Zafarbek Ergashov
Tashkent State University of Law Faculty of International Law and Comparative Legislation, fourth-year student
zafarbekergashov151025@gmail.com

LEGAL FRAMEWORK FOR THE IMPLEMENTATION OF 5G TECHNOLOGY

Abstract: The article explores the legal foundations for the implementation of 5G technology in Uzbekistan, focusing on the regulatory and infrastructural frameworks necessary for its deployment. Key elements such as spectrum allocation, infrastructure sharing, data protection, and cybersecurity are discussed in detail. The article examines existing telecommunications laws and recent policy changes, including the "Digital Uzbekistan – 2030" strategy, which lays the groundwork for 5G rollout across the country. The role of public-private partnerships and the impact of 5G on digital transformation, smart services, and IoT applications are also highlighted.

Keywords: 5G technology, Uzbekistan, legal framework, telecommunications law, spectrum allocation, infrastructure sharing, Digital Uzbekistan, cybersecurity, data protection, public-private partnerships, IoT, mobile broadband.

INTRODUCTION

The implementation of 5G technology in Uzbekistan is set to transform the country's digital landscape. As uztelecom.uz, the national telecommunications operator, spearheads this technological revolution, it brings unprecedented opportunities for enhanced mobile Internet, faster data speeds, and improved connectivity. This advancement aligns with the Digital Uzbekistan initiative, promising to boost e-government services, smart manufacturing, and the Internet of Things (IoT).

Navigating the legal foundations for 5G implementation in Uzbekistan involves understanding key regulations and policies. These include the Law on Telecommunications (2018), the Law on Information Security (2021), and the Law on Personal Data (2019). The article will explore spectrum allocation, infrastructure development, and cybersecurity considerations. It will also examine the transition from non-standalone 5G networks to 5G-Advanced technology, highlighting the crucial role of mobile broadband in shaping Uzbekistan's digital future.

OVERVIEW OF 5G TECHNOLOGY AND ITS POTENTIAL IN UZBEKISTAN

Definition and benefits of 5G

5G, the fifth generation of mobile telecommunications, represents a significant leap forward in wireless technology. Building upon its predecessor 4G (LTE), 5G enables substantially faster data transmission with minimal latency, opening up entirely new application areas . This advanced communication standard goes beyond digital telephony and fast mobile internet, addressing the increasing global data traffic driven by streaming, big data, and the Internet of Things (IoT).

The benefits of 5G technology are numerous and far-reaching. It promises to set new standards in terms of data speed, network capacity, response time, reliability, and data security, enabling real-time data communication for the first time . Theoretically, 5G technology can achieve data

rates of up to 20 Gbit/s, making it up to 20 times faster than the previous generation. This remarkable speed enhancement means that transferring a highresolution movie at peak download speeds could take just six seconds, compared to seven minutes with 4G.

One of the most significant advantages of 5G is its ultra-low latency, with round-trip data transmission taking less than five milliseconds. This minimal delay opens up possibilities for remote control of devices in near-real time, making it ideal for applications in agriculture, manufacturing, and logistics. Moreover, 5G is expected to deliver up to 1,000 times more capacity than 4G, creating fertile ground for IoT development.

Current state of telecommunications in Uzbekistan

Uzbekistan has been making significant strides in improving its telecommunications infrastructure. As of January 2022, the total length of fiber-optic communication lines in the country reached 118 thousand kilometers, marking a nearly six-fold increase since 2017. This expansion has greatly enhanced the country's digital connectivity, with the overall bandwidth speed of international networks increasing more than 28-fold – from 64.2 to 1800 Gbit/s.

The mobile communication sector in Uzbekistan has also seen remarkable growth. By the end of 2022, the number of mobile communication subscribers reached 31.3 million, with mobile broadband Internet coverage extending to 98 percent of the population. The country has installed 8,300 new mobile stations in 2022 alone, bringing the total to 54,200 units and achieving a 99 percent mobile communication coverage across the republic.

Government's vision for digital transformation

The government of Uzbekistan has prioritized digitalization and the development of information and communication technologies (ICT) since the early 2000s. This commitment is evident in the implementation of several key initiatives, including the integrated program of National Information and Communication System Development 2013-2020, the National Action Strategy on Five Priority Development Areas 2017-2021, and the "Digital Uzbekistan – 2030" Strategy.

These efforts have yielded tangible results. According to the State Committee of the Republic of Uzbekistan on Statistics, the gross value added in the field of Information and communication increased more than twofold during 2017-2021, reaching 11.8 trillion UZS (over 1 billion US dollars) in 2021. The government's vision extends to the development of e-government services, with 56% of public services now provided through the portal of interactive public services as of January 2022.

