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APPLICATION OF 5TH GENERATION CELLULAR TECHNOLOGY IN THE PRE-TRIAL INVESTIGATION STAGE

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Abstract. The author is going to overview and analyze technological-theoretical, international and national legal grounds for the usage of this advanced technology in tackling criminal offences. The novelty of this paper is that this type of research has not yet been carried out in depth in either Lithuania or Latvia. The majority of research on advanced technology and human rights was and is still focused on the possible threats to human rights which can be caused by new technologies, especially in the area of communication. But let us consider this area of research from a fresh perspective and thereby raise an important question: How does 5th generation cellular technology help with the protection of human rights during a criminal pre-trial investigation?

Keywords: 5th generation cellular technology, human rights, criminal offence, criminal proceeding, pre-trial investigation.

“Technology is, of course, a double-edged sword. Fire can cook our food but also burn us.”
(Jason Silva, n.d.)

Introduction

The aim of this paper is to identify possible avenues for the application of 5th generation cellular technology as a tool to protect human rights in criminal procedures. Technology has become a powerful tool that affects human rights, but a lot depends on the way in which a modern technology is used. For example, 4th or 5th generation cellular technologies can be very intrusive in regards to a person’s privacy, or can be very useful in detecting criminal offences during pre-trial investigation. The famous proverb “Every stick has two ends” is particularly appropriate, as it reminds us that the same tool can be looked at from different perspectives, in this case 5th generation cellular/mobile technology (hereinafter referred to as “5G technology”). This is an important tool in our lives, as many of us can’t imagine our daily routine without a smart mobile phone. Increased access to the internet, the massive number of cellular/mobile smart phone users, and the development of social media tools have enabled us to spread messages more quickly and to broader audiences. Emerging technologies, particularly in the area of communication, may significantly expand the availability and quality of data upon which we can make informed decisions for the benefit of society (Bloomer, n.d.). 5G will have an average download speed of about 1 Gbps (1 gigabyte per second), meaning that users can download an entire movie in a matter of seconds. In short, 5G technology can quickly transfer huge amounts of information/metadata from one point to another, despite locations and the distances between them. This makes this technology extremely attractive to law enforcement agencies. At the same time, rapid developments in communication technology, the transmission of data, and

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artificial intelligence raise serious questions about potential impacts on human rights and the future of work, as well as who will benefit and who will lose out from the expansion of these technologies (Bloomer, n.d.).

The author of this research paper is going to use research methods such as: data collection, data analysis, descriptive research, analytical research, logical analysis to explore the topic. The research of this topic and the answers to the question outlined above will allow us:

- to build a conceptual approach to the usage of 5th generation cellular technology in the area of criminal procedure from the perspective of the protection of human rights;
- to identify specific areas in criminal procedure where new technology can be used most successfully in the detection and investigation of criminal offences;
- to have clear avenues for employing 5th generation cellular technology for better protection of human rights during pre-trial investigation.

1. Theoretical-technological and legal backgrounds

This paper is going to focus on the benefits of 5G technology during the pre-trial investigation phase in the context of human rights protection. The other stages of criminal proceedings may form separate objects of research. Telecommunications companies, governments, the media, and scientists have all discussed this forthcoming technology in terms of its capabilities in the expansion of smart cities, virtual reality, driverless cars, and the “Internet of Things” (hereinafter referred to as “IoT”). They also consider the possible harmful impact on human health, and potential threats to personal privacy due to the absence of sufficient safeguards. The huge amount of metadata created by 5G-enabled technologies will also create significant risks in terms of illegal surveillance, involving the interception of metadata and the violation of a person’s data protection laws. It is important to recognize that 5G technology will not only increase the volume of data formats we associate with current mobile technology usage (video, audio, text), but it will also facilitate and expand new data streams (health data, traffic data, etc.). In all of this, it is surprising that so little has been done publicly to explore how 5G technology might protect human rights during the pre-trial investigation period. The author admits that vulnerabilities in existing networks which allow network traffic interception (e.g., IMSI catchers), hacking, and compromised device security have given rise to fears amongst human rights activists and lawyers on 5G technology.

