

INTERNET OF THINGS AND 5G

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Інтернет речей та 5G

Сьогодні світ знаходиться напередодні нової технологічної революції в бездротових мережах. Очікуваний запуск п'ятого покоління стільникового зв'язку тісно пов'язаний з розвитком не менше проривного явища останніх років - Інтернету речей (IoT). Обидві ці концепції здатні кардинально змінити бізнес і соціум, надавши їм унікальні можливості взаємодії «розумних» пристроїв.

Today, the world is on the eve of a new technological revolution in wireless networks. The expected launch of the fifth generation of cellular communications is closely linked to the development of at least a breakthrough in recent years - the Internet of Things (IoT). Both of these concepts are capable of dramatically changing business and society, giving them unique opportunities to interact with "smart" devices.

It is already becoming apparent that the IoT concept is capable of making revolutionary changes in business, society and the management system of virtually any technological process. The Internet of things, sooner or later, will unite all those involved in the manufacture and use of “smart” equipment into one global system. However, one of obstacles to do this is the lack of network capacity, which does not allow you to use all the features of IoT.

The use of the next generation of mobile communication - 5G, can play a major role in addressing this issue. Its main difference from the previous ones is the huge (over 10 Gb / s) data transfer rate, and, accordingly, the response speed. The signal delay in 5G will be reduced to only 1 ms, despite the fact that in 4G it is 10 ms, and in 3G – all 100 ms.

But in the context of using 5G IoT devices, speed is still not a determining factor. The minimum signal delay, reliability of the network and the ability to massively connect various “smart” devices with their specific tasks and the uninterrupted interaction between them come to the forefront.

Although it seems that the world has come close to implementing 5G, developers still have a lot of work to do. The global compilation and development of the IMT-2020 communication standard (officially named 5G technology) is entrusted to the International Telecommunication Union. At the country level, implementation will fall on the shoulders of both telecom operators and providers and the government. It will require the restructuring of the existing infrastructure for a new generation of communications.

At the same time, 5G will not immediately replace 3G and LTE, but will work in parallel so that gadgets can be able to switch between networks depending

on user's requests. Given the current level of technological equipment of mobile operators, at the first stage, the signal coverage of 5G networks will be even less than that of 3G and LTE. Most likely, at first the base stations will be located along the main routes, business centers of large cities, and as the new infrastructure develops, they will go to the "outback".

Customizing to new standards will have not only infrastructure, but gadgets and all other devices connected to the network. To fully work in 5G, they must become not only "smarter", but also more powerful. Another major challenge that 5G developers will have to solve is to reduce power consumption. This parameter is especially relevant for all kinds of sensors and other IoT devices. To solve it, in all likelihood, higher frequency ranges and the connection of mobile networks with WiFi technology will be used.

In any case, the new generation of 5G communications will become the basis for the digital transformation of business and society, and the effect of its implementation will go far beyond the IT sphere.

How will 5G and IoT change the world? Today, high-tech provides many additional features for various gadgets with access to the Internet. This function is unifying for IoT devices. Since the capabilities of the 5G network are truly huge, its appearance will definitely lead to a sharp increase in the number of "smart devices" and the evolution of existing ones. Simply put, the potential of the new communication standard will facilitate the connection to the network of everything that can be connected, from household appliances to aircraft. According to some estimates, the number of simultaneous connections can reach from 50 to 100 billion devices.

But the main difference between 5G and previous generations will be that it will carry out a new revolution in business processes. The entertainment sector will continue to occupy a large place in the life of society, but nevertheless, it will have to give way to advanced technologies, such as IoT and VR. Modern business has long lived in the "digital" category and just waited for the next round of productivity, so the high speed, short response time and low power consumption that 5G promises will ensure the mass implementation of robots and the Internet of things.

This, in turn, will "turn" many traditional areas of wireless networks, introducing hundreds of millions of online objects that perform a variety of functions. Actually, 5G will become a kind of framework around which the image of a new, digital economy will begin to form, actively using IoT technology, multiplying the already known advantages of the latter and bringing it closer to widespread use.

Currently, it is still not possible to fully integrate wireless devices into a single network. The main obstacle is the lack of a single standard for IoT, since different network protocols are now used in its different segments. But 5G technology, designed to work with heterogeneous traffic, can provide a variety of devices with different parameters, both familiar mobile and smart ones, such as sensors, regulators and other devices that can be connected to the Internet.

The social component of IoT .If the technical side of launching a new network is more or less clear, then the problem of restructuring thinking for the mass development of IoT will only have to be solved. Of course, the introduction of 5G will lead to a breakdown of existing standards in everyday life and business. And if the latter will have to adapt in one way or another in order to survive, the ordinary users are not yet ready for such changes. And, first of all, this concerns the availability of information about the capabilities of IoT systems and their proper use.

What is the use if disparate devices are closed on one or two systems or groups of people and perform a limited range of tasks? And if it is technically possible to solve this problem by integrating various platforms and services, for users, individual companies have already begun developing a special concept called the Social Internet of Things (Social IoT or SIoT).

In short, its essence is to create a service platform that combines people and devices into one global social network. The unlimited possibilities of such a network to receive and accumulate colossal streams of information connected to devices capable of independently generating content will allow you to design various services with almost any configuration, while obtaining the right products or solutions.

At first glance, all this may seem like something that goes beyond the ordinary user's understanding, but the whole point of Social IoT lies precisely in the mass availability of information about the capabilities of “smart” devices and the simplicity of its exchange.

In other words, the main task of Social IoT is to create a single information space that is accessible and understandable to any person.

Of course, a detailed description of Social IoT's ability to combine real-world devices with the virtual world requires separate material. Nevertheless, from what has already been said, it becomes clear that the number of tasks that can be solved through Social IoT after the launch of 5G is simply unlimited. And someone who wants to keep up to date and feel confident in the digital world of “smart” devices surrounding him should prepare now, because then you will have to spend time and money on training.

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