The adoption of the "Digital Uzbekistan – 2030" Strategy and its implementation roadmap in 2020 has created a legal basis for the transition to a digital economy. This strategy encompasses priority areas such as the development of digital infrastructure, e-government, the national digital technology market, and education and advanced training in the field of information technology. As Uzbekistan continues to invest in its digital future, the introduction of 5G technology promises to play a crucial role in realizing the country's vision for comprehensive digital transformation.

LEGAL FRAMWEWORK FOR 5G IMPLEMENTATION

Existing telecommunications laws

The legal landscape for telecommunications in Uzbekistan is primarily governed by the Law on Telecommunications, which was recently adopted in a new edition. This law aims to provide conveniences to both the population and entities operating in the telecommunications sector. One significant change is that the construction of buildings and structures now requires modern telecommunications infrastructure, addressing previous challenges faced by residents.

The law also allows operators to share telecommunications infrastructure facilities, promoting efficiency and cost-effectiveness in network deployment. Furthermore, it has simplified the licensing process for certain services. For instance, a license is no longer required to operate in the telecommunications sector when providing services through applications of banks, payment systems, payment organizations, or e-commerce platforms.

Recent policy changes to enable 5G

Uzbekistan has been taking steps to facilitate the implementation of 5G technology. The "Digital Uzbekistan – 2030" Strategy, adopted in 2020, has created a legal basis for the transition to a digital economy. This strategy encompasses priority areas such as the development of digital infrastructure, e-government, and the national digital technology market.

In line with this strategy, Uzbekistan has begun the process of increasing mobile Internet speeds and introducing 5G technology throughout the country. As part of this initiative, more than 3,000 existing base stations across Uzbekistan will be modernized using the latest technologies, and more than 2,000 new base stations will be built and put into operation.

The government has also outlined key tasks in the Uzbekistan 2030 strategy, which includes systematic work to cover the city of Tashkent, the Republic of Karakalpakstan, and regional centers with a fifth-generation (5G) communications network. Progress has already been made, with Tashkent and Samarkand fully covered by 5G and provided with high-speed LTE networks in 2023.

Regulatory bodies overseeing 5G rollout

The primary regulatory body overseeing the telecommunications sector, including the 5G rollout, is the Ministry for the Development of Digital Technologies of the Republic of Uzbekistan. This ministry serves as the licensing authority in the field of telecommunications and is responsible for policymaking, regulation, and content provision.

1. The ministry's responsibilities include:
2. Implementing a unified state policy on information technologies and communications
3. Developing and modernizing telecommunications infrastructure
4. Ensuring the implementation of state programs on "e-government"
5. Coordinating the development of the national segment of the Internet
6. Implementing measures to ensure information security

Another important regulatory body is Uzkomnazorat, created in November 2018 to oversee compliance with ICT-related legislation.

The licensing process for telecommunications activities is carried out in accordance with the Law of the Republic of Uzbekistan 'On licensing, permitting and notification procedures' and the Resolution of the Cabinet of Ministers dated February 21, 2022 №80. The Department of Licensing and Analysis of the Execution of License Agreements within the Ministry for Digital

Technologies handles the acceptance of applications for obtaining licenses, organizes meetings of expert groups on licensing issues, and registers licenses.

As Uzbekistan continues to develop its 5G infrastructure, these regulatory bodies will play a crucial role in ensuring the smooth implementation of the technology while adhering to legal and security requirements. The legal framework and recent policy changes demonstrate Uzbekistan's commitment to embracing 5G technology and its potential to transform the country's digital landscape.

SPECTRUM ALLOCATION AND LICENSING

Available spectrum bands for 5G

The implementation of 5G technology in Uzbekistan requires careful allocation of spectrum bands to ensure optimal performance and coverage. While specific details about Uzbekistan's spectrum allocation for 5G are limited, the country is likely to follow international trends in spectrum usage for 5G networks.

Globally, 5G networks typically operate on three main spectrum bands: low-band (sub-1 GHz), mid-band (1-6 GHz), and high-band (mmWave). Each band offers different characteristics in terms of coverage and capacity. The lowband provides extensive coverage but lower speeds, mid-band offers a balance of coverage and capacity, while high-band delivers extremely high speeds but limited coverage.

In many countries, the 3.5 GHz band has emerged as a popular choice for initial 5G deployments due to its balance of coverage and capacity. For instance, in Kazakhstan, a neighboring country, three lots of 100 MHz each around 3.5 GHz were planned for auction in May 2022. Uzbekistan may consider similar allocations to align with regional trends and ensure compatibility with global 5G ecosystems.

