INTERNET OF THINGS IN TELECOMMUNICATIONS

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Abstract. *The convergence of the Internet of Things (IoT) and the telecommunications sector is giving rise to many new ideas for innovative creation. This combination makes it possible to do much more, including making homes smarter and helping cities better leverage technology. By connecting all kinds of devices to the Internet, telecommunications companies make their work easier, bring new ideas, and make customers happy. However, integration of IoT in communications faces various challenges, such as scalability issues, network security issues, and handling large amounts of data. To exploit the full potential of the Internet of Things, these obstacles must be overcome to have a significant impact on the development of digital infrastructure and services. Telecommunications companies are at the forefront of this technological advancement, paving the way to a more automated and efficient future. The Internet of Things has already begun to transform the communications landscape. The demand for faster digital networks is already increasing, whether or not big data is the driving factor.*

Keywords: internet, digital, scalability, network

Introduction

In a society where technology undergoes continuous evolution, the emergence of the Internet of Things (IoT) stands out as a particularly noteworthy development. IoT facilitates the interconnection of various devices, vehicles, and even entire urban areas, enabling seamless communication and collaboration among them. At the core of this transformative process, telecommunications enterprises are establishing the groundwork for a more intelligent and interconnected future. Data derived from the telecommunications sector substantiate the surging prevalence of the Internet of Things and its pragmatic application: several years prior, 71% of IT and telecommunications firms embraced IoT, with this proportion steadily climbing in present times [1].

Top uses
• Smart homes and offices

Smart home systems have existed for a considerable duration, albeit undergoing significant modifications and enhancements. Telcos are significantly contributing to their advancement. An integral part of this field includes the successful establishment of narrowband IoT networks and 5G. The amalgamation of IoT and mobile systems is imperative for the automation of solutions. The involvement of IoT and telecommunications is crucial in the management of various aspects in smart buildings, such as lighting, temperature, appliances, and security.
• Healthcare

This industry is actively adopting IoT solutions and devices, including innovative wearables and traditional medical equipment enriched with smart sensors and connected to a common network. Given this, telcos are building ties with healthcare institutions to ensure high-quality, fast and cost-effective connections. IoT helps telecom providers not only increase the reliability of remote medical services and the accuracy of diagnoses, but also streamline remote troubleshooting processes.

- Autonomous vehicles

Autonomous driving is being actively explored by numerous automakers around the world. Automotive infrastructure and connected vehicles are one of the areas that combine the capabilities of telecommunications, namely 5G and IoT technologies. To make vehicles fully autonomous, cars and their environment must be equipped with intelligent sensors. These sensors are designed to define and interpret conditions to ensure the car drives safely. LTE-V solutions that can currently be used to design IoT devices enable organized interaction and data exchange between cars.

- Protection of properties and facilities

This use case is probably relevant in every industry we can talk about. And the main goal of implementing IoT security solutions is to reduce the risk of damage or theft of expensive machines, devices and tools. IoT-powered smart cameras are among the most popular solutions used by businesses and businesses across various industries. By leveraging the benefits of Internet of Things networks, telecommunications companies are helping to limit unauthorized access to valuable assets, thereby improving the physical security of those objects and deterring potential threats.

- Smart cities

This is a relatively new concept based on a combination of narrowband 5G and IoT capabilities. Such projects have become possible thanks to collaboration between telecommunications companies, local governments and authorities. Under such projects, telecommunications companies provide the infrastructure necessary to establish connections between urban objects. IoT-based telecommunications solutions play a major role in data management and monitoring, enabling local authorities to make informed decisions that deliver the greatest value to businesses and society [2].

Challenges of implementing IoT in telecom

- Scalability

Every second, 127 devices are connected to the Internet for the first time. And as businesses add more connected devices, IoT scaling is exposed to a flood of new forms of data from devices like sensors, gateways, routers, and cameras . Therefore, digital players need to find a global connectivity solution that can keep up with network growth.

- Security

Any successful IoT deployment requires addressing traditional network security issues. The average IoT device is attacked within five minutes of going online, and 75% of devices infected in these attacks are routers. In this way, telecommunications service providers must manage device identity, personal data protection, access control, distributed denial of service (DDoS), authentication and other security issues and privacy, as security and confidentiality have become important concerns for users' personal data.

- Compatibility

The lack of standardization in the Internet of Things (IoT) poses a major challenge to its comprehensive and effective implementation: without uniform standards, device compliance will be significantly compromised. Different IoT devices developed by different manufacturers often run on different platforms and protocols, making their interaction with each other complex. Using middleware solutions to bridge communication gaps between different IoT devices and systems.

- Big data management

IoT devices are prolific data generators, producing a never-ending stream of data – a capability that is both challenging and very challenging. The volume of data generated by these devices is staggering and often results in a data deluge that is difficult to manage effectively.

