration of the environment, the first post-development governance is the consciousness of the former Chinese people, which has caused the deterioration of China's current environment. However, with the continuous improvement of national demand, the level of spiritual demand continues to rise, so that environmental protection, green, Words such as low-carbon and sustainable development have become the trend. The fifth-generation mobile communication technology and the environment also have a few meters of connection. It can be said that if the fifth-generation mobile communication technology wants to coexist with the times, it will conform to the development of the times. In the process of design, it is necessary to ensure the integration with the environment, and it is necessary to increase the intensity in terms of energy saving, and also to ensure the consumption of the network.

According to the information and literature that the author has found, the total amount of mobile data in China in 2010 will be one thousandth of that in 2020. That is to say, the emergence of the fifth generation of mobile communication technology will make mobile data traffic. It rises linearly and expands a thousand times. Therefore, the speed of the network is constantly accelerating, and its main purpose is to better adapt to the needs and use of users.

3. Key technologies in the fifth generation of mobile communication technology

In today's environment, people's requirements are higher and higher for data, but the spectrum resources are certain. Therefore, how to increase the efficiency of spectrum utilization is more important. In this process, antenna technology is used to improve the spectrum efficiency of the system. Effective techniques for transmission reliability are applied to a variety of wireless communication systems.

MIMO technology is the main technology of the fifth-generation mobile communication technology. It mainly places the transmitting antenna and the receiving antenna at the transmitting end and the receiving end, which greatly improves the quality of communication. The second MIMO technology is also called multi-input and multi-input. Output technology. Up to now, because resources are limited, it is very important to ensure space resources reasonably. MIMO technology is based on several or even multiple antennas for multiple transmissions, more acceptance, and expansion of communication channel capacity. Second, this technology is more obvious. Advantages, while the fifth generation of mobile communication technology is also known as the core technology.

Today's mobile communication systems work in the frequency band below 3 GHz, but the population is gradually increasing. In the process, the frequency band will be very tight and even cause band blockage. However, in the future, the fifth generation of mobile communication technology will use the high frequency band, which is also an embodiment of adapting to the development of the times and satisfying the needs of customers. This high frequency band will allow 3GHz to have a rich channel resource, which makes it crowded. The problem of congestion has been effectively solved, which has slowed down the problem of resource shortage. Therefore, it can be seen that the fifth-generation mobile communication technology tends to be perfect, can develop for a long time, and has a very close relationship with high-band transmission technology.

Full-duplex technology is also one of the more important technologies in the fifth generation of mobile communication. It is mainly a two-way communication technology for simultaneous, same-area, and co-channel, because wireless systems will impose some restrictions and interference on the received signals. , resulting in no way to carry out the same channel, simultaneous two-way communication. And in the actual theoretical process, full-duplex technology may also improve the spectrum utilization, so that the spectrum can be more flexible and used more effectively. It can be seen that in the future fifth-generation mobile communication technology, The full-duplex technology conference is a key development direction, so it takes a certain amount of effort in full-duplex technology. However, the dual-full-work technology still has certain deficiencies, and it

faces many challenges. Among them, because the power between the received signal and the transmitted signal is greatly different, which will generate sub-interference, and the full-duplex technology is in the process of development. Among them, what needs to be done is to solve the problem of self-interference. Only by solving the self-interference problem can we ensure the better use of full-duplex technology. In the past few years, China has been paying great attention to sub-interference and researching interference cancellation technology.

For China, wireless communication technology is mainly based on the base station, which is a central point, and this will have certain limitations, such as coverage and capacity, although relay technology and multi-point cooperation technology It can be expanded indefinitely to improve coverage, but because of the increasing number of users on the edge of the community, the network structure will become inflexible. Moreover, in the process of using the device, the communication technology can be directly used to solve the problem well, and data transmission is required between adjacent middle segments. This technology has a very fast transmission speed, no high delay, and The consumption is also low, and there are many characteristics in various aspects such as the utilization of space resources.

In the mobile communication network, because of the huge workload, a lot of manpower will be invested in the work process, which will lead to a huge expansion of the operator's cost. According to the relevant data, it can be seen that the labor cost invested by operators can basically reach 70% of the total cost. The rapid development of the network, nowadays, the use of human resources is not fully qualified for network work. Therefore, in order to make this problem better solved, the self-organizing network technology is gradually discovered. This technology is mainly introduced into the network through network intelligence, so that the relevant work expected in the network can be used normally.

In the current network laying process, the network self-organizing ability has gradually been recognized. In today's network laying, the network self-organizing ability has gradually been recognized as a necessary condition, and in the whole process, it also shows the most unique side. .

In the fifth generation of mobile communication networks, there will be more than one multi-layer wireless access including multi-standard heterogeneous networks. This structure network is more complicated, and its internal nodes are also very complicated, and this, It will make the network deployment, operation and maintenance Deng problem become more complicated. Therefore, the fifth generation mobile communication network needs to deploy the network as much as possible, and the operation and maintenance difficulty is reduced, thereby reducing the cost and improving the network operation and maintenance quality.

Because most of the fifth-generation mobile communication networks are based on large-scale MIMO wireless transmission technology, this will greatly increase the spatial freedom, which will make the antenna selection and node optimization more possibilities. , selective.

Because the network architecture of the fifth-generation mobile communication network has the advantages of low cost, low delay, and high maintenance efficiency, it can meet the demand for large-capacity and high-scale services. Nowadays, in many countries, it is mainly in the cloud architecture. , C-RAN conducted research. The cloud architecture can increase the efficiency of RF power, improve the efficiency of the spectrum, and minimize operating costs. The use of C-RAN is to use synergistic technology to reduce interference and improve spectrum efficiency. At the same time, it can better manage the intelligent networking dynamically, so as to better meet the requirements of the fifth generation mobile communication technology. .

4. The development trend of the fifth generation mobile communication technology

China will initially use the fifth-generation mobile communication technology in 2020, and in the process, the problems will be: system speed, reliability, compatibility and energy consumption. At present, the fifth generation Mobile communication technology is still under study. The main purpose is to make the fifth generation mobile communication technology better, and in the future, this technology will be continuously researched and used, and the spectrum application exists in it. Key technologies, system structures, etc. are also the main development directions for future

research.

Nowadays, the world mobile communication field has carried out large-scale research on the development of the fifth generation mobile communication, and in this process, China should plan and lay out the information technology industry and future development in China, and build an open research and development environment, and In the process, the fifth-generation information technology can better serve the commercial competition. Nowadays, China's fifth-generation mobile communication technology has begun to take shape. In the next 2020, it will be preliminarily released for trial use in developed cities in China.

5. Conclusion

According to the above remarks, in the era of digitization, the fifth-generation mobile communication technology has gradually become a development trend, and in this process, various technologies such as new network architecture technology and direct communication technology between devices are supported. In addition to the major guarantees for the development of information technology in the five generations, many countries continue to study and believe that the fifth generation of mobile communication technology can be better presented to everyone.

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