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# Laws and Emerging Technologies

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Edited by

Esther Salmerón-Manzano

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# **Laws and Emerging Technologies**



# Laws and Emerging Technologies

Editor

**Esther Salmerón-Manzano**

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# About the Editor

## **Esther Salmerón-Manzano**

Esther Salmerón-Manzano, lawyer and lecturer at the Faculty of Law in the Universidad Internacional de la Rioja (Spain) and at the Law Department of the University of Almeria (Spain). She received her M.S. in Law and Ph.D. in Law from the University of Almeria (Spain). She has published over 18 papers in JCR journals (<https://orcid.org/0000-0003-3019-3539>), H-index 7. Her main interests are Laws and Emerging Technologies, and Contract Law. She was Supervisor of 30 Bachelor and Master Final Reports. She is the Academic Director of the Master's degree in legal consultancy for companies and the Master's degree in family law at Universidad Internacional de la Rioja (Spain).





# Preface to “Laws and Emerging Technologies”

The emergence of new technologies of knowledge in all fields, their dissemination, and their application for social or economic benefit are essential activities for the progress of society worldwide. Its development has been essential for international economic and social convergence. However, the regulation and legal implications of these new technologies need to be addressed in the legal systems of every country.

**Esther Salmerón-Manzano**

*Editor*



# Laws and Emerging Technologies

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**Abstract:** New technologies and so-called communication and information technologies are transforming our society, the way in which we relate to each other, and the way we understand the world. By a wider extension, they are also influencing the world of law. That is why technologies will have a huge impact on society in the coming years and will bring new challenges and legal challenges to the legal sector worldwide. On the other hand, the new communications era also brings many new legal issues such as those derived from e-commerce and payment services, intellectual property, or the problems derived from the use of new technologies by young people. This will undoubtedly affect the development, evolution, and understanding of law. This Special Issue has become this window into the new challenges of law in relation to new technologies.

**Keywords:** legaltech; law firms; personal data; environmental law; law enforcement; BIM

## 1. Introduction

The emergence of new technologies of knowledge in all fields, their dissemination, and their application for social or economic benefit are essential activities for the progress of society worldwide. Its development has been essential for international economic and social convergence. However, the regulation and legal implications of these new technologies need to be addressed in the legal systems of every country. Therefore, in order to regulate the basic conditions that guarantee the equality and rights of individuals, legal systems should pay special attention to the legal challenges that new technologies can present. This includes, for example, blockchain technology in the future of contracts, big data, and the protection of personal data; the emergence of electric scooters as a new form of urban mobility; or even the fact that dependence on new technologies can affect one's personal life, where one seeks the right to disconnect digitally, and even the right to be forgotten.

This Special Issue aims to provide new legal advances in connection with new technologies. Therefore, research articles on any of these fields, with a global or local perspective, were welcomed.

## 2. Publications Statistics

The summary of the call for papers for this Special Issue on the seven manuscripts submitted: rejected (two; 29%) and published (five; 71%). The published manuscripts come from various continents and countries; the results are summarized in Table 1. The continental breakdown of authors is 61% from North America (USA and Canada), and 39% from Europe (Spain, Greece and Denmark). The average number of authors per manuscript was less than three.



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**Table 1.** Statistics of authors by country.

Continent	Country	Authors
Europe	Greece	3
Europe	Spain	1
Europe	Denmark	1
North America	USA	2
North America	Canada	6
Total		13

### 3. Authors' Affiliation

The authors come from eight different affiliations. Table 2 summarises the authors and their affiliations.

**Table 2.** Authors and affiliations.

Author	Affiliation	Country	References
Maniadaki, Maria	School of Environmental Engineering, Technical University of Crete	Greece	(Maniadaki et al. 2021)
Papathanasopoulos, Athanasios	School of Environmental Engineering, Technical University of Crete	Greece	(Maniadaki et al. 2021)
Mitrou, Lilian	Department of Information and Communication Systems Engineering, University of the Aegean-Greece	Greece	(Maniadaki et al. 2021)
Salmerón-Manzano, Esther	Faculty of Law, Universidad Internacional de La Rioja (UNIR)	Spain	(Salmerón-Manzano 2021)
Cullen, Olivia	Faculty of Social Work, University of Calgary	Canada	(Cullen et al. 2020)
Dimitropoulos, Gina	Faculty of Social Work, University of Calgary	Canada	(Cullen et al. 2020)
Dawes, Natalie	Faculty of Social Work, University of Calgary	Canada	(Cullen et al. 2020)
Ernst, Keri Zug	The Keller Center, San Mateo Medical Center	USA	(Cullen et al. 2020)
Binford, Warren	College of Law, Willamette University	USA	(Cullen et al. 2020)
Caserta, Salvatore	Faculty of Law, University of Copenhagen	Denmark	(Caserta 2020)
Jobidon, Gabriel	CIRCERB-CRMR, Université Laval	Canada	(Jobidon et al. 2021)
Lemieux, Pierre	Faculty of Law, Université Laval	Canada	(Jobidon et al. 2021)
Beauregard, Robert	Academic and Student Affairs, Université Laval	Canada	(Jobidon et al. 2021)

### 4. Topics

The research carried out by the authors in this Special Issue is summarized in Table 3 below. This table identifies the broad areas of law and new technologies that they address. They have been grouped into three main lines of research: Legaltech, New Technologies and Privacy Protection, and New Technologies and Recruitment. Table 4 summarizes the keywords used by all the manuscripts in the Special Issue. It can be seen that there is no repetition of keywords, with the exception of law firms and large law firms, and that in general the keywords are mostly combined.

**Table 3.** Topics for Laws and Emerging Technologies.

Bibliometric Studies	Number of Manuscripts	References
Legaltech and law firms	2	(Salmerón-Manzano 2021; Caserta 2020)
New Technologies and Privacy Protection	2	(Maniadaki et al. 2021; Cullen et al. 2020)
New Technologies and Recruitment	1	(Jobidon et al. 2021)

**Table 4.** Topics for Laws and Emerging Technologies.

Keywords	Reference
remote sensing; personal data; privacy; drones; UAV; satellites; environmental monitoring; environmental law	(Maniadaki et al. 2021)
legaltech; lawtech; justice; legal profession; legal design; law firms; legal education	(Salmerón-Manzano 2021)
child sexual abuse material; child pornography; law enforcement; multidisciplinary work	(Cullen et al. 2020)
digitalization; large law firms; sociology of law	(Caserta 2020)
building information modeling; integrated project delivery; public procurement; collaboration; infrastructure contracts	(Jobidon et al. 2021)

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**Conflicts of Interest:** The author declares no conflict of interest.

## References

- Caserta, Salvatore. 2020. Digitalization of the Legal Field and the Future of Large Law Firms. *Laws* 9: 14. [\[CrossRef\]](#)
- Cullen, Olivia, Keri Zug Ernst, Natalie Dawes, Warren Binford, and Gina Dimitropoulos. 2020. "Our Laws Have Not Caught up with the Technology": Understanding Challenges and Facilitators in Investigating and Prosecuting Child Sexual Abuse Materials in the United States. *Laws* 9: 28. [\[CrossRef\]](#)
- Jobidon, Gabriel, Pierre Lemieux, and Robert Beauregard. 2021. Building Information Modeling in Quebec's Procurement for Public Infrastructure: A Case for Integrated Project Delivery. *Laws* 10: 43. [\[CrossRef\]](#)
- Maniadaki, Maria, Athanasios Papathanasopoulos, Lilian Mitrou, and Efpraxia-Aithra Maria. 2021. Reconciling Remote Sensing Technologies with Personal Data and Privacy Protection in the European Union: Recent Developments in Greek Legislation and Application Perspectives in Environmental Law. *Laws* 10: 33. [\[CrossRef\]](#)
- Salmerón-Manzano, Esther. 2021. Legaltech and Lawtech: Global Perspectives, Challenges, and Opportunities. *Laws* 10: 24. [\[CrossRef\]](#)



Article

# Reconciling Remote Sensing Technologies with Personal Data and Privacy Protection in the European Union: Recent Developments in Greek Legislation and Application Perspectives in Environmental Law

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**Abstract:** Using remote sensing technologies to ensure environmental protection responds to the need of protection of a right and a public good and interest. However, the increasing introduction of these technologies has raised new challenges, such as their interference with the rights of privacy and personal data, which are also protected fundamental rights. In this paper the importance of remote sensing technologies as tools for environmental monitoring and environmental law enforcement is analyzed, while legal issues regarding privacy and data protection from their use for environmental purposes are presented. Existing legislation for reconciling emerging conflicts is also examined and major European Court of Human Rights (ECtHR) and Court of Justice of the European Union (CJEU) case law on the issue is approached. Finally, recent developments in Greek legislation and their application perspectives in environmental law are presented as a timely “case study”.

**Keywords:** Remote Sensing; personal data; privacy; drones; UAV; satellites; environmental monitoring; environmental law

## 1. Introduction

The development of remote sensing technologies, has led to numerous applications in several sectors. Remote sensing “provides tools for gathering data and solving real world problems<sup>1</sup>”. Especially in the field of environmental monitoring, the development of remote sensing technologies has been proven more than crucial, as it enables the collection of a wealth of data for Earth’s current and future state, affecting directly the decision making process as well as the environmental law enforcement sector (Mertikas et al. 2021). However, the transformation of collected data into useful information in the scope of environmental law, raises new challenges, such as their interference with the rights of privacy and personal data (Coffer 2020; Santos and Rapp 2019; Finn and Wright 2016; Sandbrook 2015; Doldirina 2014; Purdy 2011). Although it has become common knowledge that environmental problems have a global impact, calling thus for global action, nations still have their own role in legislation and regulation. In this sense, embracing new technologies such as remote sensing technologies in the case of Greece responds not only to Article 37 of EU Charter of Fundamental Rights<sup>2</sup> but also to the need of protection of a—in Greece constitutionally anchored—right and a public good and interest for environmental protection (Article 24 of the Greek Constitution). At the same time, key questions arise: is

<sup>1</sup> Available online: [http://gsp.humboldt.edu/OLM/Courses/GSP\\_216\\_Online/lesson8-2/future.html](http://gsp.humboldt.edu/OLM/Courses/GSP_216_Online/lesson8-2/future.html) (accessed on 5 April 2021).