Network and device security, encryption, and limits on hacking might be corrected in new 5G wireless technology. Its intended purpose is to provide faster and higher capacity transmissions to carry the massive amount of metadata generated from the IoT, driverless cars, and other demanding technologies (What is 5G?, n.d.). Every IoT will generate personal data, which will be mined, stored, and used by governments, law enforcement, and private businesses. The author of this paper is going to focus on the detection of criminal offences, and the identification of the main avenues where 5G technology might serve in an efficient way in the protection of human rights. History shows us that law enforcement agencies delay in adopting the achievements of science in the area of communication technology into practical usage due to several reasons. One of the main barriers is the lack of standard operating procedure, lack of laws or amendments to existing laws, and lack of strategy on the usage of advanced technology for the detection of criminal offences.

Article 3 of the United Nations Universal Declaration of Human Rights states that “Everyone has the right to life, liberty and security of person” (The United Nations Universal Declaration of Human Rights, 1948). The same provisions can be found in other international conventions on human rights (for example, Articles 2 and 5 of the European Convention on Human Rights), and in the main written laws of many countries – The Constitutions (for example, Articles 18–31 of The Constitution of the Republic of Lithuania, (1992)). National lawmakers also put provisions for the protection of human rights and freedoms into the main documents of the criminal justice system: a criminal code and a criminal procedure code in countries with a Continental Legal System, or into separate legal acts in the countries with a Common Legal System.

A criminal code (or a penal code) is a body of law that defines criminal offences. The criminal procedure code provides rules on how investigations should be conducted if criminal offences have been committed. We can find the provisions on the aims of a criminal procedure in the criminal procedure codes of many countries. In this case Article 1 of the Criminal Procedure Code of the Republic of Lithuania (hereinafter referred to as “CPC”) is relevant, which states that:

“The criminal procedure aims in defense of human and citizen rights and freedoms at a speedy and detailed detection of criminal acts and a proper application of the law in order to ensure that any person who has committed a criminal act is given a fair punishment and that no one who is innocent is convicted” (The Criminal Procedure Code of the Republic of Lithuania, 2020).

The author of this paper would like to draw attention to the usage of a specific phrase by national lawmakers: “in defense of human and citizen rights and freedoms at a speedy and detailed detection of criminal acts” (The Criminal Procedure Code of the Republic of Lithuania, 2020). The protection of human rights and the rapid and detailed detection of criminal acts/offences is one of several pillars of criminal procedure. It requires bodies that conduct pre-trial investigations, prosecutors, pre-trial investigative judges, experts, and specialists of forensic labs to coordinate their actions and to exchange information related to the criminal offence as soon as possible, before finally gathering evidence in the manner prescribed by law through conducting pre-trial investigative actions. In accordance with Paragraph 4 of Article 20 of CPC “evidence may be only such material which is obtained by lawful means and may be validated by the proceedings laid down in this Code” (The Criminal Procedure Code of the Republic of Lithuania, 2020).

This paper will not take an in-depth look at tactics for detecting criminal offences and gathering evidence through the conducting of pre-trial investigative actions. Instead the author is going to focus on the avenues in which 5G technology will safeguard the fundamental right to a fair trial within a reasonable time, and will facilitate the achievement of the aims of criminal procedure as prescribed in the international conventions, the CPC, and in the laws on criminal procedure in many countries. For example, Article 6 (1) of the European Convention for the Protection of Human Rights and Fundamental Freedoms (hereinafter referred to as “ECHR”) “Right to a fair trial” states that:

“The determination of his civil rights and obligations or of any criminal charge against him, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law” (The European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950).

Article 176 of CPC of the Republic of Lithuania states, that “Time Limits of Pre-Trial Investigation... A pre-trial investigation must be carried out in an expedited manner” (The Criminal Procedure Code of the Republic of Lithuania, 2020). The rapid and detailed detection of criminal offences, especially in the case of particularly grave crimes, depends on various factors. The fast exchange of metadata in huge amounts amongst parties involved in the criminal procedure is a very important factor in law enforcement agencies’ activity. As an example which illustrates the crucial role of communication in daily life we can take one of branch of industry – logistics – where the key task is to deliver a parcel from point A to point B in safe, fast, and efficient way. Therefore, to perform this task we need a reliable and relatively cheap means of transportation.

