

# Features of agreement of a land area for placing a linear object when connecting telecommunications networks

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**Abstract.** The modern world is impossible without telecommunication technologies, which blur state borders and the distance between people, make mobile and video communication available and allow solving many problems in the field of management, education, and commerce. Each person encounters them on a daily basis, sharing phone calls, checking emails or buying goods from online stores. The general concept of information and communication technologies includes a set of methods, processes and devices that allow you to receive, collect, accumulate, store, process and transmit information encoded in digital form or existing in analog form. The actual problem today is the limited number of land plots for the construction of linear facilities, namely telecommunication networks, and it is one of the main problems in the city due to the rather high density of buildings.

## 1 Introduction

The last two decades of the past and the next century can be safely called the beginning of the information technology era. A striking manifestation of this is the unprecedented progress in speed and results in the creation of new methods and means of telecommunications. The rapid development of technologies for the production of communication systems and means with practically unlimited bandwidth and transmission range, their massive use, led to the formation of a global information society [1]. Telecommunications today is one of the fastest growing knowledge-intensive and high-tech sectors of the world economy. When transmitting information, the strategic direction is the use of additional methods of data transmission and telecommunication nodes due to the technological development of optical transmission methods and wavelength division methods, the transition to all-optical networks, as well as the expansion of the use of optical transmission methods, up to user terminals [2]. Communication means, conditioned by the physiological capabilities of a person, cannot solve the problem of transmitting large amounts of information over long distances. To solve these problems, man has created technical means of communication - electronic devices that generate and restore electrical signals for this purpose. The practice of communication between people shows that the most convenient for transmitting a unit of information is a message, and the physical

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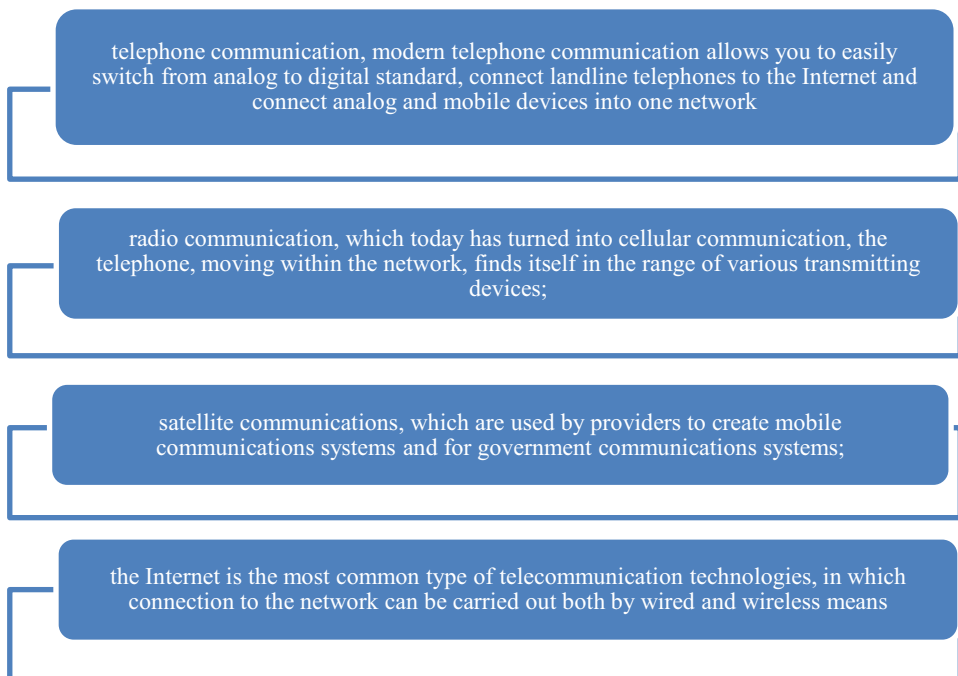
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process that displays the transmitted message is called a signal. The transmission and reception of electrical signals carrying messages of any kind is telecommunications [3,4].

Each generation tends to develop new technical means, improve the system of accounting, processing, transmission and storage of data. Telegraph, telephone, teletype, radio were recognized as the first telecommunication means. The middle of the 19 th century was marked by the massive use of satellite communications, computers, and a computer network [5,6]. As a result, this had a positive effect on the development of new telecommunication technologies. In a narrower sense, telecommunication technologies are understood as a set of software and hardware that allow establishing communication without using wires and transmitting information packets, including audio and video information. The key sectors of telecommunications in our modern world include the Internet, data transmission networks, including fiber-optic, wireless, mobile communications, digital and analog television, satellite communications systems, and telephone communications [7].

