

THE ROLE AND THE RIGHTS OF INDIVIDUAL IN DATA ECONOMY ECOSYSTEMS: IMPLEMENTATION OF THE 5G ELECTRONIC COMMUNICATION NETWORKS IN LATVIA

Ilze Auliciema¹, M.Sc.pol., PhD student

¹Faculty of Social Sciences, University of Latvia

Abstract. The article aims to reveal human privacy aspects of implementing 5G technologies in Latvia and provide an insight into how technology affects individuals and their privacy and property rights.

The research analyses Latvian and European Union policy planning documents and regulatory acts in the 5G technology implementation and digital transformation, looking at them from the perspective of the ecosystem approach and individual rights.

As a result of the study, it is revealed that the European Union and its member states are already facing a severe dilemma - priorities must be chosen: protection of individual data and private life or rapid development of the digital economy. The European Union's efforts to secure 5G networks and data security are taking longer than the technology ecosystem expects.

The fact that the implementation of 5G technologies has been transferred to the hands of telecommunications operators (private business structures, with very little public capital or even global structures) and the development of different services are more private sector-oriented as well creates a threat that people and even state will not be able to control the use of data that is processed using data transmission networks.

The study contributes to the discussion on the ethical aspects of digital transformation and data economy at individual and national levels.

Key words: data economy, ecosystem, 5G, ethics.

JEL code: H4, L88

Introduction

The European Union (EU) has set ambitious goals for achieving leadership in economic development by building it on a sustainable digital infrastructure regarding connectivity, microelectronics, and the ability to process vast data as they act as enablers for other technological developments to support our industry's competitive edge (European Commission, 2021). 5G technology is a prerequisite for excellent and secure connectivity for future business, citizen and society development.

In order to support the creation of 5G networks in Latvia, it is expected that for the creation of these networks, restrictions on the right to use private and public real estate are determined in the regulatory acts, as is the case for other public service providers (electricity supply, water supply) (Cabinet of Ministers of Latvia, 2021).

Also, the ever-widening development of digital services encourages abandoning other delivery channels (face-to-face, mail) in the private sector and public services.

The task of the research is to determine whether the 5G infrastructure and its public services are as safe and ethical from the individual's point of view as electricity and water and whether the setting of these restrictions does not infringe on the individual's privacy. The second task is to determine whether an individual can receive services if he wants to avoid his data being processed at the direct service provider and in data transmission networks.

An ecosystem approach will be used to accomplish this issue. The European digital compass (European Commission, 2021) widely uses the concept of the ecosystem to describe various industries or systems where digital technology and industry cooperation are observed, such as the digital education ecosystem, health industry ecosystem, service ecosystem, agricultural ecosystem, and mobility ecosystem.

The European strategy for data (European Commission, 2020) sees this concept as referring to an ecosystem data space that includes businesses, civil society and individuals.

James F. Moore in the 1990s introduced the descriptive term "ecosystem" to explain non-biological systems as a metaphor to describe complex, interdependent relationships between different actors (participants of the system) in the business environment (Rantanen Minna M., 2019), (Moore J. F., 2006).

Such an approach allows using the concept of an ecosystem to describe how a particular set of elements works with specific goals. Ecosystem boundaries need to be defined on a case-by-case basis, as one ecosystem can be viewed both in isolation and as an element of another.

Digital technology service providers (DTSP) create an ecosystem that provides services and processes a wide variety of data, including personal data, for those services. Public administration is the ecosystem by itself and cooperates with the DTSP ecosystem. At the same time, public administration processes personal data containing sensitive information. The third ecosystem is the individual who receives services (voluntary or mandatory) and whose data is processed. The interaction of these three ecosystems will be examined by analysing the policy planning documents and the information available in the Latvian State Enterprise Register.

The following methods are used in the study: analysis of policy planning documents to reveal what goals are planned to be realized by introducing 5G technologies and what other policies it affects; grammatical and teleological interpretation of regulatory acts to determine how the European Union and Latvia regulate the issues of personal data processing and the creation of 5G infrastructure. The principles included in the policy planning documents and regulatory acts are compared with the theoretical insights found in the scientific literature on the formation of the data economy and the role of the individual in it.

Data transmission networks are the first step that takes data from its origin to processing. Therefore, it is vital to create this first step so that only those data that do not violate the individual's privacy are processed.

