THE IMPORTANCE OF IOT IN EVERYDAY LIFE AND IN LAW ENFORCEMENT

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Abstract. *Every day, we leave behind more and more digital data, which is related to the use of modern technical devices as well. This can speed up the flow of information. With the emergence of the Internet of Things, when machines communicate with each other and machines with people and exchange information. It has become essential to get to know the applications behind each device, as well as to analyze and examine the process of digital citizenship formation. The study presents modern technical devices, applications, data and digital citizenship from the Hungarian point of view, as well as the related decisions.*

Keywords*: IoT, EoT, forensics, technology, mobile devices*

Introduction

We are surrounded by many sensors that sense our environment and detect the set-up - physical, chemical, biological, etc. – status changes, as well as contact and communicate with each other and the user via the Internet (Haig, 2018., 97-98).

In the 21 st century our everyday life is shaped by technology (Tóth, 2021a). We are living in an era of the fourth industrial revolution of Western civilization; digitalization, when rapid technological development and globalization pose new challenges to the protection of personal data (Mátyás, 2020) and to the right to knowledge based on being given appropriate information too (Tóth, 2020). Nowadays, the Internet of Things (Internet of Things, hereinafter: IoT) plays an increasingly important role, the scope of which is quite broad, as it permeates the whole of society, such as agriculture, industry, transport, education, public administration, law enforcement, as well as the activities of circles that commit crimes.

The concept of IoT: in Hungarian translation, the "internet of things" is a socio-technological framework concept, which describes that products, objects, devices are connected online, communicate with each other, and perform tasks, without necessarily having a user interface. Technically, this is how we describe a multitude of natural or man-made objects that have an IP address and are able to distribute data via the Internet network (IVSZ, 2014-2015). So IoT is a worldwide network of interconnected objects, devices, objects that can be individually addressed and have their own IP address (Haig, 2018, 97).

IoT devices are able to communicate with each other by connecting to some kind of network - The connection can be realized on the one hand using technology

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based on the use of licensed frequencies (e.g. 4G; 5G), on the other hand using frequencies that can be used without a license (e.g. SigFox), or using private technologies (e.g. Wi-Fi; Bluetooth) (Gellért, 2022, 56.)

Legal background of IoT

According to some predictions, by 2025 there will be approximately 100 billion IoT devices and 2 million sensors will be installed every hour (URL1).

As the number of devices increases, it is expected that the number of attacks against IoT devices will also increase. Directive 2013/40EU of the European Parliament and Council is important from the point of view of protection. In order to comply with this, in our country, the LXXII of 2014. Act amended § 423 of Act C of 2012 on the Criminal Code, the "Breach of information system or data" fact. The Civil Code According to § 459, point 15, "the information system is the equipment that ensures the automatic processing, management, storage, and transmission of data, or the set of such equipment in connection with each other." This definition includes computers, IoT devices, communication and telecommunication networks and systems, as well as different types of SIM cards, and the definition does not distinguish between the transmission of signals, therefore it includes electronic, optical and various information systems created by radio waves and satellite radiation (Gellért, 2021, 18). In compliance with Directive 2013/40/EU of the European Parliament and Council, we also adopted the concept of data: "the appearance of facts, information or concepts stored, managed, processed or transmitted in an information system in any form suitable for processing by the information system, including the program which ensures the execution of a function by the information system" (Act C of 2012).

The importance of SIM

The most important element of data management, the SIM card (subscriber identification module), is built into IoT devices for the purpose of identifying the smart device (Gellért, 2021, 58.) Nowadays, the use of an environmentally friendly eSIM card is gaining more and more space as a convenience aspect, which will also expand the data request aspects of law enforcement authorities. For eSIM-capable devices, it is easy to download the profile of the subscriber to the chip card built into the mobile phone, which contains the characteristics of the subscription. Another advantage is that eSIM profiles can be easily and quickly changed between devices; the PIN and other security codes can be viewed at any time in the online account, and eSIM phones can also be used as dual SIMs (URL2). These options (profiles) also support the work of the investigative authority in identifying the perpetrator. Finding out the facts and identifying the perpetrator is the primary task of the investigation. (Vári, 2015)

However, it must be said that in terms of IoT devices, iSIM (integrated SIM), which is considered a new generation of the subscriber identification circuit, has appeared, which enables the device in question to be even smaller by integrating the SIM card functions into the main processor of the device (Sipos).