## 2 Main part

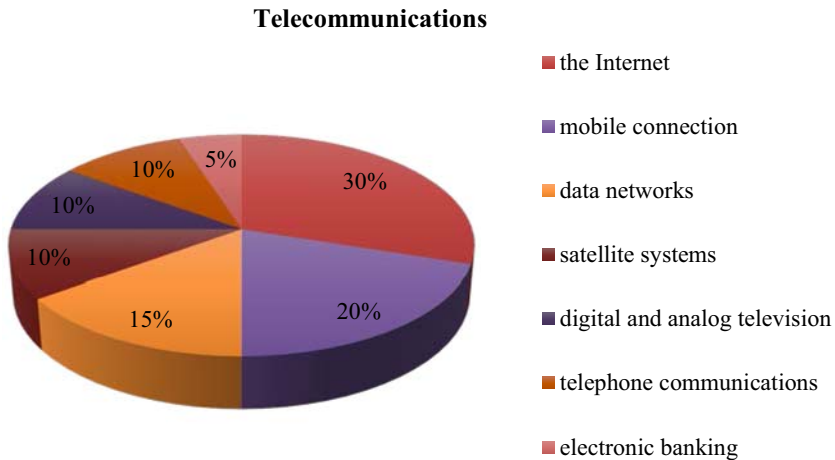
Telecommunication technologies can be considered as services provided by providers of various levels [8]. According to this principle, the following types of telecommunication technologies can be distinguished (Figure 1).



**Fig. 1.** Telecommunication technology type.

Telecommunication technologies today are mainly used to organize communication systems. Communication systems are of practical importance, with the help of these technologies it is possible to achieve significantly more important goals, among which - the creation of distance learning systems; providing low-cost voice telephony; creation of information systems of enterprises and their integration into a complex, which allows to optimize management; building banking networks; conducting electronic auctions and

tenders to ensure public procurement; communication of remote subjects; for online commerce; implementation of remote control in the public and private spheres [9].

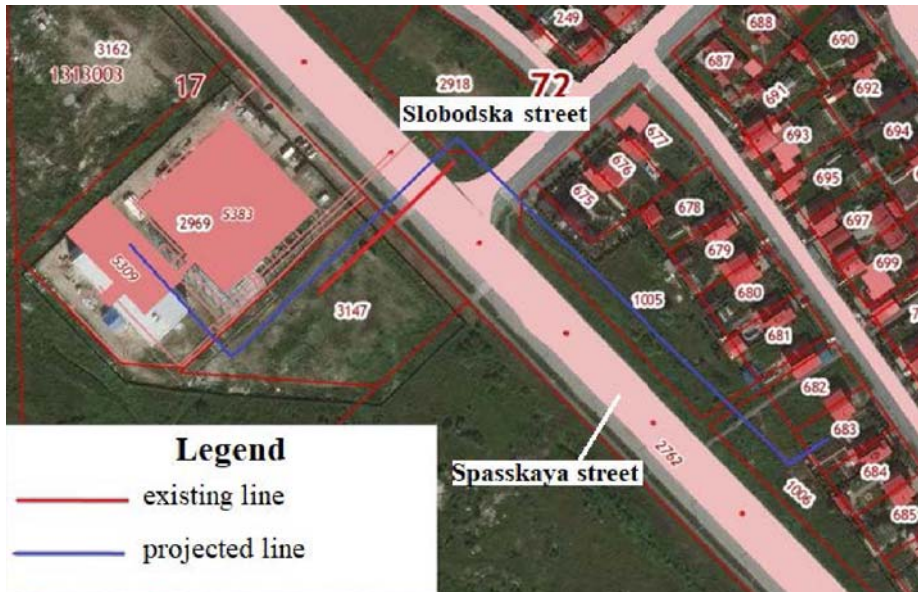


**Fig. 2.** Essential telecommunication technologies.

The range of possibilities for using telecommunication technologies is expanding every day (Figure 2). It is difficult to say what exactly will be proposed tomorrow in this area to make communication more accessible and production processes easier. The need for professionals capable of skilled development, design, construction and maintenance in the field of telecommunications is constantly growing. The policy of national telecommunications companies, economic position and geographic location are factors influencing the choice of technology for the transfer of information in the banking system [10]. Modern banking communications allow for interbank payments with an electronic signature, document encryption. Transition of telecommunication systems to private satellite channels will allow modernizing the banking system. In this case, it is beneficial to use virtual private networks that lease public networks. The sphere of providing telecommunication services is marked by the largest suppliers of wire, cellular communications, Internet providers, and cable television. The industry leaders are MTS, Rostelecom, Megafon, TransTeleCom, Er-Telecom, Interregional Transitelecom, and Space Communication [11,12].