<sup>2</sup> Article 37 of EU Charter of Fundamental Rights: “A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development”.



the protection of privacy and personal data a normative restriction thereof and vice versa? How could a fair and balanced reconciliation of all rights be achieved? Does the law provide the instruments for striking this balance? What is the role of the existing ECtHR and CJEU case law for such an interpretation? Further, what is more: does national legislation play a role for a successful regulation? The paper is structured in four parts, as follows: in the first part, the importance of remote sensing technologies as tools for environmental monitoring and environmental law enforcement is analyzed. In the second part, legal issues regarding privacy and data protection from the use of remote sensing technologies for environmental purposes are presented. In the third part, existing legislation for reconciling emerging conflicts from the application of remote sensing technologies between the right for a high level of environmental protection and the rights for privacy and personal data protection is examined. In addition, major ECtHR and CJEU case law on the issue is approached focusing on the application of the principle of proportionality. In the fourth part, recent developments in Greek legislation and their application perspectives in environmental law are presented as a timely “case study”. Greece, one of the oldest members of EU, with 80% of its surface belonging to mountainous areas and with thousands of islands, faces difficulties in the collection of data for its territory. As a result, the use of remote sensing technologies in Greece seems inevitable and therefore this country may become an excellent example for studying emerging challenges from the application of remote sensing technologies in the environmental sector.

## **2. Remote Sensing Technologies as Tools for Environmental Monitoring and Environmental Law Enforcement**

### *2.1. Definitions-Brief Description of Current and Future Capacities*

“Remote sensing may be broadly defined as the collection of information about an object without being in physical contact with the object. Aircraft and satellites are the common platforms from which remote sensing observations are made. The term remote sensing is restricted to methods that employ electromagnetic energy as the means of detecting and measuring target characteristics” (Sabins 1978). Remote sensing systems are based on signals and images acquired by sensors installed on artificial satellites or aircraft and are used for vast geographical phenomena (di Vimercati et al. 2013). The advancement of satellite technologies and unmanned aerial vehicles has been remarkable last decades. The technological development of satellite technologies on one hand has led to on-demand satellite constellations, which deliver high resolution data (0.75 m) with a daily revisit interval anywhere around the globe. In addition to the high resolution, they can acquire a sequence of images with a small time interval (video persistent mode) due to their unique rapid sensor depointing agility (Almar et al. 2019). Furthermore, as more countries gain their own Earth observation capability, commercialization is a common theme (Harris and Baumann 2021). On the other hand, unmanned aerial vehicles or “drones”, although initially used almost exclusively for military applications, it is now to mention their rapid development for civil applications, and it has even been said that “we are entering the drone age” (Anderson 2012). The surveillance capabilities of drones are rapidly advancing and cheap storage is now available<sup>3</sup>. The capabilities of drones depend on what they are able to carry. Due to the growing commercialization of drones, commercial UAV manufacturers will increasingly improve their products following the needs of their clients. Additionally, a service sector will evolve to offer UAV services such as leased systems, on-demand flights, or consultation for choosing appropriate platforms or analyzing UAV-generated data (Watts et al. 2012).

To sum up, the future of remote sensing technologies can be described into three words: development, privatization, commercialization.

<sup>3</sup> Drones and Environmental Monitoring. 2017. Environmental Law Institute, Washington, DC, USA.

## 2.2. Applications of Remote Sensing Technologies in Environmental Monitoring and Environmental Law Enforcement

Remote sensing is used in numerous fields for environmental purposes. Remote sensing has provided the means for detecting and quantifying the rates of pollution, as well as for mapping and monitoring sources of pollution and the degree of remediation for their management. It has the means to respond and facilitate environmental management, and makes sound and evidence-based decisions in relation to Earth's resources at a global scale and across different continents, nations, and domains (Mertikas et al. 2021). Such a collection of environmental monitoring data through remote sensing technologies is undoubtedly essential for the effective decision making of environmental authorities.

Simultaneously, the most important applications of remote sensing technologies in environmental law enforcement consist of their use from public authorities for their work (duty) known as "environmental compliance assurance". Environmental compliance assurance describes all the ways in which public authorities promote, monitor and enforce compliance with environmental law. Through the Copernicus program and the relevant EU action plan, the EU Commission promotes the use of satellite images and other geospatial data resources to detect illegal disposal of waste, illegal land use and other breaches<sup>4</sup>. Earth observation technology may also contribute to implementing and ensuring compliance with multilateral environmental agreements (Kuriyama 2005) and they have been actually used to monitor the implementation of environmental agreements such as the World Heritage Convention, the Convention of Biological Diversity, the Ramsar Convention, the UN Convention to Combat Desertification, and the UN Framework Convention on Climate Change. In some countries, such as the Netherlands, earth observation technology is also used in the preparation of 'environmental impact reports' to obtain permits for new water projects, in order to verify their compliance with the legal framework<sup>5</sup>. Another significant application of remote sensing technologies in environmental law enforcement refers to collecting reliable information that can provide solid evidence to combat environmental crime (Patias et al. 2020). However, remote sensing technologies as means of proof are subject to certain limitations and are therefore preferably used as complementary means of proof. In particular, data collected by remote sensing technologies are of digital nature which means that they are subject to alterations and thus need to be verified<sup>6</sup>. In addition, strict control of the whole process of data collection and interpretation is essential, from the moment the data is obtained, in order to avoid wrong evidence (Laituri 2018).

## 3. Privacy and Data Protection: Legal Issues from the Use of Remote Sensing Technologies for Environmental Monitoring and Environmental Law Enforcement

Technology has always been a threat to the right to privacy, in other words, to "the right to be le(f)t alone" (Warren and Brandeis 1890). In spite of several attempts that have been made to define privacy, no universal definition of privacy could be created. Although the claim for privacy is universal, its concrete form differs according to the prevailing societal characteristics, the economic and cultural environment (Lucács 2016). There are—among others—the following forms of privacy: information privacy and location privacy. Informational privacy indicates much more as informational seclusion, a refuge for the individual. Informational privacy rests on the premise that information about ourselves is something over which individuals may exercise autonomy. Location privacy refers to the right of individuals to move in their "home" and other public or semi-public places without being identified, tracked or monitored (Mitrou 2009). In this sense, the use of remote sensing technologies in the current era may interfere with the rights to informational and location privacy. Observation of private spaces with remote sensing technologies or the location of a person (even without collection of data) or even the correlation of collected data with other

<sup>4</sup> Available online: [https://ec.europa.eu/environment/legal/compliance\\_en.htm](https://ec.europa.eu/environment/legal/compliance_en.htm) (accessed on 5 April 2021).

<sup>5</sup> ESA Workshop Evidence from Space, Document ESA-ISPL/EO 47, 5 October 2010, Available on line: <https://www.space-institute.org/wp-content/uploads/2010/10/Workshop-Information-Package-Final.pdf> (accessed on 5 April 2021).

<sup>6</sup> Ibid.

data may reveal information about individuals' (private) life. Especially when using drones also the so called "bodily privacy" could be affected. As "bodily privacy" we understand also the right to keep bodily functions and body characteristics private (Mitrou 2009). Indicatively, regarding the use of remote sensing technologies for monitoring compliance with environmental legislation on vegetation clearance, in a survey of UK and Australian farmers about their attitudes to being monitored using satellite imagery, most farmers were happy to be monitored this way in principle, however, 58% of Australian respondents and 75% of UK respondents agreed that satellite monitoring was "an invasion of their privacy" (Purdy 2011). Similarly, even if people are aware that certain drones are used for conservation purposes, for example for combatting illegal hunting in South Africa, they may nonetheless feel aggrieved (Sandbrook 2015). The use of remote sensing technologies may interfere also with the right to data protection. Privacy and data protection are closely linked but they are not identical. Data protection serves the protection of private life but the relevant rules apply also to personally identified information, which does not fall under the scope of "private life" even in its broad interpretation. Data protection rules are applicable, whenever personal data are processed (Mitrou 2009). The right to data protection will only protect individuals when remote sensing technologies process personal data (which includes collection of personal data). The collection of images, videos, sounds, and the geo-localization data related to an identified or identifiable natural person (according to the definition of Article 4 (1) of General Data Protection Regulation—GDPR) that has been collected by remote sensing technologies and may also be processed by using suitable methods is subject to data protection legislation. According to CJEU case law, personal data are those that "allow very precise conclusions to be drawn concerning the private lives of the persons whose data has been retained, such as the habits of everyday life, permanent or temporary places of residence, daily or other movements, the activities carried out, the social relationships of those persons and the social environments frequented by them"<sup>7</sup>.

In this sense, very high resolution (VHR) satellite imagery creates considerable challenges for personal data protection, since contextualizing satellite imagery in reference to geographical locations, such as neighborhoods or even houses, can transform an individual in an image from arbitrary to distinguishable (Coffer 2020). Additionally, interactive maps that integrate various types of data, including satellite Earth observation data, into GIS, as well as zooming function available when browsing GIS, may make available personal information linked to a specific geographic location or even an individual (Doldirina 2014). In addition, the application of facial recognition technology or big data analytical software in data collected by remote sensing technologies puts in danger the protection of personal data when it constitutes process of personal data. With regard to drones the threats are more direct, since they can easily observe persons and private spaces and collect personal data, such as persons' locations, relationships etc. Further, what is more: if data subjects are not informed about the use of remote sensing technologies for monitoring purposes their right to informational self-determination and to autonomous and informed decision making is affected. Furthermore, if they are not adequately informed about the data processing equipment, about the purposes of data collection and the identity of who is collecting data as well as the agency's or company's location, that would result in an increased feeling of being under surveillance and a subsequent possible decrease in the legitimate exercise of civil liberties and rights, best known as "chilling effect"<sup>8</sup>.

For this reason, personal data protection law is applicable, so that personal data procession may be only under strict requirements allowed (see below under Section 4.2). Before applying personal data protection law, it must be first checked whether personal data concerns are raised by the use of remote sensing technologies in each particular case.

<sup>7</sup> C-293/12 and C-594/12 *Digital Rights Ireland* para 27, C-203/15 and C 698/15 *Tele 2* para 99 and C-207/16 *Ministerio Fiscal* para 60.

<sup>8</sup> On the chilling and panopticon effect syndrome arising from a large-scale use of drones, see Rachel L. Finn, David Wright and Anna Donovan (Trilateral Research & Consulting, LLP), Laura Jacques and Paul De Hert (Vrije Universiteit Brussel), 2014, Privacy, data protection and ethical risks in civil RPAS operations, 7 November 2014, Available online: <http://ec.europa.eu/T1/textgreater{}translations/T1/textgreater{}renditions/T1/textgreater{}pdf> (accessed on 5 April 2021).

For example, regarding the use of remote sensing technologies for the detection of planning breaches, it is remarkable that the Belgium Privacy Commission in its Opinion no. 26/2006 stated that: “The Privacy Commission considered that the satellite images, insofar as they concerned property of natural persons, constituted information about identified or identifiable natural persons which qualified as personal data for the purposes of privacy law, and that the processing of that information by the planning authorities had to be treated as processing of personal data within the meaning of privacy law” (Billiet 2012).

#### 4. Setting the Limits between Conflicting Rights

It is clear so far, that the importance of remote sensing technologies as tools for environmental monitoring and environmental law enforcement is undoubtable, however, the same time their use may cause considerable threats to the rights for privacy and personal data protection. In the following section, it is examined how a fair and balanced reconciliation of all rights could be achieved before technology significantly outpaces legislation<sup>9</sup>.