In the case of iSIM, according to some forecasts, by 2025, humanity will be able to use 488 million devices intended for the consumer market. Advantages of iSIM over eSIM:

- eSIM requires a separate processor, while iSIM functions are integrated into the main processor;

- eSIMs work on a separate chip, in the case of the iSIM there is no need for such a chip, nor is there a separate space for SIM services;
- iSIM does not require further development from the operator's side (Sipos)

With the use of smart devices and 5G technology, digitization will become even stronger and play an even greater role in creating a digital society. With the 5G network, the data transmission speed will increase, and by the end of the decade it will be possible to connect billions of devices (Sipos)

So 5G will have an impact on the spread of IoT devices, and will also contribute to the development of existing and emerging areas. These are the following:

- self-driving cars will be provided with a real-time connection,
- with the development of healthcare applications, "distance healing" will become more and more common,
- creating IoT and IoE with smart home devices,
- spread of holographic augmented reality,
- augmented reality (Ürmösné et al, 2022) based map, navigation,
- 3-dimensional holographic communication,
- virtual online purchases,
- it will also affect the agricultural deployment of sensors and sensors.

The above groups will already enrich the field of IoE tools and methods, and with the development of the network of connections, we will encounter a triple formation when we talk about communication between machines, between machines and people, and between people using technology.

The "Internet of things/objects" and the "everything Internet" are already present in parallel in our lives and in the future, so this will define our everyday life even more, and thus also the work of law enforcement agencies. Therefore, the application of artificial intelligence and network science research methods will be of great importance in the processing and use of the mass of data generated during the IoT.

We are starting to use IT devices that were even unheard of a few years ago, and our homes are also becoming smart (Krasznay. 2020, 122). The number of Iot devices is expected to increase to 125 billion by 2030 (URL3). These devices will communicate with each other and form a digital ecosystem, a connection network, a map. The network of these devices takes the form of smart homes on a small scale, and smart cities on a larger scale. The network of a smart home can connect to the network of another smart home, thereby creating an even more complex network, or the network of smart homes or smart homes can connect to the network of a smart city.

Digital citizenship

The development of information and communication technologies brings with it a radical transformation of our lives. This is how the relationship between the state and society is placed in the digital space, and modern government digital interfaces and services are created. The draft law on the creation of digital citizenship creates the foundations for the implementation of the National Digital Citizenship Program (hereinafter: DÁP). The goal of the Program is to enable Hungarian people to manage their affairs more easily and faster than ever before with the help of a central mobile application. With the help of the mobile application, they will be able to prove their identity and arrange their payments to the state with the push of a button. During the implementation of the

Program, one of the most important principles is that the user decides whether to take advantage of the opportunities offered by digital citizenship (URL4).

It was formulated as a goal for citizens to be able to manage almost all matters concerning public administration online - primarily on a portable info communication device. With the help of the mobile application, they will be able to verify their identity and settle their payments to the state with the push of a button, and with the phone, they can prove their identity to the police and tobacconist only that they are over 18 years old. In addition, utility bills will be available and paid through the DÁP application. At the same time, they would also introduce market services that, for example, make the warranty card available and downloadable when purchasing a product.

Utility bills will also be available and paid through the DÁP application. At the same time, they would also introduce market services that, for example, make the warranty card available and downloadable when purchasing a product. In the digital space, the user profile based on the digital citizen ID is used for primary contact with the state. Digital citizenship is based on data managed in state registers.

In the future, it will be possible for everyone to manage their affairs in offline mode through the DÁP application. The customer registration body can provide the investigation authority without the customer's consent for the purpose of preventing and detecting crimes, conducting criminal proceedings or executing punishments and measures. So, the prison service will be one of the the next autorities to use such modern information and communication technologies. (Czenczer, 2020; Ürmösné, 2019). Also, the use of the data generated during the use of the application will create another data collection opportunity for the police.

Data-driven research such as network research, which is based on the analysis of the huge amount of data around us, will be important in order to understand the operation of the complex systems found in everyday life and to reveal their connections that are invisible on the surface. The toolbox of network research makes it possible to connect and analyze dynamic data cadastres that are scattered or not found in one data set. Network thinking plays a significant role in mapping the financial networks of criminals and criminal organizations (Ürmösné, 2018), as well as in creating a diagram of the relationship between criminals.

It is necessary to create an EU law enforcement ecosystem that supports e-investigation processes, thus reducing the reaction time of the investigating authority. The data obtained during e-investigation can also serve as the basis for network research analyses, and the results established in this way can also contribute to the development of the criminal digital ecosystem.

Summary

Efficiency and the widespread use of new technologies, processes and procedures are also natural in law making, especially in the field of cybercrimes and cybersecurity (2021b).

We have seen that when using modern technical devices and applications, a lot of digital data is generated, which gives the opportunity to create a profile.

However, it should be avoided that certain sections of the law allow the collection of inventory data, thereby creating a profile, as these legal provisions are not in line with the constitutional requirements stemming from the right to respect for privacy contained in the Basic Law, as well as the right to the protection of personal data.

Furthermore, network research helps to fulfill the basic principle of the completeness of the investigation, because if the system of connections can be mapped, then during the analysis, all the perpetrators and all the illegal acts can be revealed in relation to the investigated event.

Today and in the future, digital data and modern technical tools will help the work of law enforcement agencies, and thus also detection and proof.

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