Due to its huge technical capacities, 5G technology is exactly the right tool to perform information/metadata carrier functions during the pre-trial investigation stage. Although obviously some homework should be done before employing 5G technology in any area of the criminal justice system. Firstly, we must consider the coverage of 5G technology in the countryside. Secondly we must look at the use of millimeter waves for 5G. Millimeter waves have shorter range than microwaves, therefore the cells are limited to smaller size, and these waves also have trouble passing through building walls (5G telecommunication science, n.d.). These limitations should be taken into account before the usage technology is undertaken widely. Another issue to which the author of this paper

would like to attract the attention of lawmakers, policymakers, and officials of law enforcement agencies is the fact that, in some cases, state institutions exhibit a lack of strategic view on the usage of the achievements of science – particularly with advanced products that emerge during the digital revolution. In the opposite area of society, as well as with organized crime, terrorist organizations are very often several steps ahead of law enforcement agencies in their usage of advanced technology for wrongdoing, and the breaching of human rights and freedoms.

This leads us to the conclusion that think tanks at law enforcement agencies should be set up for mapping strategy on the usage of advanced technologies in performing functions and tasks to protect human rights, national security, and public order. In this case the author is going to develop an integral part of a strategy in the usage of advanced technologies in the area of criminal justice. The starting point for the development of the author's idea might be the division of all actions during the pre-trial investigation into two groups. The first of these groups is composed of the preparatory actions, various in their nature, that serve to prepare for the later investigative actions by coordinating them. The second group is, therefore, the investigative actions themselves. That classification is based on the provisions of CPC. For example, Article 170 of CPC of the Republic of Lithuania states that:

“Powers of the Prosecutor in the Pre-Trial Investigation... 2. Where the pre-trial investigation or its separate steps are conducted by institutions of pre-trial investigation the prosecutor shall be obliged to supervise the course of pre-trial investigation conducted by these institutions... 3. The prosecutor shall give directions to these institutions...” (The Criminal Procedure Code of the Republic of Lithuania, 2020).

2. 5th Cellular technology and pre-trial investigative actions

The preparatory action might also be called organizational and logistical support of pre-trial investigative actions. Logistical and organizational support actions address different purposes to content actions. These can be actions that are designed for different types and forms of cooperation and coordination. For example, the exchange of information on a criminal offence that has been committed, amongst members of an investigative team within an agency or inter-agency through working meetings, ad hoc consultations with experts from forensics labs on issues related to the fixation and collection of data, or material from different evidence carriers during the pre-trial investigation stage. These organizational and logistical support actions require rapid and reliable tools for communication amongst team members or other public officials or parties involved in the first stage of a criminal proceeding, and also for the transmission of metadata. For example, violation of the regulations governing road traffic safety or the operation of vehicles which results in an accident causing a person's death, requires the conducting of one of the essential pre-trial investigative actions – a crime scene examination. Crime scene examination is an art, and it also serves as the entry point for the successful conducting of other investigative actions. For example, a transport-traceological expertise on the causes of a road accident hugely depends on a comprehensive and detailed examination of a crime scene. Lengthy procedures of criminal proceedings on road accidents in many countries including Lithuania are closely related to the quality of a crime scene examination. A poorly conducted crime scene examination impedes the results of transport-traceological expertise on the causes of a road accident, and increases the length of criminal proceedings. It also affects a victim's rights and the state's obligation before people for the proper application of the law in order to ensure that any person who has committed a criminal offense will be given a fair punishment.

According to the report of the European Commission for the Efficiency of Justice on the length of court proceedings in the Member States of the Council of Europe based on the case law of the European Court of Human Rights, violations of Article 6 (1) of ECHR through excessively lengthy proceedings represent the primary reason for European States to be condemned by the European Court of Human Rights (hereinafter referred to as “ECtHR”) (Report of European Commission for efficiency of justice, 2018). This is also confirmed by the statistics of the judgments rendered by the ECtHR from the years 1959 to 2017 (Table of ECtHR on violations 1959-2017, 2017). One of the vital elements for functioning of a criminal justice system is the protection of the fundamental right to

a fair trial within a reasonable time. The length of a criminal proceeding correlates with human rights and, in the same way, affects them.