##### 4.1. Specific Legislation on Remote Sensing Technologies

Satellite remote sensing is subject to international space law. The Outer Space Treaty and the four follow-on treaties consist the most important documents for international space law. They have not been recently modified. There is to observe a lack of relevant and precise guidance in the Outer Space Treaty on issues of privacy related to VHR satellite data. Further, in the four follow-on treaties on space no specific provision is included, as no consideration has been given to privacy aspects and the respective protection. This is due to the fact that at the time these major space treaties were drafted no consideration was given to privacy protection (Dunk 2013). Only the Convention on International Liability for Damage Caused by Space Objects rules in Article II that “A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft in flight<sup>10</sup>”. Taking into account that the term “damage” in Article I (a) is defined as the “loss of life, personal injury or other impairment of health”, it can be claimed that a violation of an individual’s privacy right can be potentially construed as an impairment of health under this Convention. Such an interpretation is based on the World Health Organization’s definition of health<sup>11</sup>, according to which health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (Santos and Rapp 2019). In this sense, targeted surveillance or even the fear of constant surveillance by satellite remote sensing may disturb people’s mental and social well-being and cause “damage” under the Convention on International Liability for Damage Caused by Space Object. Finally, neither the Resolution 41/65 on the Principles of Remote Sensing of the Earth from Outer Space focuses at all on privacy matters.

International law regarding unmanned aircraft systems clearly states a need for harmonization comparable to that of manned operations, even though drones are subject to national civil aviation law of the member States<sup>12</sup>. However, in such international contexts there is again no clear reference to privacy and personal data matters.

Nevertheless, especially for drones, there is to mention a recent trend for detailed regulation in European level. Regulation (EU) 2018/1139 clearly recognizes the threats for privacy and personal data protection by the use of drones: “The rules regarding unmanned aircraft should contribute to achieving compliance with relevant rights guaranteed under

<sup>9</sup> According to the Collingridge dilemma ‘Regulators having to regulate emerging technologies face a double- bind problem: the effects of new technology cannot be easily predicted until the technology is extensively deployed. Yet once deployed they become entrenched and are then difficult to change’ (Collingridge 1980).

<sup>10</sup> Convention on International Liability for Damage Caused by Space Objects (1972), Available online: [https://www.unoosa.org/pdf/gares/ARES\\_26\\_2777E.pdf](https://www.unoosa.org/pdf/gares/ARES_26_2777E.pdf) (accessed on 5 May 2021).

<sup>11</sup> Preamble to the Constitution of the World Health Organization, reprinted in Final Acts of the International Health Conference, U.N. Doc. E/155, at 11 (1946).

<sup>12</sup> See: ICAO Cir 328, Unmanned Aircraft Systems (UAS), Available online: [https://www.icao.int/meetings/uas/documents/circular%20328\\_en.pdf](https://www.icao.int/meetings/uas/documents/circular%20328_en.pdf) (accessed on 5 April 2021).

Union Law, and in particular the right to respect for private and family life, set out in Article 7 of the Charter of Fundamental Rights of the European Union, and with the right to protection of personal data, set out in Article 8 of that Charter and in Article 16 TFEU, and regulated by Regulation (EU) 2016/679 of the European Parliament and of the Council<sup>13</sup>. Generally, the Regulation (EU) 2018/1139 serves for the protection of privacy in such use by setting what should be achieved. Recent Commission Delegated Regulation (EU) 2019/945<sup>14</sup> which applies since 1 July 2020 has divided drones into classes in terms of their technical characteristics (open, specific and certified category) and lays down the requirements for the remote identification of drones, which is very important in helping to determine the operator of the drone, serving thus for more effective privacy protection in the use of drones (Puraite and Silinske 2020). However, for classes C0 and C4, which are technically simpler and therefore more accessible to the majority of people, no requirement of a direct remote identification equipment is included. In addition, Commission Implementing Regulation (EU) 2019/947 of 24 May 2019<sup>15</sup> on the rules and procedures for the operation of unmanned aircraft, being in effect and applying since 1 July 2020, includes requirements for the implementation of three foundations of the U-space system, namely registration, geo-awareness and remote identification, which will need to be further completed. According to the Preamble of this Regulation par. 14 and 16: “Operators of unmanned aircraft should be registered where they operate an unmanned aircraft which, in case of impact, can transfer, to a human, a kinetic energy above 80 Joules or the operation of which presents risks to privacy, protection of personal data, security or the environment” . . . “Considering the risks to privacy and protection of personal data, operators of unmanned aircraft should be registered if they operate an unmanned aircraft which is equipped with a sensor able to capture personal data”. This is a clear safeguard clause but it is still questionable how alone the registration of operators would be effective for privacy issues if for classes C0 and C4, there is no requirement of a direct remote identification equipment. In addition, Article 11 of the Regulation 2019/947 states the rules for conducting an operational risk assessment while Article 18 (h) and (i) of the Regulation imposes the development of a risk based oversight system and an audit planning for certain drone operators, but it seems difficult to perceive how Article 35 GDPR<sup>16</sup> vis a vis Article 11 and 18 of the Regulation 2019/947 could complement each other (Pagallo and Bassi 2020). To sum up, the new legislation at EU level, namely Regulations 2019/945 and 2019/947, establish registration and remote identification requirements in the use of drones, making thus a huge contribution to the effectiveness of privacy and personal data protection, but with exceptions that could possibly undermine this goal, while there are still some unclear points of the risk assessment mechanism set.

#### *4.2. Parallel Application of International and European Union Law on the Protection of Privacy and Personal Data*

Apart from the above mentioned specific legislation on remote sensing technologies, it is important to assess the parallel application of International and European Union Law on the protection of privacy and personal data when using remote sensing technologies.

Protection of privacy on international level is ruled by Article 8 of the European Convention on Human Rights (ECHR): “Everyone has the right to respect for his private and family life, his home and his correspondence”. According to Paragraph 2 of the Article 8 ECHR “There shall be no interference by a public authority with the exercise of this right

<sup>13</sup> Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No. 2111/2005, (EC) No. 1008/2008, (EU) No. 996/2010, (EU) No. 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No. 552/2004 and (EC) No. 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No. 3922/91 Preamble para 28.

<sup>14</sup> Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems.

<sup>15</sup> Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft.

<sup>16</sup> In Article 35 GDPR data protection impact assessment is ruled in 11 paragraphs. In particular, it is ruled when and how a data protection impact assessment is conducted in Member States.

except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic wellbeing of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others". Therefore, the right to private life is not guaranteed in ECHR as an absolute right but it must be balanced against and reconciled with other legitimate interests, either private or public, while any interference with the right to privacy has to comply with the so-called "democracy test" (Mitrou 2009).

On European Union level, Article 16 of the Treaty on the Functioning of the European Union (TFEU) in accordance with Article 8 of the Charter of Fundamental Rights of the European Union, they rule together the protection of personal data. Article 7 of the Charter of Fundamental Rights of the European Union declares respect for private and family life. Furthermore, according to Article 52 (1) of the Charter of Fundamental Rights of the European Union, the principle of proportionality is introduced as a tool for balancing fundamental rights. According to the last Article, limitations on the exercise of the rights and freedoms recognized by the Charter must be necessary and appropriate.

In this sense, a limitation may be necessary if there is a need to adopt measures for the public interest objective pursued. If a limitation is proven to be strictly necessary, there must be also be assessed whether it is proportionate. Proportionality means that the advantages resulting from the limitation should outweigh the disadvantages the latter causes on the exercise of the fundamental rights at stake. To reduce disadvantages and risks to the enjoyment of the rights to privacy and data protection, it is important that limitations contain appropriate safeguards<sup>17</sup>.

Furthermore, Union Law contains since very early specialized legislation on the protection of personal data. The current basic legislative acts for the protection of personal data in the EU is GDPR<sup>18</sup> on one hand, and Police and Criminal Justice Authorities Directive<sup>19</sup> on the other hand.

GDPR's territorial scope according to Article 3 par. 2 b covers the processing of data (which includes collection) both from satellites and drones, as long as they collect or process data of EU residents, even if they collect or process such data from satellites under the jurisdiction and control of a non-EU country provided that processing activities are related to the monitoring of the behavior of EU residents as far as their behavior takes place within the Union. Police and Criminal Justice Authorities Directive applies to the processing of personal data by competent authorities of member states for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including the safeguarding against and the prevention of threats to public security. It also covers collected data both from satellites and drones, as long they are processed by competent authorities of member states.

Following the above mentioned legislation, and especially Article 52 (1) of the Charter and Article 8 (2) ECHR any limitation to the exercise of rights and freedoms recognized by the Charter must be provided for by law ("in accordance with the law"), made only if it is necessary and genuinely meets objective of general interest recognized by the Union or the need to protect the rights and freedoms of others ("in pursuit of one of the legitimate aims set out in Article 8 (2) of the ECHR and necessary in a democratic society")<sup>20</sup>.

As a result, the police and other environmental authorities when using remote sensing technologies should first assure themselves that they have a valid legal basis for processing personal data. This also stems directly from Article 8 of Police and Criminal Justice

<sup>17</sup> Handbook on European data protection law. 2018. Available online: <https://fra.europa.eu/en/publication/2018/handbook-european-data-protection-law-2018-edition> (accessed on 5 April 2021).

<sup>18</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC.

<sup>19</sup> Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA.

<sup>20</sup> See also: Opinion 01/2015 on Privacy and Data Protection Issues relating to the Utilization of Drones. Available on line: [https://ec.europa.eu/newsroom/article29/item-detail.cfm?item\\_id=640602](https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=640602) (accessed on 5 April 2021).

Authorities Directive as well as from Article 6 of GDPR. In this point, it is important to underline that Police and Criminal Justice Authorities Directive and GDPR supplement each other as they operate in different sectors but cooperate in the areas where they overlap (Pajunoja 2017). CJEU case law also identifies this relation between Police and Criminal Justice Authorities Directive and GDPR<sup>21</sup>. Therefore, police and the Criminal Justice Authorities Directive are applied when limitations to rights are imposed by the State for personal data collected directly by competent authorities only in order to serve their work (duty) for the prevention, investigation, detection or prosecution of environmental criminal offences. In cases when data are collected by third parties (private entities etc.) for other reasons but it happens them to be necessary also for the purposes of the prevention, investigation, detection or prosecution of environmental criminal offences, Article 23d of GDPR is applicable. Finally, Article 6e of GDPR is applicable, when administrative official authorities, such as forest services, environmental departments, environmental inspectors etc., that are authorized to protect the environment and impose administrative sanctions for law infringements, may according to a certain legal basis process personal data, for example inspect protected areas with drones.