When using any digital service, an individual faces the fact that the information he provides creates data whose re-use he cannot control. The individual has no choice - but to agree to the service provider's terms or refuse to use the service. 5G technologies multiply the possibilities of collecting and re-using any data, including those whose further use is not in the individual's interest. In practice, the privacy policies offered by mobile operators and telecommunication service providers generally comply with the General Data Protection Regulation (GDPR). However, the volume and use of collected data, as well as different understandings of what is identifiable personal data, create conditions for these data to be used for purposes that remain unknown to the data subject.

5G technologies are considered to be the critical point for the development of countless new services. However, the disadvantage is that these services will be developed based on data collected from individuals forced to consent to the data processing to perform simple daily activities.

The EU and Latvian experts have evaluated several areas and scenarios for the application of 5G technologies and discovered the high potential for development on the one hand and increased risks for data security, as well as the need to solve ethical dilemmas regarding the uncontrolled use of identifiable personal data on the other hand.

The article examines the implementation of 5G technologies from the point of view of the ecosystem approach, as well as analyses the problems individuals face when using digital services, highlighting the individual's and state's ability to influence and control the further use of identifiable data.

Research results and discussion

EU policies for building data economy and implementing 5G technologies

An action plan 5G for Europe envisages that every EU member state will identify at least one major city to be "5G enabled" by the end of 2018 and that all urban areas and primary terrestrial transport paths will have uninterrupted 5G coverage by 2025 (European Commission, 2016, p.4).

5G is not only a new paradigm for electronic communication. On the socio-economic and political sides, 5G has been defined as the essential technological component in the digital transformation of society and the economy in the most advanced countries over the next decade. On the technical side, the advantages of this technology include higher speeds and greater capacity, latency, reliability, flexibility and efficiency (Cavanillas, Curry, & Wahlster, 2016, p.3).

The European Digital Compass points to three main areas where the data economy could make the most significant contribution: digitally-enabled health solutions, digitally-enabled green solutions and intelligent edge computing – applications (European Commission, 2021). However, studies analysing four sectors (automotive, healthcare, transport and utilities) show that, despite significant benefits, there are significant risks to the privacy of individuals (European Union, 2016).

Considering identified risks, the European strategy of data (European Commission, 2020) defines an ambitious goal – to find our European way of data economy, balancing the flow and wide use of data while preserving high privacy, security, safety and ethical standards. With the General Data Protection Regulation (GDPR) (European Parliament, 2016), the EU created a solid framework for digital trust. The upcoming review of the GDPR may provide further valuable elements in this regard. Other initiatives that have fostered the development of the data economy are the Regulation of the free flow of non-personal data, the Cyber Security Act, and the Open Data Directive (European Commission, 2020).

This approach is different from the United States of America, where the organization of the data space is left to the private sector, with considerable concentration effects and China, where a combination of government surveillance with strong control of Big Tech companies over massive amounts of data without sufficient safeguards for individuals dominate (European Commission, 2020).

5G implementation from the ecosystem prospective

James F. Moore described a business ecosystem as "an economic community supported by a foundation of interacting organisations and individuals—the organisms of the business world". Often, a platform of any kind acts as a central point for the business ecosystem (Iansiti & Levien, 2004), (Rantanen Minna M., 2019).

An ecosystem can consist of several elements that can be ecosystems in themselves. That way, it is possible to define different ecosystems depending on the point of view - for example, from the point of view of DTSP, business interests are at the centre, while public administration is the client. On the other hand, DTSP is one of many suppliers for public administration, and the performance of public administration functions is at the centre.

According to James F. Moore, each business ecosystem goes through four successive phases in its development: (1) birth - when the cooperative challenge is working with customers and suppliers to define the new value proposition around a seed innovation, but from the point of competitiveness, it is essential to tie up critical lead customers, key suppliers, and important channels; (2) expansion when the task is to bring the new offer to a large market by working with suppliers and partners to scale up supply and to achieve maximum market coverage and defeat similar ideas; (3) leadership when it is necessary to provide a compelling vision for the future that encourages suppliers and customers to work together to continue

improving the complete offer and maintain strong bargaining power to other players in the ecosystem, and (4) self-renewal what means work with innovators to bring new ideas to the existing ecosystem and maintain high barriers to entry to prevent innovators from building alternative ecosystems (Moore J. F., 1999).

M.Rantanen et al., describing e-government, offer to look at it as an ecosystem – a complex socio-technical system incorporating citizens, organisations, companies, and government agencies. It uses electronic platforms to create and distribute value to its participants. Citizens are involved in this system through the Institute of Citizenship, and it is assumed that citizens are stakeholders in the e-government system (Rantanen Minna M., 2019, lpp. p.1643). However, if DTSP as a supranational company (or ecosystem of several companies) is the centre of the ecosystem, the concept of citizenship is irrelevant.