Crime scene examination demands from an investigator a lot of knowledge in the fields of different sciences, and very often a lot of questions arise for officials who conduct crime scene examinations. For example, ad hoc consultation with experts/specialists from forensic labs on how to record damaged vehicles in accidents, how to provide initial medical aid to people inside damaged vehicles, how collect evidence from crime scene, or how to solve others problems on site. The technical capabilities of 5G technology allow it to transmit a huge amount of metadata immediately. It allows for a prosecutor, or a leader of an investigation team to arrange a live direct online meeting of all members assigned to an investigative team (especially if the team consists of representatives from different agencies) without their physical presence in one place at the same time, to exchange opinions. It will also reduce the time needed for members of the investigative team from different agencies stationed in the different parts of a city to come to a meeting place. In this way, a leading official of crime scene examination has the potential to air an online view of a road accident crime scene, and receive ad hoc consultation from experts on the issues above that relate to fixation, and the collection evidence.

This leads to the conclusion that in the collection of data it must be ensured that human rights are observed during criminal procedures, as part of a wider strategy for the usage of advanced technologies (in this case – 5G technology). This might be achieved via the usage of guidelines for organizational and logistical support actions during the pre-trial investigation.

Another part of these actions which the author is going to analyze in this research paper are pre-trial investigative actions. An exact list of pre-trial investigative actions and the procedures through which they are conducted are prescribed in detail by CPC (for countries of a Continental legal system, for example Germany and Republic of Lithuania) or laws (for countries of a Common legal system, for example New Zealand and The United Kingdom).

The usage of advanced technologies in criminal proceedings is enshrined in international legal acts. For example, Paragraph 18 of Article 18 of the United Nations Convention against Transnational Organized Crime adds the possibility of the hearing of witnesses or experts by means of video conference. This Convention was signed and ratified by many countries in the world, and became part of their legal systems. The same provisions on the usage of video-conference in criminal proceedings are enshrined in Article 10 of the European Union (hereinafter referred to as “EU”) Convention on Mutual Assistance in Criminal Matters between the Member States of the European Union (2000).

The European e-Justice Strategy promotes the use of video-conferencing in cross-border civil or criminal judicial proceedings by endorsing efforts made at a national level, while coordinating at a European level to ensure interoperability (Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee - Towards a European e Justice Strategy, 2008). It is particularly important in cross-border proceedings, for example in the hearing of a remote witness in another country in national proceedings or interpreting in a video conference with a non-native speaker when the interpreter is in different location.

Article 2 of Directive 2010/64/EU of the European Parliament and of the Council of 20 October 2010 on the right to interpretation and translation in criminal proceedings, states that:

“1. Member States shall ensure that suspected or accused persons who do not speak or understand the language of the criminal proceedings concerned are provided, without delay, with interpretation during criminal proceedings before investigative and judicial authorities, including during police questioning, all court hearings and any necessary interim hearings...6. Where appropriate, communication technology such as videoconferencing, telephone or the Internet may be used, unless the physical presence of the interpreter is required in order to safeguard the fairness of the proceedings.”

Video-conferencing refers to the use of interactive telecommunications technologies for witness testimony via simultaneous two-way video and audio transmissions. This technology allows for a witness or a victim to testify from a room adjoining the courtroom/interview room of the pre-trial investigation body, or from a distant or undisclosed location through an audio-visual link which might be used for communication (to carry metadata) by 5G technology. Parties of a criminal proceeding can ask questions of the witness or victim and see and hear the witness or victim's answers in real time transmission.

Provisions on video-conference are enshrined in national laws on criminal proceedings in many EU MS. For example, article 81 of CPC of the Republic of Lithuania on peculiarities on usage of information and electronic communication technologies in the criminal proceedings (The Criminal Procedure Code of the Republic of Lithuania, 2020), the usage of technological means in criminal proceedings is prescribed in the CPC of the Republic of Lithuania, Article 179 on the recording of the course and results of the investigation actions states, that:

- “1. When performing investigation actions, records shall be made. During the performance of the investigation actions, photographs may also be taken, films shot, audio and video recordings made, prints and castings of the traces may be made, plans and schemes may be made, and other ways of fixing may be used.
2. Records shall be made by a person performing an action of investigation or a person assisting him during an investigation action or immediately after it. Records shall indicate the place and date (the year, month, day and hour), the person performing the action and all those participating or present during the investigation action, the testimony of the persons examined or a description of other actions of investigation and their results; statements of persons who participated in the performance of the investigation actions who were present at it. Where technical means were used when performing the investigation actions the records must specify the conditions and manner of their use” (The Criminal Procedure Code of the Republic of Lithuania, 2020).