Police and other environmental authorities when using remote sensing technologies should afterwards follow all principles stemming from Article 4 of Police and Criminal Justice Authorities Directive either from Article 5 of GDPR, namely their actions should comply with the principles of lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality (security), and accountability. This means that data subjects must be aware of the collection and processing of their personal data and therefore data controllers have the obligation to inform them according to the relevant Articles of Police and Criminal Justice Authorities Directive or of GDPR. Especially for drones, signposts or information sheets for an event could be easily used for drone operations in fixed locations, also social media, public display areas, flashing lights, buzzers and bright colors could be envisaged. Drone operators could also publish information on their website or on dedicated platforms in order to inform constantly about the different operations that take place<sup>22</sup>. In addition, remote sensing technologies shall be used from police and other environmental authorities when the necessity and appropriateness for the specific purposes is justified. A strict assessment of the necessity and proportionality of the processed data should take place.

Furthermore, data controllers and processors, where applicable, must implement the appropriate technical and organizational measures to protect personal data from accidental or unlawful destruction according to the security principle (Article 29 of Police and Criminal Justice Authorities Directive or Article 32 of GDPR). Finally, it seems that a data protection impact assessment of Article 35 of GDPR is necessary (only when GDPR is applicable because such an impact assessment is not included in Police and Criminal Justice Authorities Directive), since remote sensing technologies, especially the use of drones, in the environmental law enforcement sector are likely to result in a high risk to the rights and freedoms of natural persons as stated above. Simultaneously, decisions that produce legal effects concerning the natural person, such as imposition of environmental administrative fines, can be based on processed remote sensing data, making a data protection impact assessment in these cases absolutely essential.

#### *4.3. Relevant ECtHR and CJEU Case Law on Lawful Limitations of Privacy and Personal Data Protection*

Under this rather complicated legislative background, finding relevant case law, seems to be more than vital for a successful interpretation of lawful limitations of privacy

<sup>21</sup> C- 623/17 *Privacy International*, para 47–48.

<sup>22</sup> WP29 apart from these also acknowledges the need for the creation of a national or cross-national information resource to enable individuals to identify the missions and operators associated with individual drones (Working Group on Data Protection in Telecommunication, Working Paper on Privacy and Aerial Surveillance, 54th meeting, Berlin, September 2013. Available online: <https://www.datenschutz-berlin.de/infothek-und-service/veroeffentlichungen/working-paper/> (accessed on 5 April 2021).

and personal data protection when using remote sensing technologies for environmental purposes. In this sense, relevant ECtHR and CJEU case law is of high priority.

A first observation is that the structure and wording of ECHR is different than that of the Charter. The Charter as already mentioned above does not use the notion of interferences with guaranteed rights, but contains a provision on limitation(s) on the exercise of the rights and freedoms recognized by the Charter. However, despite different wording, in their case law, the CJEU and the ECtHR often refer to each other's judgments, as part of the constant dialogue between the two courts to seek a harmonious interpretation of data protection rules<sup>23</sup>.

According to the jurisprudence of ECtHR, interference is in accordance with the law if it is based on a provision of domestic law, which must be "accessible to the persons concerned and foreseeable as to its effects". Since very early the ECtHR had judged that the "notion of necessity implies that the interference corresponds to a pressing social need and, in particular, that it is proportionate to the legitimate aim pursued"<sup>24</sup>. In its following jurisprudence the ECtHR considers further an interference "necessary in a democratic society" for a legitimate aim if it answers a "pressing social need" and, in particular, if it is proportionate to the legitimate aim pursued and if the reasons adduced by the national authorities to justify it are "relevant and sufficient"<sup>25</sup>. More recently, the ECtHR interpreted the requirement of "necessity in a democratic society", as "including whether it is proportionate to the legitimate aims pursued, by verifying, for example, whether it is possible to achieve the aims by less restrictive means" while there is settled an obligation for domestic law for providing "adequate and effective safeguards and guarantees against abuse"<sup>26</sup>.

The jurisprudence of the CJEU also recognizes the same necessity for adequate and effective safeguards and guarantees or in other words the "existence of clear and precise rules" and "minimum safeguards" to protect personal data against the risk of abuse and against any unlawful access and use of that data<sup>27</sup>. The CJEU also considers that only the objective of fighting serious crime is capable of justifying restrictions in personal data protection such as data retention measures or access to data protected by Articles 7 and 8 of the Charter<sup>28</sup>. However, the definition of what may be considered to be 'serious crime' is left to the discretion of the member states, since depending on the national legal system, the same offence may be penalized more or less severely. Therefore, it is finally the correlation between the seriousness of the interference and the objective pursued under certain criteria, such as the categories of data concerned and the duration of the period in respect of which access is sought, that is decisive for justifying a potential restriction<sup>29</sup>.

In this sense, the CJEU often<sup>30</sup> refers directly to the principle of proportionality as the appropriate tool for properly balancing the objective of general interest against the rights at issue and underlines that exceptions that allow limitations on the protection of personal data must remain exceptions and not be transformed to the rule. Of special importance is C-73/16, *Peter Puškár* case, where the CJEU judged<sup>31</sup> that the processing of personal data by the authorities of a member state for the purpose of collecting tax and combating tax fraud without the consent of the data subjects is legitimate, provided that, those authorities were invested by the national legislation with tasks carried out in the public interest and

<sup>23</sup> Handbook on European data protection law. 2018. Available online: <https://fra.europa.eu/en/publication/2018/handbook-european-data-protection-law-2018-edition> (accessed on 5 April 2021).

<sup>24</sup> ECHR *Leander v Sweden* No. 9248/81, 26 March 1987, para 50 and 58.

<sup>25</sup> *S. and Marper v the UK* (GC), 30562/04 & 30566/04, 4 December 2008, para 101.

<sup>26</sup> *Roman Zakharov v. Russia* (GC), 47143/06, 4 December 2015, Para 260, 236, *Szabo and Vissy v. Hungary*, 37138/14, 12 January 2016, para 57, *P.N v. Germany*, 74440/17, 11 June 2020, para 74.

<sup>27</sup> C-293/12 and C-594/12 *Digital Rights Ireland* para 54, C-203/15 and C 698/15 *Tele 2* para 109.

<sup>28</sup> C-203/15 and C 698/15 *Tele 2* para 102, C-207/16 *Ministerio Fiscal* para 56 and 57.

<sup>29</sup> C-746/18, *H. K. v. Prokuratuur* para 87–97.

<sup>30</sup> C- 623/17 *Privacy International*, para 64, 67, Joined cases C-511/18 *La Quadrature du Net and Others*, C- 512/2018 *French Data Network and Others* and C- 520/2018 *Ordre des barreaux francophones et germanophone and Others*.

<sup>31</sup> C-73/16, *Peter Puškár* para 112–117.



the principle of proportionality is respected. According to the decision such processing is proportionate only if there are sufficient grounds to suspect the person concerned for the alleged crimes. The court stated in this decision that the protection of the fundamental right to respect for private life at the European Union level requires that derogations from the protection of personal data and its limitations should be carried out within the limits of what is strictly necessary. In order to prove that such limitations are carried out within the limits of what is strictly necessary the CJEU requires from the national court to ascertain that there is no other less restrictive means in order to achieve the authority's objectives.

To sum up, it stems from all previous mentioned decisions of ECtHR and CJEU that limitations of privacy and personal data protection are lawful as long as they are proportionate to the legitimate aims pursued and they are imposed with sufficient safeguards against abuse or in other words as long as they are proportionate in so far as they apply only as it is strictly necessary under clear and precise rules with sufficient guarantees of the effective protection of privacy and personal data against the risk of misuse. Finally, it is obvious that although the objective of fighting serious crimes clearly justifies restrictions of privacy or personal data in areas of prevention, investigation, detection and prosecution of criminal offences, the condition of proportionality and strong safeguards to guarantee the rights are to be the same time fulfilled.

In regards with remote sensing technologies, although no ad hoc case law concerning the balance between the right for a high level of Environmental Protection and the rights for privacy and personal data exists, the use of the previously mentioned ECtHR and CJEU case law by analogy seems more than appropriate. Consequently, remote sensing technologies can be used for environmental purposes, especially for combatting serious environmental crime, however with sufficient guarantees for the effective protection of privacy and personal data, provided that no other less restrictive means exist.

In the following section, recent developments and first "concrete" steps in Greek legislation regarding the reconciliation of remote sensing technologies with personal data and privacy protection are presented, as well as their application perspectives in environmental law, in an attempt of a primary approach. However, it must be underlined even from this early point, that the new Greek regulatory framework is limited to certain crimes, covering thus only a small part of environmental crime, that is below analyzed. Police and Criminal Justice Authorities Directive (and its harmonization national law) as well as GDPR still regulate the majority of emerging legal issues from the use of remote sensing technologies for environmental monitoring and environmental law enforcement in Greece. Nonetheless, despite the limited scope of the new legislation, its value remains of great importance since it opens the path and the dialogue for a consistent regulatory framework of remote sensing technologies in national level.

## 5. The Case of Greece

### 5.1. *The Special Features of Greece*

Greece can be considered as a most interesting case for applying remote sensing technologies for environmental purposes. This is not only due to the natural features of Greece but also due to rules of constitutional protection of the environment, of privacy and personal data constitutional protection as well as due to the recent introduction of a specific regulatory framework for the use of remote sensing technologies in public places.

#### 5.1.1. Natural Features and Remote Sensing Technologies

When it comes to the use of remote sensing technologies, Greece seems to be an "ideal" case study. This country is characterized by its unique relief, its alpine character, the great length of its coastline, its large number of islands, and its remarkable biodiversity, with habitats and species subject to a special protection status. Therefore, remote sensing technologies have great potential when it comes to covering the needs that arise from the purpose of environmental protection by replacing human physical presence, whenever such presence is inadequate or impossible.

The use of modern technological tools for the purpose of environmental protection is different from the former know-how employed by the Greek administration, which involved the “static” use of older technologies to address special technical issues (e.g., for purposes of public works<sup>32</sup> or for forest mapping<sup>33</sup>), and from the more recent one concerning the attainment of objectives of a wider range (National Cadastre<sup>34</sup>, forest maps-Forest Register<sup>35</sup>) through modern technologies, which, however, are in these cases again used in a technocratic and mechanistic manner.

The usability of the most modern technologies, such as satellite imagery and UAVs, is nowadays examined in a ‘dynamic’ manner, i.e., for the purpose of systematically recording and using data where and when required, depending on the needs of an overall environmental protection strategy. Such a use, based on a real-time monitoring strategy, exceeds the existing administrative experience, on the one hand, and raises crucial questions about human rights and especially privacy and personal data protection, on the other hand.

### 5.1.2. Constitutional Protection of Conflicting Rights and the Principle of Proportionality as Counterbalance

Greek legal order has the particularity that provides a constitutional protection to the environment, and, especially to the forest environment, which is subject to a special status of enhanced constitutional protection (Article 24 par. 1 and Article 117 par. 3 of the Constitution) (Maria et al. 2020). At the same time, the rights of personal data, privacy, and personality protection are also constitutionally anchored (Articles 9, 9A, 5 of the Constitution).