Licensing process for operators

The licensing process for telecommunications operators in Uzbekistan is overseen by the Ministry for the Development of Digital Technologies of the Republic of Uzbekistan. This process is governed by the Law of the Republic of Uzbekistan 'On licensing, permitting and notification procedures' and the Resolution of the Cabinet of Ministers dated February 21, 2022 №80.

For 5G spectrum licensing, Uzbekistan may adopt a competitive auction process, similar to other countries in the region. The decision to hold such auctions would likely be made by the Interdepartmental Coordinating Commission for Improving and Increasing the Efficiency of Information Activities and Data Transfer, based on proposals from the Ministry for Digital Technologies.

Potential licensees would need to submit detailed applications, including:

1. Proof of payment for tender proposal consideration
2. Evidence of a deposit made
3. Documentation of employee qualifications
4. A detailed broadcasting concept (for media-related licenses)
5. Technical compliance certifications
6. Proof of equipment ownership or lease agreements

The licensing authority typically makes decisions within 10 working days, or 25 working days if coordination with the Interdepartmental Coordination Commission is required.

Challenges in spectrum reallocation

As Uzbekistan prepares for 5G implementation, it faces several challenges in spectrum reallocation:

1. Existing spectrum usage: Current spectrum bands may be occupied by other services, necessitating careful planning for transition or sharing arrangements.
2. Harmonization with global standards: Aligning spectrum allocations with international norms is crucial for ensuring device compatibility and roaming capabilities.
3. Balancing different spectrum bands: Allocating appropriate amounts of low, mid, and high-band spectrum to achieve the right mix of coverage and capacity.
4. Infrastructure development: Uztelecom uz, the national telecommunications operator, has been working on modernizing its network infrastructure. In 2023, the company laid over 60,000 kilometers of fiber-optic communication lines, increasing the total length to more than 227,000 kilometers. This extensive fiber network will be crucial in supporting the backhaul requirements of 5G networks.
5. Regulatory framework: Developing a comprehensive regulatory framework that addresses issues such as spectrum sharing, infrastructure sharing, and quality of service requirements for 5G networks.
6. Rural coverage: Ensuring that spectrum allocation and licensing processes promote coverage in rural areas, not just urban centers.

As Uzbekistan navigates these challenges, it can look to experiences of other countries in the region. For instance, the successful deployment of 5G in Tashkent and Samarkand by Uztelecom.uz provides valuable insights for expanding coverage to other parts of the country.

INFRASTRUCTURE DEVELOPMENT AND SHARING REGULATIONS

Rules for 5G network deployment

The deployment of 5G networks in Uzbekistan has a significant impact on the country's digital landscape. Uztelecom uz, the national telecommunications operator, has been at the forefront of this technological revolution. The company has made substantial progress in expanding 5G coverage across the country, with a focus on major urban centers.

In March 2023, Uztelecom uz initiated a large-scale project to increase mobile Internet speeds and introduce 5G technology throughout Uzbekistan. This ambitious undertaking involves the modernization of more than 3,000 existing base stations using cutting-edge technologies, as well as the construction and activation of over 2,000 new base stations. This extensive infrastructure upgrade has a direct influence on the quality of mobile Internet services, enabling subscribers to enjoy fifth-generation speeds comfortably.

The first stage of the 5G rollout focused on providing full coverage in Tashkent, the capital city, along with partial coverage in regional centers. By September 2023, Uztelecom uz had successfully launched 5G networks in all regional centers of the republic. This rapid expansion demonstrates the company's commitment to modernizing Uzbekistan's telecommunication infrastructure and bringing the benefits of 5G technology to a wider population.

Infrastructure sharing policies

To facilitate the efficient deployment of 5G networks, Uzbekistan has implemented infrastructure sharing policies. These policies aim to reduce costs, accelerate network rollout, and promote competition in the telecommunications sector. The Law on Telecommunications, recently adopted in a new edition, allows operators to share telecommunications infrastructure facilities. This provision enables more efficient use of resources and helps overcome challenges in network deployment, particularly in rural and hard-to-reach areas.

The infrastructure sharing policies have had a positive influence on the expansion of fiber-optic communication lines across the country. By 2023, the government aims to increase the capacity of the international data transmission channel by 3.5 times. This expansion includes the construction of 150,000 kilometers of fiber-optic communication lines, which will extend to all settlements in Uzbekistan. The goal is to provide at least 80% of households with broadband wired Internet access, laying the foundation for widespread 5G adoption.