The European Commission planned the implementation of 5G technologies as a Public-Private-Partnership (PPP) (European Commission, 2016). The 5G Infrastructure Public Private Partnership (5G PPP) was a joint initiative between the European Commission and the European ICT industry (ICT manufacturers, telecommunications operators, service providers, SMEs and researcher Institutions) (5G PPP). It means the European Commission for the development and implementation of 5G technologies created an ecosystem – PPP, which included EU and industry representatives for developing infrastructure, which potentially can become a good part of the future economy. Severe public funding was invested in ensuring that 5G technology is available in Europe by 2020 (European Commission, 2016).

Member states were involved in this ecosystem as well. They were responsible for allocating and assigning 5G pioneer bands, security measures of 5G networks, investment and funding, and national security. Deployment of 5G networks was the responsibility of mobile network operators and 5G vendors (European Court of Auditors, 2022, p.11). Here, we can observe an ecosystem containing EU institutions, EU member states and DTSP industry representatives - mobile network operators and 5G vendors. Citizens were not involved in this ecosystem. Initially, they are mentioned as possible users of potentially developed new services they were involved in the research phase. However, the issue of the threat that the introduction of 5G technologies and the use of these services could pose to their privacy has not been sufficiently discussed. On the other hand – European Commission recognises the role of citizens and wants their active involvement in the digital transformation process (European Commission, 2022).

From an ecosystem perspective, digital transformation and 5G implementation is the offer of the DTSP ecosystem to the EU and the Member States at the governmental level that have adopted them. The research activities, which have been carried out jointly by research institutions, industry representatives and the government, have been focused on researching the application of technologies to achieve the goals set by the EU. Here we see a top-down approach, where residents and society are relatively little setup.

Returning to the ecosystem approach defined by James F. Moore, the digital technology ecosystem did not look for customers in the environment of citizens or SMEs. However, it used another ecosystem - the EU - to attract new customers. Besides that, the shared ecosystem (EU and DTSP) are now working on the next step and developing a vision from the 6G network ecosystem (5G PPP, 2021).

However, the fact that DTSPs are already ready to offer 6G technologies, but the EU has not yet been able to use the opportunities offered by 5G technologies indicates that technologies are developing much faster than people in their habits or public administration will ever be able to do. These ecosystems have different rates of development. The fact that the DTSP ecosystem requires customers to buy innovative products does not mean that Member States should pressure citizens to adopt these technologies.

EU policies in the field of individual's data protection and cyber security

The Commission has already taken several steps since 2014. With the GDPR, the EU created a solid framework for digital trust. The upcoming review of the GDPR may provide further valuable elements in this regard. Other initiatives that have fostered the development of the data economy are the Regulation of the free flow of non-personal data, the Cybersecurity Act, and the Open Data Directive. The Commission has also engaged in digital diplomacy, recognizing 13 countries as providing adequate protection for personal data (European Commission, 2020).

Personal Data economy ecosystems rely on the cooperation of organizations and individuals. However, in current research on data economy ecosystems, individuals are only data subjects and not part of the ecosystem. Also, data economy ecosystems are currently being orchestrated mainly by a few big tech companies, which have faced scandals due to their unethical practices concerning personal data. This development has led to a lack of trust towards collecting personal data, which could undermine the promised benefits of personal data economies for all. (Rantanen & Koskinen, 2020).

According to GDPR, a data subject refers to any person who can be identified, directly or indirectly (European Parliament, 2016). The use of digital services provides experience to the provider of these services (for the entire ecosystem if all stages of the ecosystem are involved in providing the service, including communication services) and to the user. For the user, this experience is individual and personal. In this case, the question is who owns the user experience if it is anonymized (data about transaction are separated from personal information) and stored as data - the user, the direct service provider or the entire service provider ecosystem? Service providers receive fees for services and user experience in the form of data. The volume of this data exceeds what is required directly for the provision of the service; therefore, its processing does not meet the requirements of the GDPR.

For example, if individual pay for a parking space with the application. In that case, information is processed not only about the payment but also about the car and location, and the user cannot control the re-use of this data. In addition, the mobile device must be linked to a bank card to make a payment. In this case, an answer to the question is required - who owns the user experience accumulated in the form of data?