Finally, any conflict between protected human rights in the Hellenic Constitution system is resolved through the implementation of the principle of proportionality (Article 25 par. 1 of the Constitution<sup>36</sup>), which is the essential counterbalance<sup>37</sup>. In the Greek legal order, the principle of proportionality was initially acknowledged by the Hellenic Council of State as a constitutional principle derived from the concept of State of justice<sup>38</sup>, and after the constitutional revision of the year 2001, it was explicitly incorporated in Article 25 par. 1 of the Constitution.

### 5.2. Privacy and Data Protection in Greece

The inviolable nature of private and family life is explicitly guaranteed by Article 9 of the Constitution as well as by civil and criminal legislation, which protect these rights against infringements either by state authorities or by other citizens (Dagtoglou 1991). Moreover, the protection of privacy is further guaranteed by the Constitution through Article 19 (Confidentiality of letters, free correspondence and communication) and Article 21 (protection of family, marriage, motherhood and childhood, rights of persons with disabilities), while especially the confidentiality of letters and free correspondence and communication are supervised by the independent Communications Privacy Authority.

<sup>32</sup> Legislative Decree 3879/1958, PD 696/1974.

<sup>33</sup> Law 248/1976.

<sup>34</sup> Law 4512/2018.

<sup>35</sup> Law 3889/2010.

<sup>36</sup> Article 25 par. 1 “1. The rights of the human being as an individual and as a member of the society and the principle of the welfare state rule of law are guaranteed by the State. All agents of the State shall be obliged to ensure the unhindered and effective exercise thereof. These rights also apply to the relations between individuals to which they are appropriate. Restrictions of any kind which, according to the Constitution, may be imposed upon these rights, should be provided either directly by the Constitution or by statute, should a reservation exist in the latter’s favor, and should respect the principle of proportionality”.

<sup>37</sup> About the principle of proportionality and its adoption and evolution by the different national legal orders, the European Law, the CJEU case law and the ECHR case law: see Scaccia G. Proportionality and the Balancing of Rights in the Case-law of European Courts. 2019. federalismi.it, 4/2019, Available on line: <https://www.sipotra.it/wp-content/uploads/2019/03/Proportionality-and-the-Balancing-of-Rights-in-the-Case-law-of-European-Courts.pdf> (accessed on 5 April 2021).

<sup>38</sup> Hellenic Council of State 1341/1982, 2112/1984, 2261/1984, 3682/1986.

Personal data protection, which is inextricably connected to remote sensing technologies<sup>39</sup>, is established in Article 9A of the Constitution<sup>40</sup> and currently regulated by Law 4624/2019, through which national law has been harmonized with Directive (EU) 2016/680. Privacy and personal data are also protected through criminal law, in Chapter 22 of the Penal Code regarding “infringements of personal confidentiality and communication” (Manoledakis 2008) and through civil law in Article 57 of the Civil Code regarding the protection of personality (Alexandropoulou-Egitiadou 2007). Personal data protection in Greece is simultaneously directly subject to GDPR regulation.

Proper implementation of the personal data protection framework is under the supervision of the independent Data Protection Authority (hereinafter DPA). In the event of conflict between the necessity of safeguarding the environment and the protection of personal data, the necessary balance shall be pursued through the implementation of the principle of proportionality. In this sense, DPA in its Opinion 2/2010 considers that restrictions in personal data protection for the purpose of protecting the environment (as a whole, not only with regard to environmental crime), which is an explicit constitutional provision, are legitimate, as long as requirements set by the principle of proportionality (necessity, appropriateness, *stricto sensu* proportionality) are met.

### 5.3. The National Implementation of the Principle of Proportionality

#### 5.3.1. The National Legal Framework on the Principle of Proportionality

Although Article 25 par. 1 of the Constitution establishes the principle of proportionality horizontally, namely in all cases of individual rights’ restrictions, without any further distinctions or clarifications, the implementation of the principle itself is related to the particular characteristics of each restricted right and its specific legal frame. As foresaid, the protection of personal data is ensured by specific legislation, at international, EU and national level and the proper implementation of this legislation is supervised by DPA. Any derogation to the protection of personal data is subject to special strict rules, because personal data are connected to elements of human personality and in particular the private sphere of the individual. Therefore, collection and procession of such data is permitted only exceptionally, when and to the extent necessary to serve another legitimate interest, in accordance with the principle of proportionality<sup>41</sup>.

Particularly in the monitoring technologies context, DPA issued the Directive No. 1/2011 regarding the use of video surveillance systems. Article 5 of this Directive, entitled “the principle of proportionality”, provides that the lawfulness of personal data procession is examined with regard to the legitimate aim pursued as well as in accordance with the principle of proportionality. Video surveillance systems must be thus appropriate and necessary in relation to the aim pursued. This aim should the same time not be possible to be achieved by means equally effective but less restrictive for individual rights.

With regards to environmental protection, the principle of proportionality intervenes with an ecological role, allowing the restriction of other rights for the sake of environmental protection, and preventing any disproportionate infringement of the environment in the course of pursuing other lawful purposes<sup>42</sup>. Furthermore, it ensures the protection of other public or private interests against an intensive implementation of the precautionary

<sup>39</sup> The reason for the creation of a special legal framework for personal data protection lies on the special nature of the information produced by modern technologies, which may relate to certain individuals as well as important aspects of their identity (Wagner De Cew 2004; Solove 2003; Akrivopoulou 2011).

<sup>40</sup> Article 9A: All persons have the right to be protected from the collection, processing and use, especially by electronic means, of their personal data, as specified by law. The protection of personal data is ensured by an independent authority, which is constituted and operates as specified by law.

<sup>41</sup> DPA, Opinion 4/2020, Decision 31/2019.

<sup>42</sup> Thus, when examining compliance of distortion of forest vegetation with the Constitution, while pursuing a lawful purpose, the protection of forest vegetation must be weighed against the objective pursued, and it must be examined whether the specific goal can be achieved by other means (Hellenic Council of State 293/2009, Perivallon and Dikeo (In Greek) 2009, p. 494, Hellenic Council of State 2763/2006, Perivallon and Dikeo (In Greek) 2007, p. 70), since even if the change of the forest form is deemed to be permitted, it must be implemented with the “least possible loss of forest wealth” (Hellenic Council of State 3816/2010, Perivallon and Dikeo (In Greek) 2011, p. 123), and only to the “absolutely necessary extent” (Hellenic Council of State 2972/2010).

principle, which would systematically exclude the protection of other rights in the name of environmental protection, as well as the avoidance of excessive sanctions in case of violation of environmental protection measures<sup>43</sup> (Veinla 2004; Thomas 2000; McNelis 2000; Siouti 2018; Nikolopoulos 2000).

In particular, with regard to environmental crimes, the Greek environmental criminal laws, and especially, both Law 4042/2012<sup>44</sup> transposing Directive 2008/98/EC into the Greek legislation, and special statutes<sup>45</sup> respect the principle of proportionality, aiming at the implementation of preventive, effective, and proportionate sanctions, which will safeguard environmental protection more effectively.

### 5.3.2. The National Case Law on the Principle of Proportionality

Greek case law on the principle of proportionality is quite rich. According to national case-law, no right is absolute, not even the constitutional ones, therefore even a constitutional right, such as the right to personal data protection, may be restricted for reasons of public interest, such as the protection of other constitutional rights, in accordance with the criteria imposed by the principle of proportionality<sup>46</sup>.

Particularly, in the monitoring technologies context, the Council of State considers in line with DPA's guidelines, that personal data may only be lawfully taken and processed when a legal interest is to be satisfied, provided that this legal interest obviously outweighs the rights and interests of the personal data subject and only if the legal order does not provide any other way for satisfying the specific legal interest<sup>47</sup>.

Individual rights' restrictions for environmental protection is a special case of implementation of the principle of proportionality particularly important for national case law. Due to the paramount importance of environmental protection, due to environmental degradation throughout the planet and natural phenomena described as "climate change" as well as due to the need for decisive measures to ensure the effective protection of the environment, measures restricting other rights that are considered proportionate to this purpose may be very intensive, reaching even "the core" of restricted rights. In this sense, the substantial deprivation of the use of a property by its owner for environmental purposes, may be considered lawful, but the same time may lead to lawful compensation claim by the owner in proportion to the imposed deprivation<sup>48</sup>. Similarly, an absolute prohibition of hunting in an area of the Natura 2000 network, as long as there is a need for such a strict prohibition as an appropriate measure to protect wildlife in that area, is in line with the principle of proportionality<sup>49</sup>. Moreover, the Hellenic Supreme Court applies the principle of proportionality in order to resolve the question of procedural use, before civil and criminal courts, of evidence obtained through illegal means, despite Article 19 par. 3 of the Constitution which explicitly prohibits the use of illegal evidence. According to national case law, securing the exercise of the right to judicial protection of a party (Article 20 par. 1 of the Constitution) consists a legal reason for the use of evidence obtained through illegal means in accordance with the principle of proportionality, i.e., if the data collected are absolutely necessary and appropriate for the recognition, exercise or defense of a right before the court, to the extent absolutely necessary and insofar as this purpose cannot be achieved by other less restrictive means<sup>50</sup>.

<sup>43</sup> Hellenic Council of State 1393/2016, which ruled that in determining the environmental fine, while determining the unified fine, the principle of proportionality is applied, through the co-assessment of the elements determining and restricting the amount of the fine, which are provided for in the substantive provisions of the environmental laws.

<sup>44</sup> Government Gazette, Series I, No. 24/ 2012.

<sup>45</sup> e.g., in accordance with article 94 §§ 1 and 8a' of law 4495/2017 for administrative and criminal sanctions in case of illegal constructions, it is considered that during the measurement of the imposed penalty, the value of the illegal construction and the degree of environmental degradation are to be taken into account.

<sup>46</sup> Hellenic Supreme Court (Plen. Sess.) 1/2017, Hellenic Council of State 1616/2012, 2254/2005.

<sup>47</sup> Hellenic Council of State 265/2017, 2254/2005.

<sup>48</sup> Hellenic Council of State 488/2018, 2428/2016, 2133/2016, 2601/2005.

<sup>49</sup> Hellenic Council of State 875, 876/2019.

<sup>50</sup> Hellenic Supreme Court (Plen. Sess.) 1/2017, Hellenic Supreme Court 901/2019, 653/2013.

#### 5.4. *The Establishment of a Modern Legal Framework*

In view of the aforementioned parameters, and in the light of the CJEU case law, the current EU laws (GDPR, Directive 2016/680) and the opinions and guidelines of the national Independent Data Protection Authority) and pursuant to Law 3917/2011 (regarding the use of surveillance systems with sound and picture recording in public places), innovative legislation on the use of monitoring technologies in public places has been recently established in Greece, via the Presidential Decree 75/2020<sup>51</sup> (hereinafter PD). The PD 75/2020 does not provide for a general monitoring policy or a specific policy for environmental purposes, it only provides rules for the use of such technologies for crime prevention and repression and for traffic management. However, these provisions despite not aiming at the special regulation of the use of monitoring technologies for environmental purposes, contain, inter alia, rules applying on environmental crime prevention and repression. Therefore, even though the scope of the new legislation may be limited, it is important that these provisions, reflect all current European and national trends and needs regarding the exploitation of remote sensing technologies. Therefore, the analysis of these new specific rules can be the axis for the establishment of an integrated monitoring national legal framework for environmental purposes.

