



CONFERENCE ARTICLE

THE CONCEPT AND DEVELOPMENT OF TELECOMMUNICATIONS SERVICES

Dilshodbek Toshpo'latov

PhD Student, Independent Researcher, University of World Economy and Diplomacy, Uzbekistan

ABSTRACT

This thesis presents the concept and essence of telecommunications services, their historical origins, and development trends. In addition, the author analyzes the telecommunications sector on the basis of international legal documents and the legislation of the Republic of Uzbekistan.

Keywords: Telecommunications, electromagnetic, optical, radio broadcasting, satellite, information, cable lines.

INTRODUCTION

In today's digital world, telecommunications services have become an integral part of human life. Their development profoundly affects all areas of society, economy, and culture. This sector is one of the core elements of modern society's infrastructure, and its continuous advancement serves as a driving force for economic growth, social progress, and technological innovation.

The concept of telecommunications services is encountered frequently today, yet our understanding does not always fully correspond to its essence. In simple terms, telecommunications mean communication at a distance. Communication—the process of exchanging information—is a necessary condition for the existence of living organisms, ecological systems, and human society. The development of society has always gone hand in hand with the progress of telecommunication technologies. Especially over the last decade, telecommunications technologies have been developing at an accelerated pace.

A telecommunications system is a set of technical means, organizational measures, and entities that enable connection to information, its transmission, and access to it. For the exchange of information, telecommunications systems make use of both natural and artificial environments. Together with the medium of data transmission, telecommunications systems form telecommunications networks. Examples of such networks include:

- postal communication;
- public telephone services;
- mobile telephone networks;
- telegraph communication;
- the internet—a global network of interconnected computer systems;
- wired radio broadcasting networks;
- cable radio broadcasting networks;
- television and radio broadcasting networks;
- departmental networks for state services, air, sea, and space navigation systems;

- energy systems;
- global rescue and safety networks [1; p. 4].

The telecommunications systems listed above typically operate in close cooperation and make use of shared resources to establish communication. To organize such cooperation, specialized bodies operate both at the national level and globally. These bodies determine the procedures for the use of shared resources, develop the rules (protocols) for interaction between telecommunication systems, and promote the advancement of promising telecommunication technologies.

If we briefly touch upon the history of telecommunications development, the modern evolution of long-distance communication began with the invention of the electric telegraph in 1844, followed by the widespread adoption of the telephone in 1876, and later the emergence of radio and television communication systems. Traditionally, information transmission was carried out through "terrestrial" means—transport systems, electric wire lines—which, however, could not guarantee high reliability and, most importantly, could not ensure transmission speed. With the invention of radio, radio waves began to be used in information transfer, which extended distances and improved the quality of transmission within a single continent. Nevertheless, intercontinental communication remained unstable and of average quality, as it was frequently subject to atmospheric disturbances. Furthermore, the use of radio-wave channels was strictly limited in capacity.

In 1956, the first long-distance intercontinental submarine telephone cable (TAT-1) was laid across the Atlantic Ocean. The new submarine cable technology provided high-quality continuous communication between continents, meeting the growing demand for intercontinental interaction. However, this technology still did not resolve the issue of information transmission speed.

The emergence of space technologies and artificial satellites in information transmission marked a new stage in global communications. The first satellite communication system, Telstar, was launched into an elliptical orbit in 1962. In 1963, the first satellite placed in a geostationary orbit at about 36,000 km above the equator enabled continuous communication over one-third of the Earth's surface. Today, satellite communication

systems—thanks to their flexibility, ability to transmit to multiple points, fundamentally new quality, and the possibility of transmitting any volume of information across vast distances almost instantaneously—are not only creating entirely new communication methods but are also actively employed by traditional communication service providers that once relied solely on terrestrial infrastructure. Satellite communication systems have become effective, open to all, and a truly global telecommunications network, connecting objects located at great distances from one another [2].

Divergent expert opinions and approaches have so far hindered the establishment of a universally recognized legal definition of telecommunications. Even the definitions found in international legal instruments are not sufficiently precise, leading to potential confusion in scholarly discourse.

For example, in the revised 1982 International Telecommunication Convention, Annex 2 defines “telecommunication” as “any transmission, broadcasting, or reception of signs, signals, writings, images, sounds, or intelligence of any nature by wire, radio, optical, or other electromagnetic systems” [3, p. 150]. In contrast, the 1994 Annex on Telecommunications to the General Agreement on Trade in Services (GATS) adopted a broader formulation, defining it simply as “the transmission and reception of signals by any electromagnetic means” [4]. The reason for this approach lies in the rapid pace of transformation and modernization of communication tools, making it virtually impossible to provide an exhaustive and final listing.

According to Article 3 of the Law of the Republic of Uzbekistan “On Telecommunications” adopted on December 28, 2024, telecommunications are defined as the transmission, reception, and processing of information in the form of signs, texts, images, sounds, videos, or other types of signals through wired, radio, optical, or other electromagnetic systems. Telecommunications facilities include telecommunications equipment, installations, cable lines, and systems that enable their operation [5].

In legal literature, some authors, relying on definitions provided in international conventions, interpret telecommunications only as the technical means of ensuring communication and the functioning of these systems. For example, Professor Fr. Lyall represents any communication by the following scheme: signal creation — encoding — transmission — reception — decoding. From this perspective, legal regulation applies only to the technical aspects of the process, such as operator activities and the harmonization of technical standards [6]. However, this concept does not take into account the modern stage of development of communication technologies. Today, telecommunications have penetrated so deeply into almost all spheres of society and state activity that it would be incorrect to regard them merely as auxiliary tools. Moreover, in recent years it has become evident that the main “object” of telecommunication is information itself.

Professor Isabella Diederiks-Verschoor, President of the International Institute of Space Law, defined telecommunications as “the process of exchanging information between individuals through a system of common symbols, signs, or gestures.” In essence, her view corresponds to the concept that telecommunications encompass not only the technical means of creating and transmitting information but also the very process itself [7].

Thus, telecommunications are a complex and multifaceted phenomenon that includes political, economic, social, and, of course, legal dimensions, and they possess their own unique history of development.

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