European data strategy also recognizes the problems in re-using natural person's data. Since increasingly large amounts of data consumers generate when they use IoT devices and digital services, consumers may face risks of discrimination, unfair practices and 'lock-in' effects (European Commission, 2020).

Shoshanna Zuboff finds that technologies are designed to render our experience into data, and this typically occurs outside of our awareness, let alone our consent. Whenever we encounter a digital interface, we make our experience "datification" (Zuboff, 2018, p.233).

Vermanen *et al.* indicate that technology's ethicality depends on many issues, such as the nature of the technology, the context of its use and its potential implication. They admit that using a framework including four ethical issues the information age creates: privacy, accuracy, property and accessibility (Vermanen, Rantanen, & Harkke, 2022).

A special report of the European Court of Auditors recognizes that the security of 5G networks is a matter of national security. However, the implementation of security measures is a matter of national competence. The Network and Information Systems Cooperation Group established by the NIS Directive (ENISA, 2023) adopted an EU toolbox on 5G cybersecurity, specifying several strategic, technical and

support measures to deal with 5G security network threats identifying the relevant actors for each of these measures (European Court of Auditors, 2022, p.29)

Implementing security measures takes time, which means that many member states will not be able to ensure the creation of 5G infrastructure within the planned deadlines.

From the point of view of the DTSP ecosystem, creating the infrastructure necessary for the development of the data economy will be delayed due to the need to implement cybersecurity measures. Also, the need to comply in detail with natural persons' data protection regulation requirements will require additional measures.

5G infrastructure development in Latvia

5G implementation issues in Latvia are currently regulated by the Cabinet of Ministers' Order "On the Development Plan for the Electronic Communications Industry 2021-2027", which meets the requirements of the planning documents of the European Union.

This plan envisages the creation of 5G infrastructure along the country's largest highways, along the Rail Baltica railway corridor, and in cities where the population exceeds 50,000, i.e. in Riga, Daugavpils, Liepaja and Jelgava (Cabinet of Ministers of Latvia, 2021), (Ministry of Transport). Research conducted in Latvia has established that high-speed Internet in Latvia is necessary for the following sectors: intelligent transport, smart healthcare, digital content services (media and entertainment), smart production and smart education (Ministry of Transport, 2020).

As in most EU countries, implementing 5G infrastructure in Latvia is the competence of mobile network operators or electronic communication service providers. The physical infrastructure of 5G is the property of these merchants. They are equated with public service providers such as water and electricity in their rights. In order to understand whether there is a difference between these public service providers, let us look at the data on mobile operators in the Latvian Enterprise Register in Table 1.

Table 1

Ownership and Status of Mobile Operators in Latvia

Mobile network operator	Owners	True beneficiaries	Status of a person important to national security
LMT	Ltd "Manager of Public Assets Possessor" (Ministry of Economics) (5%), Telia Company AB (24,5%), SONERA HOLDING B.V. (24,5%), State owned company "Latvian State Radio and Television Centre" (23%), Limited liability company „Tet" (23%)	It is impossible to find out the true beneficiary of the legal entity	Yes
Tele2	Tele2 Sverige Aktiebolag (100%)	The beneficial owner is a shareholder in a joint-stock company, the shares of which are listed on the regulated market, and how control over the legal entity is exercised results only from the status of the shareholder.	Yes
Bite Latvija	Bite Lietuva (100%)	It is impossible to find out the true beneficiary of the legal entity	Yes

Source: information compilation prepared by the author based on data of the Register of Enterprises of the Republic of Latvia, <https://info.ur.gov.lv>.

As it can be seen in the Table 1, unlike water supply and electricity service providers, only LMT is controlled by the Latvian state. It is impossible to ascertain the beneficiaries of the other two service providers.

The mobile operator registers the connection between a person (natural or legal) and the subscription number (SIM card). The mobile operator determines the terms of the contract - the individual can only agree to them or choose another service provider or refuse to use this service.

From the perspective of an individual, the conclusion of a contract with a mobile communications operator, which the Latvian state can influence only through regulatory acts, is grounds for doubting the individual's ability to defend his rights in the field of data protection.

An individual's claim for a ban on the re-use of data (in fact, the individual will not have the opportunity to obtain evidence of such facts) must be proven in court if service provider if the service provider does not recognize the violation. However, an ordinary person is unlikely to have the finances for such claims. Service providers have incomparably more opportunities to defend their point of view.