Public-private partnerships for 5G buildout

Uzbekistan has recognized the importance of public-private partnerships (PPPs) in accelerating the development of its telecommunications infrastructure, including 5G networks. The country has implemented a comprehensive PPP strategy encompassing 63 diverse projects across various sectors. While not all of these projects are specifically focused on 5G, they contribute to the overall modernization of Uzbekistan's infrastructure, which has a direct influence on the successful implementation of 5G technology.

The Ministry of Energy of Uzbekistan has been actively engaging with global investors to promote PPP projects in the country's electricity sector. Although these projects primarily focus on energy infrastructure, they have an indirect impact on 5G deployment by ensuring a stable power supply for telecommunications equipment.

To streamline the management and implementation of PPP projects, the Ministry of Economy and Finance is establishing a 'Center for Public-Private Partnership Projects'. This center will play a crucial role in coordinating funds, managing stakeholder engagement, and ensuring compliance with both domestic and international standards for infrastructure development, including those related to 5G networks.

The collaboration between the public and private sectors in Uzbekistan's 5G buildout has a significant influence on the country's digital transformation goals. By leveraging private capital and expertise, Uzbekistan aims to accelerate the deployment of 5G infrastructure and enhance the quality of telecommunications services across the country.

Data Protection and Cybersecurity Considerations

As Uzbekistan embraces 5G technology and digital transformation, data protection and cybersecurity have become paramount concerns. The implementation of 5G networks brings unprecedented opportunities for enhanced connectivity and innovation, but it also introduces new challenges in safeguarding personal information and critical infrastructure.

Privacy laws applicable to 5G networks

In 2019, Uzbekistan adopted the Law on Personal Data to regulate relations in the field of personal data protection. This law applies to the processing and protection of personal data, regardless of the means used, including information technology. It establishes fundamental

principles such as the observance of constitutional rights and freedoms, legitimacy of data processing purposes, and confidentiality and security of personal data.

The law has been further strengthened with the introduction of Article 27-1, which requires social networks and Internet services to store the personal data of Uzbek citizens on servers located within the country. This data localization requirement extends to major platforms such as Facebook, Google, and Telegram, aiming to enhance the security of personal data storage and boost the country's economic potential.

Cybersecurity requirements for operators

The adoption of the Law "On Cybersecurity" in April 2022 marked a significant milestone in Uzbekistan's efforts to enhance its digital security framework. This legislation, which came into force on July 17, 2022, outlines specific obligations for operators of critical facilities, including those in public administration, military, and energy sectors.

Key requirements for these operators include:

- Implementing cybersecurity measures set by the regulator
- Ensuring continuous operation of critical facilities
- Storing data with backup copies for at least three months
- Certifying hardware, firmware, and software
- Installing monitoring systems to prevent cyber-attacks and respond to incidents
- Reporting incidents and cybercrimes promptly

The State Security Service of Uzbekistan acts as the primary regulator in the cybersecurity domain, overseeing the implementation of these requirements and coordinating responses to potential threats.

Cross-border data flow regulations

Cross-border transfer of personal data is addressed in the Law on Personal Data. The law stipulates that such transfers can only be carried out to foreign states that ensure adequate protection of the rights of personal data subjects. However, cross-border transfers may be prohibited or restricted to protect the constitutional order, morality, health, rights, and legitimate interests of Uzbek citizens, as well as to ensure national defense and state security.

The implementation of data localization requirements has sparked debates about their potential impact on innovation and international competitiveness. While proponents argue that these measures strengthen data security and boost the local IT industry, critics point out potential drawbacks such as increased costs for businesses and potential limitations on consumer choice.

As Uzbekistan continues to develop its 5G infrastructure and digital economy, striking a balance between data protection, cybersecurity, and innovation remains a critical challenge. The government's efforts to create a comprehensive legal framework demonstrate its commitment to addressing these issues while fostering the growth of the country's digital landscape.

CONCLUSION

As Uzbekistan takes steps to implement 5G technology, the country is laying the groundwork for a digital revolution. The legal framework, spectrum allocation, and infrastructure development

are all coming together to create a robust environment for 5G rollout. What's more, the government's commitment to digital transformation, as seen in initiatives like the "Digital Uzbekistan – 2030" Strategy, is paving the way for widespread adoption of this groundbreaking technology.

Looking ahead, Uzbekistan faces both opportunities and challenges in its 5G journey. Balancing the need for rapid technological advancement with data protection and cybersecurity concerns will be crucial to ensure. As the country continues to build its 5G networks, it will be essential to foster collaboration between public and private sectors, adapt regulations as needed, and keep up with global technological trends. This forward-thinking approach will help Uzbekistan to fully harness the potential of 5G, boosting its digital economy and improving the lives of its citizens.

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