In this point, it must be noted that PD 75/2020 is a very recent law and therefore no related national case law has been produced yet, so its present analysis is only theoretical and cannot be based to any case law interpretation.

##### 5.4.1. Overview of the Provisions of the Presidential Decree 75/2020

PD 75/2020 governs all the surveillance systems installed and operating at public spaces, provided that they process personal data, regardless of their technical specifications (Articles 1 and 2).

The restrictively designated public authorities that are competent for the prevention, investigation, detection, or prosecution of crimes, or the enforcement of criminal sanctions, namely the Hellenic Police, the Hellenic Fire Service, and the Hellenic Coast Guard, are considered as data controllers (Article 4).

The installation and operation of surveillance systems in public spaces is permitted only to the extent necessary, and when the objectives pursued cannot be achieved equally effectively using less restrictive means, in a specific place and for a specific period of time, following a reasoned decision of the competent authority. This decision has a validity term of no longer than three years, is subject to periodical evaluation and is issued following the conduct of an impact assessment study. Finally, it is promptly sent to the competent public prosecutor for district court judges. In particular, with regard to crime prevention or repression, it is required that there is adequate evidence that the offences subject to the PD were committed (Articles 5 and 12).

The collection and processing of sound data is only exceptionally allowed, following a specifically reasoned decision of the data controller, which is approved by the competent public prosecutor, for the purpose of detecting and recognizing the persons involved in specific punishable acts, including forest arson by negligence (Article 7).

Strict rules have also been established concerning the retention period, the complete and automatic destruction of the data without the right to retrieve them, and the anonymization of the data kept exceptionally for educational purposes (Article 8), the data recipients, and the safe and unimpeachable transfer of data (Article 9), and the rights of the data subjects, especially the right of information (Article 10).

Furthermore, organisational and technical safety measures are imposed with regard to the technical specifications and the operation of the surveillance systems, for the purpose of minimizing the impact on the right to personal data protection, in accordance with the accepted international standards, as well as the minimum safety measures (users' training,

<sup>51</sup> Government Gazette, Series I, No. 173/ 10 September 2020.

creation of separate accounts, and user authentication, data encryption, etc.) are explicitly provided for (Article 11).

Harmonisation of the Presidential Decree 75/2020 with the GDPR and the Police Directive

PD 75/2020 makes explicit reference to the general application of Regulation (EU) 2016/679 (GDPR) and Directive (EU) 2016/680 (Police and Criminal Justice Authorities Directive), but it further specifies special rules, which are harmonised with the principles derived from Article 5 of GDPR and Article 4 of the Directive, as analysed above.

Firstly, as far as the principles of lawfulness, fairness, and purpose limitation are concerned, the PD limits the collection and processing of personal data exclusively to the purposes restrictively specified by the authorising legal provision of Article 14 of Law 3917/2011 (Articles 1 and 3). Such a procession is subject to a decision provided by the competent public authority (Article 12) when the above objectives cannot be achieved equally effectively using less restrictive means, and, in particular, with regard to crime prevention or repression, provided that there is adequate evidence that the crime was committed, and, in any case, provided that the collection and processing is necessary (Articles 5 and 6).

Secondly, referring to the implementation of the principle of transparency, according to the PD, data collection and processing is contingent upon the prior notification to the public prosecutor, the gathering organiser, the data subjects, and the public, as appropriate, with any expedient means, and primarily with the means explicitly specified in its provisions (Articles 6 and 10). The foregoing obligation to notify the public prosecutor and the public also includes the notification of the decision of the competent public authority on the operation of a surveillance system (Article 12). Data subjects always have the right to request and receive information about the data concerning them and any recipients of the processing (Article 10 par. 3).

Thirdly, data minimisation principle is clearly reflected in the PD, which limits the installation and operation of surveillance systems to the specific necessary space, and prohibits expansion thereof to a broader area and collection of data from non-public spaces or homes, image focus is allowed only for the detection of crimes (Article 5), while sound data collection and processing is in principle prohibited (Article 7).

Furthermore, specific provisions have been set in order to ensure storage limitation. According to the PD, the maximum data retention period is, in principle, 15 days, with certain exceptions that serve the needs of the criminal court procedure, while specifically in the case of public gatherings, the maximum data retention period is 48 hours. In addition, integrity and confidentiality (security) are pursued through specific provisions in the PD. The automatic destruction of personal data is provided in a manner that precludes retrieval thereof, and in the case of their exceptional retention for educational purposes. The PD includes also provisions for data anonymization and compliance with the confidentiality obligation (Articles 6 and 8), and for ensuring, using suitable technical means, not only secure transfer of data, but also that the transferred data cannot possibly be distorted in an unperceivable manner (Article 9). Moreover, the data controller is subject to all the necessary organisational and technical security measures (Article 11), which are aligned with Article 25 of the Regulation, or Article 20 of the Directive.

Finally, the designation of the public authorities acting as data controllers, the establishment of the legislative framework of their liability (Article 4), and the establishment of special requirements for the issuance of a decision on the installation and operation of surveillance systems (Article 12) integrate the principle of accountability in the PD.

Critical Assessment of the Provisions of Presidential Decree 75/2020

The draft PD 75/2020 was submitted to the DPA, in accordance with the law, which issued its Opinion No. 3/2020, where, presenting an analysis of the Greek and European legal framework on personal data protection, and having particularly focused to ECtHR and CJEU case law, it stressed that certain provisions needed to be amended in order

to be compatible with the International and European Union Law. Compliant with the recommendations of the DPA, the final text of the PD constitutes a strict set of rules that integrate the principles of modern protection of personal data at an international and EU level.

Although the principle of proportionality is not explicitly mentioned at any point in the text of PD 75/2020, Article 5, which sets the conditions and criteria for the installation and operation of surveillance systems, introduces the special condition of implementation of the principle of necessity and the principle of appropriateness, as manifestations of the principle of proportionality. In addition, Article 8, with respect to the retention period and the destruction of data, also follows the recommendations of the DPA regarding the respect of the principle of proportionality<sup>52</sup>. Besides, the authorizing legal provision of PD 75/2020 explicitly stipulates that this PD should aim at setting the criteria for complying with the principle of proportionality<sup>53</sup>.

It is also to underline that Articles 11 (Organizational and Technical Security Measures) and 12 (Decision on the Installation and Operation of Surveillance Systems) provide not only for the conduct of an impact assessment study at the stage of personal data processing, but also for the conduct of an impact assessment study concerning the installation, commissioning, and procurement of the surveillance systems, the software, and the additional equipment in general. Therefore, impact assessment accompanies the surveillance system and any accompanying item or equipment already from the stage of procurement thereof until installation, operation, and processing of the collected material. Such a provision is of great importance, since impact assessment at the time of the determination of the means for processing is essential for data protection by design and by default. In this sense, legal framework set by the PD not only follows in a timeliest manner current European trends on personal data protection but also forms the necessary legal background for any other future laws regarding the use of remote sensing technologies, including possible specialized legislation for environmental protection.

However, there are some points in which PD 75/2020 did not fully comply with the recommendations of the DPA. Thus, contrary to DPA's recommendations, Article 5 (installation and operation of surveillance systems) did not encompass any provision specifying clearly the criteria based on which surveillance in a specific space is evaluated as necessary, or the precise procedural requirements and the necessitated guarantees of supervision and control of the relevant measure. Similarly, Article 9 (data recipients) did not incorporate DPA's recommendation for a procedure of control and supervision by an independent authority in the case of transfer of data (except for the cases of transfer to administrative authorities acting as third parties where the transfer is approved by the public prosecutor). Finally, in Article 10 (Rights of data subjects), DPA's recommendations for special provisions for each surveillance system, and for persons who have lost their eyesight, so that the obligation of informing data subject could be most successfully achieved, were not taken into account.

Moreover, even at the points where the PD conforms to the DPA's recommendations, it is not certain that the final wording of the provisions is always correct. Thus, despite adding to Article 8 (Data retention period and destruction) the criteria on which the justified suspicions for preparing or committing in the future offences are assessed, pursuant to the Authority's recommendations, as a reason for exceptional extension of the data retention period, the criteria encompass the wording "any kind of relevant information<sup>54</sup>", which is rather ambiguous, and possibly leaves room for unauthorized extension of the data retention period. These shortcomings are indicative of the necessary adjustments for the lawful use of remote sensing technologies for all purposes and especially for environmental purposes.

<sup>52</sup> DPA, Opinion 3/2020, Available online: [https://www.dpa.gr/sites/default/files/2020-07/gnomodotisi%203\\_2020.pdf](https://www.dpa.gr/sites/default/files/2020-07/gnomodotisi%203_2020.pdf) (accessed on 5 April 2021).

<sup>53</sup> Law 3917/2011, Article 14 (4).

<sup>54</sup> Article 8 of the PD: "... justified suspicions for preparing or committing in the future the above criminal acts may stem from witnesses' testimonies or from any kind of relevant information".

#### 5.4.2. Application of PD 75/2020 in Environmental Crimes

As already mentioned, PD 75/2020 does not specifically regulate the use of surveillance systems for the prevention and repression of environmental crime, however, its purpose, as described in Article 3, includes a large number of environmental offences, referring to the relevant provisions of the Criminal Code.

In particular, the scope of PD 75/2020 encompasses:

- organized environmental crime, in particular, felonies and misdemeanors committed for the purpose of pursuing financial gain (Article 187 of the Criminal Code);
- assault by a large crowd against environmental goods (Article 189 of the Criminal Code);
- arson in forests, forest and reforestable areas (Article 265 of the Criminal Code);
- flooding (Article 265 of the Criminal Code);
- destruction or damage to works or installations intended for protection from natural disasters (Article 273 of the Criminal Code);
- poisoning of sources, wells, and water tanks (Article 279 of the Criminal Code);
- destruction or damage to public environmental goods (Article 378 of the Criminal Code).

Therefore, PD 75/2020 offers, to a large extent, the possibility of using modern remote sensing technologies for environmental protection, since its scope primarily involves the protection of public environmental goods, including public forests, coastal and riparian zones, rivers, large lakes, sea, as well as the protection of all forest and reforestable ecosystems from arson. Furthermore, such technologies can be used both for preventive and for repressive protection of the above areas and elements (Article 3a).