Digital service usage and development in Latvia

Latvia ranks 23rd among the EU countries in integrating digital technology in enterprises by the EU Digital Economy and Society Index (DESI). Although Latvia has improved in some instances, it is still below the EU average in almost all indicators (European Commission, 2022, p.12). DESI measurement regarding integrating digital technologies indicates that many Latvian companies need help to use the currently available digital technology opportunities. Therefore, there is no reason to believe that the immediate creation of 5G infrastructure could change anything. It leads to the conclusion that there is no acute need for 5G coverage in Latvia. This situation may change under the influence of external factors, such as the construction of Rail Baltica, where it is expected that 5G coverage will be available throughout the railway corridor.

Above mentioned does not mean that Latvia is not working on services that could be interesting for the digital economy. In Latvia, and especially in Riga, there are areas where 5G coverage is available, and companies can develop innovative ideas, such as the VEFRESH movement, where technology companies have teamed up with real estate developers to turn the historic VEF factory neighbourhood into an intelligent city innovation space (VEFRESH).

In the field of digital public services, the situation is even better. Latvia ranks 11th in the EU for Digital public services, scoring above the EU average in most categories.

That is why there is no reason to worry about Latvia's possible significant backwardness in implementing digital technologies at the current pace of development.

It must be remembered that competition is one of the methods of promoting the introduction of innovations (DeVries, Tummers, & Bekkers, 2018). Such evaluation mechanisms as DESI allow determining the member state's progress, but the DESI criteria cannot be considered policy goals. Therefore, following EU standards in the field of personal data processing, primary care must be taken to ensure that data collection and use meet the interests of individuals.

Conclusions

From the ecosystem approach, the EU is an economic and political ecosystem. This ecosystem at the government level has accepted the offer of DTSP to create the infrastructure for the development of the data economy. The EU promotes digital technology infrastructures with political and economic means, including implementing 5G technologies in member states. Financial incentives are used to implement these

technologies, and the possibility of applying legal sanctions to those Member States that do not implement the telecom regulations within the specified deadlines is allowed (European Commission, 2021).

The annual DESI index assesses in detail the progress of member states both from the point of view of connectivity and data technology integration. For the state, it also acts as a motivating factor for competition and a method for introducing innovations (DeVries, Tummers, & Bekkers, 2018).

Using the PPP model in creating 5G infrastructure allows for attracting additional investments for implementing these projects. However, in the case of Latvia, it can be seen that these investments and EU funding tied to projects are directed to companies whose beneficiaries cannot be ascertained using publicly available state registers.

At the level of EU regulatory acts, the individual's right to personal data protection is respected, but this is still not enough to achieve citizens' trust in 5G technologies, as even the GDPR cannot provide sufficient protection of rights if it regards of the collecting of user experience. This corresponds to the situation described by Sfofshanna Zuboff as surrender when the DTSP ecosystem creates applications that require data sharing and use this data for their own development (Zuboff, 2018, p. 233).

The introduction of 5G technologies is a project of the DTSP ecosystem and the European Union as an ecosystem. As a project, it meets with the "iron triangle" of project management: budget, scope and schedule (The Mind Tools Content Team). Implementation of information and data security requirements and personal data protection requirements increase the scope of this project. This means that the introduction of 5G will not be able to provide such rapid economic growth as the planning documents promise. However, the benefits of protecting the privacy of individuals are positive.

In order to ensure the protection of individual rights, the assumptions set by S. Zuboff should be taken into account: (1) that it must be the individual alone who decides what experience is rendered as data; (2) that the purpose of the data is to enrich individual's life, and (3) that the individual is the sole arbiter of how the data are shared or put to use.

Implementation of these principles would require additional costs for DTSP. From the point of view of the relationship between the individual and the state, any public service should maintain alternative delivery channels so that the individual can receive them without sharing his data and experiences if he does not want to. Private sector service providers should also consider the individual's views on sharing their experiences in the form of data. Normative acts regulating the protection of consumer rights should provide for the obligation for the service provider to publicly announce that the receipt of the given service will require the use of digital technologies that provide for the collection of experience data. Thus, the individual would be given the right to choose - to use this service or not.

It is even more difficult to realize that only the individual can decide how his data is processed and used. The desire not to share one's experience should not create situations where a person is deprived of his basic rights. This can create a new type of digital divide when part of the society does not agree to use digital technologies, not because they are not available, but because they require sharing experiences under compulsion. This means that wider public involvement is needed in all issues related to data re-use in decision-making. Such decisions cannot be taken by the DTSP or the government alone.

It is unethical on the part of the government and DTSP to ask individuals to transfer the right to make decisions about the fact that the individual should share his experience.

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