ECtHR position on usage of technological means for conduction interview the parts of criminal proceedings is positive. For example, ECtHR in his judgment *Marcello Viola v. Italy* from 06 October 2006 states, that:

“The applicant's participation in the appeal hearings by videoconference pursued legitimate aims under the Convention, namely, prevention of disorder, prevention of crime, protection of witnesses and victims of offences in respect of their rights to life, freedom and security, and compliance with the “reasonable time” requirement in judicial proceedings” (*Marcello Viola v. Italy*, 2006).

National courts also in favour of usage new technologies in criminal proceedings. For example, The British Columbia Supreme Court (Canada) in *R. v. Gibson* went so far as to say that a well-placed camera may enhance the expressions of a witness under cross-examination. The Alberta Court of Queen's Bench (Canada) in *R. v. Dix* held that the technological sophistication of a videoconference facility could safeguard witness reliability (*Sossin and Yetnikoff*, 2007).

This allows us to conclude that the legal framework for the usage of technological means (including new, advanced technologies such as 5G) is already in place.

The main source of data/information regarding the circumstances of a criminal offense that has been committed was, is, and will remain a human being. Procedures regarding how to conduct an interview of a victim, a witness, or suspected persons, and their rights, are prescribed in laws on criminal proceedings. For example, Article 81 of CPC of the Republic of Lithuania states, that:

- “A witness shall have the right:
- 1) to testify in his mother tongue and to use services of an interpreter if the interview is conducted in a language he does not know;
 - 3) to request sound and video recording during his testimony;

5. Photos, negatives, audio and video recordings as well as the results of the use of other technical devices when performing an investigation act shall be supplements to the record of the act of investigation” (The Criminal Procedure Code of the Republic of Lithuania, 2020).

Due to different – by nature – issues such as disabilities, working abroad, military service overseas, threats to life and health, or the high risks of being faced with illegal influences during trial, a victim, a witness (including an under-aged witness or aggrieved person), or even a suspect might be questioned using communication technologies. This is particularly important when a crucial witness or victim lives abroad, and their interview, through mutual legal assistance, might take a long period of time to conduct, therefore significantly extending the length of a pre-trial investigation.

The author of the paper would like draw particular attention to provisions enshrined in the international laws on questioning witnesses and aggrieved persons under 18 years of age. These persons shall only be summoned to the trial in exceptional cases. Thus, an interview of a person that falls into this group could be conducted in a less detrimental manner through means of video-conference as opposed to physically in the place of trial. The same approach might be of use in dealing with other pre-trial investigative actions, for example in an identity parade/police lineup.

The results of investigative actions might also then be quickly transferred into electronic case management systems which are in the process of being created (for example in Ukraine), or which are already successfully functioning elsewhere (for example in France, Lithuania, Latvia, and the Czech Republic).

This leads to the conclusion that the transmission of data, as an integral part of the strategy for using advanced technologies (in this case 5G technology), will ensure the protection of human rights during criminal investigations through carefully regulated operating procedures. These procedures would make sure that the data transmission meets a person’s privacy protection requirements and safeguards the metadata during the undertaking of investigative actions in the pre-trial investigation stage, such as during interviews or an identity parade.

Conclusions

1. The Legal grounds for the usage of advanced technologies during pre-trial investigation, particularly in the area of communication, are in place both at the national and international levels.
2. A strategy for the usage of advanced technologies (in this case 5G technology) for ensuring human rights in criminal procedures might consist of two integral parts:
 - 1) Guidelines on usage in terms of organizational and logistical support actions during the pre-trial investigation;
 - 2) Guidelines/standard operating procedures, in detail, on the usage of advanced technologies during the conducting of investigative actions at the pre-trial investigation stage.
3. Metadata exchange arrangements based on the usage of advanced communication technology (in this case 5G technology), both at the organizational and logistical support actions and pre-trial investigative actions stages, might be one of the essential factors which allow us to shorten the length of criminal procedures whilst at the same facilitating better protection of human rights.
4. To set up think tanks at law enforcement agencies or inter-agency think tanks to analyze the ways of using advanced technologies in criminal proceedings, and to prepare the drafts of laws (if needed) and guidelines on the usage of advanced technologies during the pre-trial investigation stage of criminal proceedings.

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