#### 5.5. Concluding Remarks for Greek Legislation and Future Perspectives in Environmental Law

Although the regulatory framework of PD 75/2020 includes many and significant offences of environmental relevance in its scope, it is found to be inadequate for facing emerging legal issues from the use of remote sensing technologies for environmental monitoring and environmental law enforcement. This is because it not only addresses certain environmental offences but also addresses them in a fragmentary manner. From this point, it even fails to regulate effectively issues related exclusively to environmental crime. It is a telling sign that Article 4 does not designate the competent environmental protection authorities as data controllers. Similarly, the provisions of Article 10 on information to the data subjects fail to take into account and to respond to the particularity of supervision of broad and freely accessible areas such as forest and coastal zones. In addition to this, the scope of PD 75/2020 is limited to the use of remote sensing technologies in public spaces, leaving private environmental goods (e.g., private forests, lakes, private coastal areas) unprotected.

Thus, it is recommended that a special legislative and regulatory framework is established, which will adjust the technical features offered by modern remote sensing technologies not only to the preventive and repressive treatment of environmental crime in its whole but also to their use in environmental monitoring and all aspects of environmental law enforcement. Lessons learned from the regulatory framework of PD 75/2020 for the protection of the infringed human rights, in accordance with the principle of proportionality, which calls for a special weighting based on the particular features of each environmental good, the special enhanced constitutional protection of forest ecosystems, and human rights' risks emerging from the use of technical means for environmental surveillance, should be taken into account, when forming such a special framework.

## 6. Conclusions

Remote sensing technologies provide tools for gathering data, which are extremely useful for ensuring a high level of environmental protection and the improvement of the quality of the environment. However, the same time they raise new difficult challenges,



such as their interference with the rights of privacy and personal data, which are also protected fundamental rights.

It stems from existing legislation and case law interpretation that remote sensing technologies in the European Union can be used for environmental purposes, especially for combatting serious environmental crime, however with sufficient guarantees for the effective protection of privacy and personal data, provided that no other less restrictive means exist.

The case study of Greece clearly shows that despite recent developments in the field of surveillance systems' legislation, there is still a gap in special legislative and regulatory framework which will envisage the lawful use of remote sensing technologies in the environmental sector.

However, the path has been opened and the great demand for a wider use of remote sensing technologies for supporting environmental law enforcement, for combatting environmental crime and for collecting environmental monitoring data will inevitably lead to a consistent regulatory framework in European and national level.

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## Article

# Building Information Modeling in Quebec's Procurement for Public Infrastructure: A Case for Integrated Project Delivery

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**Abstract:** The Province of Quebec is currently in the process of adopting building information modeling (BIM) for major infrastructure projects. However, legal and contractual concerns such as the tendering process, adjudication criteria, intellectual property and risk-reward sharing mechanisms hinder the implementation of an efficient BIM process. This paper addresses the following question: How do norms, whether legislative, regulatory or contractual, functionally or dysfunctionally affect the effective implementation of BIM in Quebec's public infrastructure framework? This paper suggests that the use of Integrated Project Delivery (IPD) should help mitigate legal barriers hindering BIM implementation, while preserving balance between fairness and encouraging collaboration. Quebec's normative framework, which includes legislation, regulations, contracts and infra-regulatory rules, should be modified to standardize collaborative mechanisms, integrate two-stage negotiated processes such as rank-and-run or best and final offer and enable the assessment of tenderers' objective qualities and more subjective qualities. Furthermore, a risk-reward sharing mechanism should be implemented through target costing, and upstream participation from a wide range of stakeholders should be encouraged.

**Keywords:** building information modeling; integrated project delivery; public procurement; collaboration; infrastructure contracts



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## 1. Introduction

In the past two decades, the productivity of the Canadian manufacturing industry has nearly doubled, whereas in construction it remained stagnant (McKinsey & Company 2017). To help achieve better productivity, the construction industry has turned towards building information modeling (BIM) (Succar 2009). BIM is a digital technology to establish a computable representation of all the physical and functional characteristics of a facility and its related project/life-cycle information, intended to be a repository of information for the facility owner/operator to use and maintain throughout the life-cycle of the facility (NBIMS 2007). The BIM process is essentially a method to align design members of a construction project and ensure their collaboration through information-sharing, notably through a multi-dimensional 3D model providing visual and physical properties of the asset, which can be used throughout the life-cycle of the infrastructure (Attrill and Mickovski 2020).

BIM maturity levels are defined within a range from 0 to 3. Level 0 means no collaboration and the use of traditional 2D drafting, while level 1 implies low collaboration between different stakeholders who are individually responsible for creating and managing their own data. Level 2 promotes collaborative working by ensuring each party is responsible for a 3D model which will then be combined in a federated BIM Model. Level 3 BIM involves multidisciplinary work and needs contractual frameworks encouraging open

and collaborative working and the creation of a cooperative environment throughout the life-cycle of projects. This third level enables all stakeholders to work simultaneously on the same model, therefore greatly diminishing the chance of conflicting information (Sacks et al. 2018). Widespread adoption of BIM and Integrated Project Delivery (IPD) in the public sector has notably been hindered by legal barriers (Ghassemi and Becerik-Gerber 2011). Many studies have pointed out that in order to effectively implement BIM, legal barriers need be overcome, such as liability and risk allocation issues and the status of intellectual property of the model, as well as the inadequacy of procurement practices and contracts (Sacks et al. 2018). Moreover, recent studies found that significant legal aspects or contract provisions need to be included in BIM contracts (Chihib et al. 2019), and that design–bid–build procurement and a lack of standardization impedes effective adoption of BIM (Fan et al. 2018; Leśniak et al. 2021). These issues are all addressed in the present paper, notably through the lens of IPD. IPD is defined as a contractually based approach, which creates an environment that enhances collaboration, innovation and value, and which is characterized by early involvement of team members, shared risk and reward based on project outcome, joint project management, liability reduction among IPD team members and joint validation of project goals (IPDA 2018). These principles are notably reflected in the CCDC-30 contract, published in 2018 by the Canadian Construction Documents Committee, although there are several standardized models of contracts used in jurisdictions including the United Kingdom and the United States such as the NEC4 Alliance Contract, TAC-1 Term Alliance Contract or the American Institute of Architects series. Regardless of the model, these contracts are based on common principles of common governance, a no-blame culture and the development of a target cost enabling the sharing of profits or losses. IPD is designed to help public bodies achieve functional, environmental, and economic objectives through upstream design iterations involving all relevant stakeholders, decision-making driven by performance objectives, ongoing value management, effective and open communication and the maintenance of quality assurance throughout the process (Jobidon et al. 2019). BIM benefits include faster and more effective processes, better design and production quality, controlled life-cycle costs and automated assembly, while IPD helps achieve better quality levels, shorter completion time, fewer change orders and lower costs (Azhar 2011; El Asmar et al. 2013).

In the province of Quebec, the Société québécoise des infrastructures (SQI) has been tasked with BIM implementation in public projects. The SQI is responsible for managing projects and assets for most of the province’s infrastructure projects and serves as a project manager for other public entities. The SQI has implemented BIM in 10 major infrastructure projects so far, with the intention of implementing it in all of its projects by 2021 (Société Québécoise des Infrastructures 2020).

This paper addresses the following research question, or puzzle: How do norms, whether legislative, regulatory or contractual, functionally or dysfunctionally affect the effective implementation of BIM in Quebec’s public infrastructure framework? This paper is based on an analysis of relevant literature regarding BIM, IPD, procurement processes and collaborative practices, as well as Quebec’s legislation, regulations and contractual documentation regarding the five most recent major infrastructure projects. Four main themes emerged from this analysis and are addressed in this paper using dialectics and the function–dysfunction dyad: collaboration in the tendering process, award criteria, prequalification of tenderers as well as risk and reward sharing. The authors suggest that the use of IPD should help mitigate legal barriers hindering BIM implementation.

BIM and IPD represent a paradigm shift from the traditional, fragmented, linear and adversarial culture of the construction industry to a more trust-based, collaborative and multidisciplinary approach (Lichtig 2006). Although BIM, IPD and collaborative procurement practices are independent of one another, their combination should help public bodies decrease project costs, increase productivity and quality and reduce project delivery time (Azhar 2011). While law has a predominantly territorial nature, the findings

of this paper can apply, with slight variations, to other jurisdictions looking to implement BIM in public infrastructure projects.

## 2. Methodology

The methodology of this paper lies in the development of a question into a research puzzle, which requires asking “what is puzzling about how earlier research has described or explained this (allegedly puzzling) phenomenon?” Essentially, it requires one to ask a “why x despite y” or “how did x become possible despite y” (Gustafsson and Hagström 2018). Applied to the current subject, the puzzle is thus: How can BIM level 3 be implemented despite the normative framework hindering its use? To resolve this research puzzle, this paper relies on di and the use of the function–dysfunction dyad. Although there are many conceptions of dialectics, in each of them intellectual conflicts are developed and resolved, as opposition is their common principle.

In this paper, dialectics reasoning is aimed at overcoming the duality of the function and dysfunction of norms, to achieve a higher order of integration in the form of a synthesis. Quebec’s legislation, regulations and contracts are analyzed through hermeneutics, which aims to make sense of an object of study, whether texts or text-analogues. To do so, the contractual documents for Quebec’s five latest major infrastructure projects were analyzed. Norms, whether legislative, regulatory or contractual, serve a purpose, or a positive function which acts as one pole of the dialectical spectrum. For example, regulatory norms regarding the award criteria ensure the fair and equal treatment of tenderers. However, they also lead to dysfunctions, the other pole of the dialectical spectrum, such as unduly advantaging price to the detriment of quality. This theoretical framework has notably been used in the study of formal and informal governance mechanisms in public projects, sustainable contracts and statutes analysis (Perillo 1974; Marchais-Roubelat 2012; Howard et al. 2019).

Furthermore, this paper is based on relevant literature regarding BIM, IPD, procurement processes and collaborative practices, which are thoroughly used in the “BIM-specific requirements” subsections of this paper. Finally, this paper represents the third part of a thesis, and thus follows two papers concentrated on a comparative law analysis and a content analysis of different project delivery methods in terms of contractual language (Jobidon et al. 2018, 2019). The results from these papers helped shape the subsections of the current analysis, which address collaborative mechanisms in the tendering process, award criteria and prequalification of firms as well as risk–reward mechanisms.

The following flowchart in Figure 1 illustrates the methodology used in this paper. Each subsection is structured to present the current rules and their functions, BIM-specific requirements, dysfunctions created by the current rules and the tension resolution to achieve successful implementation of BIM.