- Availability

IoT is generally used to deliver information anywhere and at any time, based on user preferences. Therefore, the availability of physical IoT devices is crucial. One possible solution is to maintain redundant programs and hardware devices to balance the load in the event of an error [3].
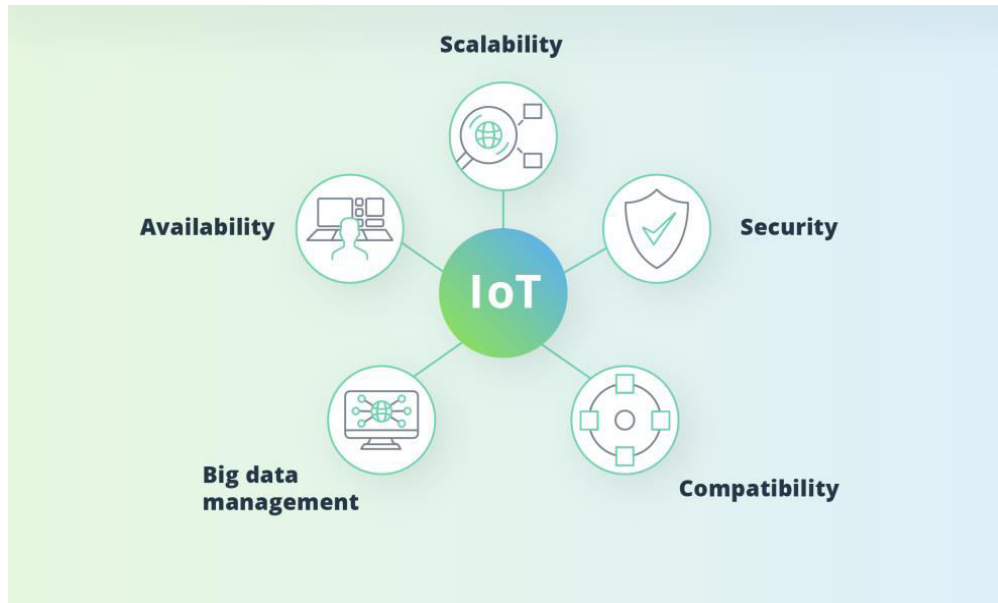
Figure 1. Categories of challenges
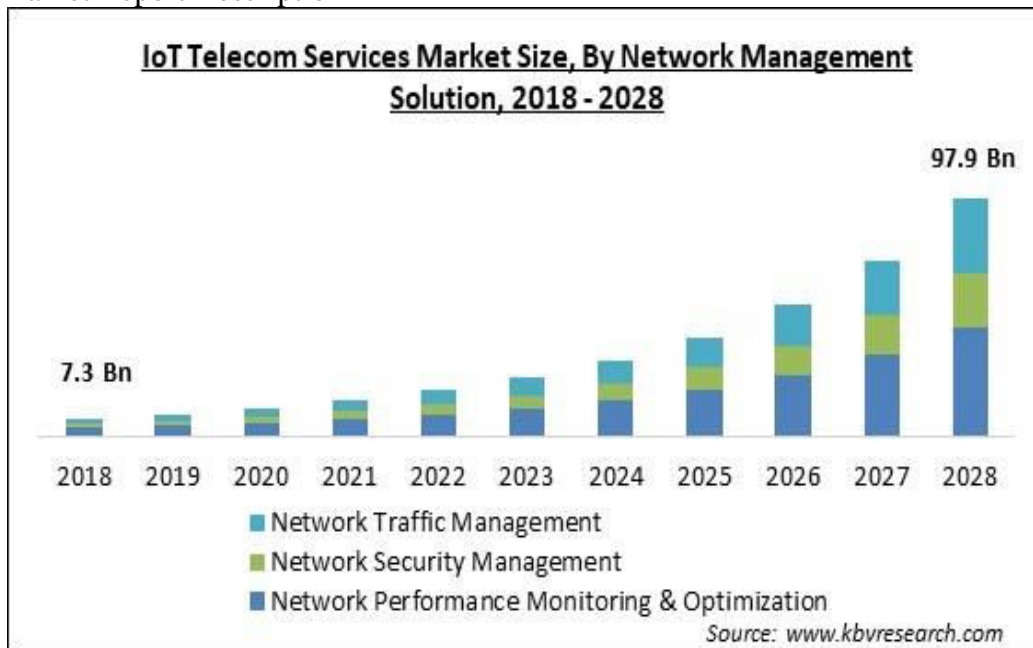
Market Report Description

Figure 2. Market Report

The Global IoT Telecom Services Market size is expected to reach $97.9 billion by 2028.

IoT offers telecom operators numerous opportunities and benefits, revolutionizing the telecom industry. The Internet of Things is expected to continue to transform the role of telecommunications service providers in facilitating communication between people and devices.

As a result, telecom companies need to develop new IoT solutions for their customers. The IoT telecommunications services market has grown significantly due to the widespread adoption of IoT devices and new technological developments. IoT platforms are used for a range of business objectives and use cases. It is therefore important to implement innovative, future-oriented and individual strategies.

The use of IoT-based initiatives is now crucial for telecommunications companies that wish to enter the digital age, gain a significant competitive advantage and take advantage of the opportunities offered by modern technology. Using Internet of Things technology, the real-time data collection method can be changed to improve performance, use fewer resources, and eliminate

human errors. Additionally, higher speed and bandwidth are the result of collaboration between telecom and IoT companies.

IoT protocols and 5G connections can transmit information from thousands of devices to large numbers of consumers without slowing communication speeds or limiting capacity. The IoT telecom services market is driven by these factors which are expected to increase in the future. The growth of the IoT telecom services market is primarily driven by the increasing adoption of technological advancements and innovations and IoT-powered smart security cameras [4].

Conclusion

The prospects for rapid implementation and large-scale development of IoT in the telecommunications sector are expected, undeniable and very promising. It is obvious that the full implementation of these innovations will take time: operators, developers and consumers must gain experience and practice in this direction. However, this is a long-term investment that will certainly pay off.

In the foreseeable future, telecom companies and startups are expected to promote their IoT services across various segments. The integration of the IoT and telecom sectors will become a strong competitive advantage that will optimize productivity, improve service quality, unlock additional opportunities, increase customer loyalty, increase profits and ensure the success of the telecom sector.

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