The telecommunications market is at the forefront of technological development and is one of the fastest growing in the world. At the moment, the telecommunications system is developing very rapidly and its main task is to enter the Russian communication system as an equal partner in the world system in order to provide urban, intercity and international communication services, as well as the Internet, data transmission and mobile communications. The purpose of the work is to consider the features of the approval of a land plot for the placement of a linear facility when connecting telecommunication networks [13]. Currently, there is an increased demand for infocommunication services in the Komarovmicrodistrict, which cannot be satisfied due to the lack of an appropriate network infrastructure. The relevance of the work is due to the need to use modern network technologies to meet the infocommunication demand of the residents of the Komarovmicrodistrict of Tyumen, which will make it possible to generate income through the provision of a wide range of services based on a modern efficient network infrastructure [14,15]. Coordination of a land plot for placing a linear facility, connecting a telecommunications network, located at Tyumen, Komarovo district, st.Spasskaya 6 (Figure

3). The Komarovomicrodistrict belongs to the public and business zone, which is surrounded by a zone of green areas of common use and a an individual building area.



**Fig. 3.** Situational plan of the location of the projected object on the public cadastral map.

The length of overhead communication lines in this area is prohibited, so the customer, the sports complex "Academy of Sports", turned to the company "Rostelecom" for the construction of underground cable line structures. Rostelecom is a Russian company providing telecommunications services for local, long distance and international telephone communications, Internet access, digital television and cellular communications [16]. The mission of the company is to provide people with high-quality and convenient digital services for a comfortable life and effective business. The existing linear object is located on the territory of the land plot with cadastral number 72: 17: 1313003: 3147. The distance to the nearest switchboard, where telecommunication works will be carried out, is located at Slobodskoy 1 proezd, building 10. The projected telecommunications work affects the territory on the street. Spasskaya, st.Slobodskaya and five land plots with cadastral number 72: 17: 1313003: 3147, 72: 17: 1313003: 2918, 72: 17: 1313003: 1005, 72: 17: 1313003: 1006, 72: 17: 1313003: 683. To create a linear facility for the placement of telecommunications, they develop a scheme for performing work, calculate a project for future investments. If the project is repaid, then the concluded contract and the application for carrying out telecommunication works are transferred to the contractor. The contractor with an official letter and a drawn up project sends a request to the Department of Land Relations and Urban Planning for approval of the land plot. In the Department of Land Relations and Urban Planning, the approval of the work is carried out within two months [17].

Registration of a land plot for the construction of a linear telecommunications facility is carried out in the following order: a preliminary lease agreement is drawn up, which indicates the area of the land plot, preparation of a land plot plan, formation of a land plot for operation, determination of the cost of rent, conclusion of a lease agreement, provision of a land plot for lease [18]. After the conclusion of the contract for easement (lease), the application for telecommunications work from the client is transferred to the technical and commercial unit, the application is transferred to the contractor; the contractor submits the documents for consideration to the Department of Land Relations and Urban Planning [19].

Work on the placement of a linear object for connecting a telecommunication network is carried out by an open method, by the method of horizontal directional drilling, the placement of the object under construction in parallel with the existing object of engineering infrastructure, by crossing existing communications and natural obstacles "through the air". In this way, the lines are protected from unauthorized persons and bad weather, which gives a guarantee of uninterrupted operation [20,21].

The construction of telecommunication works takes most of the time for the approval of land works, long-term consideration and approval of the application in the Department of Land Relations and Urban Planning. The problem of placing linear objects has always been and remains one of the most difficult issues in the Urban planning and land legislation of the Russian Federation [22]. The lack of effective and universal legal regulation significantly complicates urban planning and land and property relations. Today, the main problem in the placement of linear objects is the lack of a single regulatory and legal complex for carrying out these works.

Thus, today easements do not find proper application, and one of the reasons hindering the process of registration of both private and public easements is the rather cumbersome procedure established by the Law on State Registration of Rights to Real Estate and Transactions with It and the absence of a registered property rights to land plots for which an easement is supposed to be established [23]. The problem of registration of rights to land plots occupied by linear objects is very urgent and requires an early solution. To solve these problems, it is necessary to amend the regulation on the public easement of the Tyumen region in terms of the possibility of establishing a public easement for the construction of electrical networks; to amend the law on state registration in terms of reducing the time required for registration of public easements, to amend the Administrative Regulations of the city of Tyumen, in terms of changing the terms for issuing a permit for land work. This will significantly reduce the construction and design time for linear facilities - cable power transmission lines in the city, improve the investment climate of Tyumen, increase the availability of electricity transmission services to consumers and supply the appropriate resource; to reduce the cost of registration of linear objects - cable power lines. Today, the modern telecommunications market continues to show signs of saturation, but business operators are looking for new niches for further development. One of the main directions is the provision of comprehensive services at the intersection of information technology and telecommunications.

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