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The necessity of the implementation of Privacy by Design in sectors where data protection concerns arise

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A B S T R A C T

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This article examines the extent to which Privacy by Design can safeguard privacy and personal data within a rapidly evolving society. This paper will first briefly explain the theoretical concept and the general principles of Privacy by Design, as laid down in the General Data Protection Regulation. Then, by indicating specific examples of the implementation of the Privacy by Design approach, it will be demonstrated why the implementation of Privacy by Design is a necessity in a number of sectors where specific data protection concerns arise (biometrics, e-health and video-surveillance) and how it can be implemented.

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1. Introduction

The respect and the protection of privacy is the cornerstone of people's dignity and free will, and it is a priority in every democratic society. During the last decades we have experienced an information and technological revolution. As time passes by, the development of the existing technology, as well as the appearance of new technological achievements, such as biometrics, smart devices, or the Internet of Things, has led to the exchange of a huge flow of data both in the public and in the private sectors.

In the last decades, the concept of everyday life has totally changed. The way people do their shopping, the way payments are made, or even the way that social life is organised implies the storage and the use of an incredible amount of data.

Digital technology enables the preservation of the minutia of everyday moves of the citizens, of their likes and dislikes, of who they are and what they own.¹ Online purchases, payments with credit cards, digital IDs, surveillance cameras installed in cities, and the use of smart phones which enable users to post information on different social media about their whereabouts and activities are only some of the circumstances of modern life which give rise to privacy concerns.

George Orwell, in his novel "1984", was one of the first who tried to explain the importance of privacy, by using the Big Brother's metaphor, in the context of a totalitarian society. This extreme example shows the ultimate negative effect of the control of citizen's personal data by a totalitarian regime. However, apart from this scenario, numerous privacy concerns arise in the context of daily activities in the transaction and relations in between citizens and/or companies.

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Abbreviations: Apps, applications; CCTV, closed circuit television; ECHR, European Convention of Human Rights; ECtHR, European Court of Human Rights; ECJ, European Court of Justice; GDPR, General Data Protection Regulation; MAC, media access control; MS, member state; OECD, Organisation for Economic Co-operation and Development; PbD, Privacy by Design; PET, privacy enmeshing technologies; PIT, privacy intrusive technologies; SN, social network; WP, working party.

¹ Solove D. J., "The digital person: Technology and Privacy in the information age", NYU Press, 2004.

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The entrance in the era of the Privacy-Invasive Technologies² (or Privacy-Intrusive Technologies) triggered the growth and development of legal texts and technologies that aimed to safeguard users' privacy and personal data.³ Through different technical means, depending on the technological sector, Privacy-Enhancing Technologies, widely known as PETs,⁴ have tried to reassure the users' privacy concerns by implementing a set of principles, such as data collection limitation, data specification and users' notice, into the processing of their data. A further step in the attempt to ensure citizens' privacy and data protection in the modern information society is the concept of Privacy by Design (PbD).

Privacy by design can be briefly explained as the implementation of several privacy principles directly into the design specifications of the technological systems, in a way that privacy rules will be embedded in the operation and management of the processing of the data. This approach aims to safeguard the privacy of the users, without limiting the efficiency and the capacities of each technology. Regarding this approach, several questions arise: Can the principle of Privacy by Design be implemented in all sectors where data protection concerns? How can the integration of Privacy by Design in core legislative documents effect current technological achievements? Are new technologies violating people's privacy? How can new technologies be efficient without being privacy intrusive?

This paper will treat the above-mentioned questions by exposing the principles and the implementation of the Privacy by Design approach. Privacy by Design can be applied in a wide range of technologies; however this paper will focus on biometrics, e-health and video-surveillance.

2. Privacy by Design: theory

2.1. Historical background

As stated before, during the last thirty years and due to the rapid technological innovation, many new forms of technology have emerged, enabling the surveillance and the storage of a large amount of personal data. To this extent, different privacy stakeholders, anxious as to the capability of new technologies, have started to think about solutions for ensuring privacy when processing personal data.

The general concept of Privacy by Design was developed in the early 1960s in the architectural and building sector, when privacy started to be considered as one of the most important factors when constructing residential buildings.⁵ However, within the legal and information field the term "Privacy by

design" appeared only in the late 1990s⁶ by its proponent Dr. Ann Cavoukian, just after the appearance of the "Surveillance by design" concept,⁷ which was dealing with the capacity of law enforcement authorities to monitor citizens through the use of new technologies, which were designed to give to authorities such potential (invasive surveillance technologies). As a countermeasure to the surveillance technologies, policy makers developed the concept of Privacy by Design, which aims to build privacy direct to the design specifications of the new technological achievements.⁸ The first public reference of the term was used in 2000, during the conference "Computers, Freedom & Privacy 2000: Workshop on Freedom and Privacy by design". After the terrorist attacks in the USA on 11/09/2001, the concept of "Privacy by Design" started to become even more essential and realistic in order to preserve privacy in a positive-sum way. From that moment and until now, Privacy by Design is constantly gaining ground and supporters from both legal and technological sectors.

Since the 1990s, Ann Cavoukian, the former Information and Privacy Commissioner of Ontario in Canada (IPC) and current Executive Director of the Privacy and Big Data Institute at Ryerson University, has been promoting this approach in numerous papers and conferences. Since then, many steps have been taken towards the enforcement of PbD at a national and a regional level. In 2010, at the 32nd International Conference of Data Protection and Privacy Commissioners in Jerusalem, Ann Cavoukian presented the concept and its 7 principles. A resolution on PbD was adopted unanimously, which recognized PbD as "an essential component of fundamental privacy protection" and encouraged "the adoption of Privacy by Design's Foundational Principles".⁹ Since this moment, the 7 Foundational Principles have been translated into 39 languages.

In 2010, the *Comprehensive approach on personal data protection in the European Union* of the European Commission¹⁰ stated that "promoting (. . .) Privacy by Design principle could play an important role (. . .) in ensuring data security". An explanation of Privacy by Design is given in a footnote:

The principle of 'Privacy by Design' means that privacy and data protection are embedded throughout the entire life cycle of technologies, from the early design stage to their deployment, use and ultimate disposal. This principle features inter alia in the Commission Communication on 'A Digital Agenda for Europe' – COM(2010) 245.

⁶ A that time, the concept has not yet appeared as it is known today, but is found mostly in the principles of cryptography and Privacy Enhancing Technologies.

⁷ Samarajiva, R., "Surveillance by Design: Public Networks and the Control of Consumption", in Mansell R. and Silverstone R. (eds). "Communication by Design: The Politics of Information and Communication Technologies", Oxford: Oxford University Press, 129–56, 1996.

⁸ Davies S., "Why Privacy by Design is the next crucial step for privacy protection", London School of Economics & Privacy International, 2010.

⁹ https://secure.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/Cooperation/Conference_int/10-10-27_Jerusalem_Resolutionon_PrivacybyDesign_EN.pdf.

¹⁰ http://ec.europa.eu/justice/news/consulting_public/0006/com_2010_609_en.pdf.

² Such as such as Body scanners, public space CCTV microphones or CCTV loudspeakers etc.

³ A definition of personal data can be found in Article 4 of the General Data Protection Regulation (GDPR) which defines as "personal data" any information relating to an identified or identifiable natural person. A broad definition of privacy is an individual's right to control access to his personal information.

⁴ See Chapter 2.2.

⁵ Hedley A., "Privacy as a factor in residential buildings and site development: an annotated Bibliography", in Issue 32 of Bibliography, National Research Council of Canada. Division of Building Research, 1966.

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