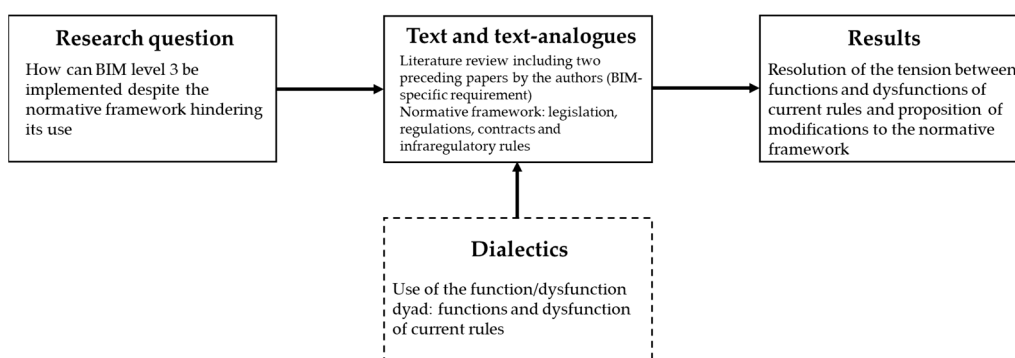


Figure 1. Methodology flowchart.

### 3. Facilitating Collaboration and Team Integration

In this section, Quebec's legislative and regulatory instruments are analyzed in terms of collaborative mechanisms, solicitation methods, adjudication criteria and integration of small and medium-sized enterprises (SME), suppliers and manufacturers. We argue that legislation and regulations should officialise and crystallize collaborative procurement practices, enable the evaluation of objective as well as subjective award criteria and standardize the prequalification mechanism.

#### 3.1. Collaboration in the Tendering Process

Quebec's legislation and regulations are mostly silent regarding collaborative practices in the procurement process. Instead, those practices are included in the request for qualifications (RFQ) and the request for proposals (RFP) contractual documents. Three main mechanisms are provided for requests for information (RFI), requests for optimization measures (ROM) and commercially confidential meetings (CCM).

RFIs allow tenderers to clarify, lightly correct or modify project requirements. If the RFI is not confidential in nature, the response is published to all tenderers, thus ensuring the honest and fair treatment of tenderers. If confidential, the response will be communicated only to the appropriate tenderer. ROMs, also subject to confidentiality, aim to significantly alter the technical requirements while ensuring the optimization of quality, costs or delivery schedule of the project. Tenderers can propose solutions that would not be valid without changes to project requirements.

Mandatory CCMs allow tenderers to provide comments and ask questions to facilitate their understanding of the project and ultimately develop compliant proposals. While CCMs have become a staple in the procurement for Quebec's latest major infrastructure projects, public bodies need a derogation from the Treasury to use them since the legislative and regulatory framework do not specifically provide for them. CCMs differ from integrated design workshops—where participants can suggest solutions, freely interact and create value for the project—and rather represent a compliance validation exercise regarding project requirements.

##### 3.1.1. Functions of Current Rules

These three mechanisms ensure a better understanding of technical, functional, commercial and legal requirements, and in the end, the conformity of proposals. They guarantee the fair and equal treatment of tenderers by sharing responses to non-confidential ROMs and RFIs, while enabling innovation through the ROM mechanism. Public bodies have a rather passive role in the process by receiving questions, comments and documents and performing a feedback exercise to validate the compliance of proposals.

##### 3.1.2. BIM-Specific Requirements

Collaboration, coordination and information-sharing are essential to achieve successful implementation of BIM (Antwi-Afari et al. 2018). Project delivery methods used in conjunction with BIM, such as IPD, also necessitate collaboration and effective communication (Sacks et al. 2018). BIM projects can facilitate collaboration, commitment from team members and enhance information-sharing using digital collaboration platforms and workshops (Olatunji 2011).

The SQI's BIM framework, which includes a BIM application guide and a BIM management plan, puts forth collaborative practices and tools to ensure value creation throughout the realization of the project (SOI 2016a, 2016b). These mechanisms include a digital collaboration platform as well as visual coordination, interference detection and integrated design workshops. These practices underpin the quality control process of the concept and serve as communication tools to support decision-making during design development and multidisciplinary workshops (Jobidon et al. 2019).

The BIM application guide also introduces the notion of the master team, also known in other jurisdictions as the planning, design and compliance team, which is responsible

for developing the early design before the selection process. 3D models developed by the master team are part of tendering documents. The design models prepared by the master team must be updated throughout the selection process to include the modifications made by addenda (SOI 2016a).

### 3.1.3. Dysfunctions of Current Rules

The absence of clear directives and guidelines creates a normative fog surrounding collaborative mechanisms and causes uncertainty for public bodies as well as tenderers. Information-sharing and collaborative processes are also hindered by the hyphenation or fragmentation of the process and teams. Finally, rules applicable to fairness interfere with value-creation during the selection process.

### 3.1.4. Tension Resolution

The necessity to obtain the Treasury Board's approval through the derogation procedure creates legal and operational uncertainty for public bodies as well as tenderers since public bodies cannot rely on standardized procedures, guidelines or manuals to adequately supervise the collaborative mechanisms essential to the implementation of BIM or IPD. Furthermore, the RFI, ROM and CCM mechanisms represent a proposal conformity validation exercise and not BIM collaborative workflows such as group modeling or interference workshops. Since there are no mandatory topics in CCMs, there is no obligation, or guidance, to connect the stakeholders' BIM experts to analyze or assess the tenderer's team capacity to interact, cooperate and collaborate in person. Coupled with the legal uncertainty caused by the lack, see the inexistence, of jurisprudence concerning collaborative procurement practices in Quebec, public bodies and tenderers are stuck in a normative fog complexifying the pathway for integrated practices implementation. Infra-regulatory rules such as directives, manuals or guidelines could help clarify the expectations of tenderers, standardize collaborative mechanisms, reduce legal and operational uncertainty and gain predictability for public bodies and tenderers.

The current selection process is also characterized by a hyphenation between four major entities: the client, the SQI, the master team and tenderers. This hyphenation is only filled by the selection of candidates who have formally rather than substantially demonstrated their ability to carry out a project in a BIM context and by the transmission, at the RFP stage, of documentation and data regarding BIM. This hinders upstream contributions to the project and is in contradiction with the Paulson curve, whereby the more changes in a project are made upstream of the process—that is, at the time of design—the less expensive they will be to implement (Paulson 1976). This hyphenation is furthered by the absence of a mention in contractual documents about whether the reference models for the realization phase of the project are the ones developed by the master team or the ones advanced by the tenderers during the selection process. Stating in the contractual documents that 3D models developed by the winning tenderer serve as the basis for future development of the design could effectively ensure continuity and clarity during the selection process.

Another issue is finding balance between sharing non confidential ROMs and RFIs to ensure fairness and the necessary confidentiality to ensure tenderers can add value to projects without losing their competitive advantage. A possible solution would be to consider a more punctual vision of fairness, that is up to a submission of an initial proposal. From that point on, public bodies could entertain bilateral negotiations with one or multiple tenderers, whether through a rank-and-run or best and final offer (BAFO) process to ensure value creation.

Rank-and-run enables public bodies to engage in negotiations with the highest scoring tenderer and with subsequent tenderers in case the initial negotiation fails, while BAFO allows public bodies to entertain individual discussions with each tenderer to enhance their propositions before a final proposal submission. Negotiations and discussions must ensure the fundamentals of the solicitations as well as those of the proposals are preserved and allow the public body to iron out the finer and more confidential aspects of proposi-



tions, whether technical or financial, to achieve more value for the project (Lawther 2007). Including these processes in Quebec's legislation and regulations would help strike balance between fairness and value-creation.

### 3.2. Award Criteria

Quebec's construction contracts regulation provides for either a one-stage lowest tenderer approach or a two-stage RFQ/RFP process for construction works. During the RFQ, the quality of tenderers is evaluated using a minimum of three criteria, which may notably include similar projects recently executed, the experience of a contractor, the ability to ensure efficient project management and the experience of key personnel. The second stage consists of inviting selected contractors to submit a tender including a price and the contract is awarded to the lowest compliant bidder. Quebec's service contracts regulation provides only for quality evaluation of professional service providers through multi-criterion weighting. The contract is awarded to the tenderer obtaining the highest final score.

As for mixed contracts for construction work and professional services, public bodies can use one-stage or two-stage processes. In a one-stage process, public bodies must use multi-criterion weighting and the k coefficient formula. The contract is awarded to the lowest adjusted price tender. In a two-stage tendering process, the RFQ is used to evaluate the quality of tenderers and the RFP can either evaluate only price or price/quality. In the case of the former, the contract is awarded to the lowest compliant tenderer while in the latter, it is awarded according to the lowest adjusted price tender.

#### 3.2.1. Functions of Current Rules

The main function of the legislation and regulations is to award public contracts in the most objective way possible to ensure equal treatment of tenderers and sound management of public funds. This is achieved either through multicriteria ponderation of objectivized quality or through the lowest compliant bidder mechanism. Much has been said and written concerning the latter and its limitations, but it should be noted that it is used in a limited way for major infrastructure projects, especially with the rise in popularity of more integrated delivery methods such as design-build (DB).

#### 3.2.2. BIM-Specific Requirements

Low-bid, price-driven competition leads to adversarial relationships as well as an increase in costs, schedule delays and poor quality (Lichtig 2006). Procurement models ensuring the integration of team members during the early design stages maximizes the benefits of a BIM project (Porwal and Hewage 2013). Single stage procurement hinders full BIM adoption notably because contractor bids come too late in the process and there is little scope to agree on improvements with the winning team before commencement of construction (Mosey et al. 2016).

Early contractor procurement models include two-stage open book, which invites tenderers to bid for a project based on an outline brief and cost benchmark (Cabinet Office 2014b). The first stage is similar to the RFQ process, but with only one team being selected on their capacity, capability, stability, experience and strength of their supply chain, plus their profit. In the second stage, the chosen team prepares a proposal based on an open book cost which complies with the client's requirements and cost benchmark (Cabinet Office 2014b). Other early involvement procurement models include early BIM partnering and construction management (Porwal and Hewage 2013). These models ensure cost savings, improved design, risk management, sustainable solutions and stakeholder consultation (Mosey et al. 2016).

#### 3.2.3. Dysfunctions of Current Rules

Quebec's adjudication criteria still lean heavily on price. As recently as 2018, draft regulations for the procurement of professional service providers prescribed the use of a

price–quality formula unduly advantaging price (AAPPQ 2019). This is the same formula applicable to mixed contracts for professional services and construction works which allows a maximum  $k$  coefficient of 15%, thus implying the same overweighting of price. Quebec is the only province in Canada that formally limits the weighting of quality in the award criteria for public infrastructure projects. Furthermore, quality is formally evaluated to ensure objectivity and without evaluating the propensity to collaborate, thus evacuating the essential aspect of human nature in BIM projects, which can lead to conflicts in an environment based on collaborative work and interactions.

#### 3.2.4. Tension Resolution

The two poles at play embody an opposition between a purely objective vision of equal treatment of tenderers through price-driven competition, and the need to appreciate parties' behaviour and the inherent qualities necessary to achieve optimal collaboration, quality and value in a BIM context. While some aspects may be objectively quantifiable and qualifiable such as price, experience of tenderers or the number of similar projects, the criteria used to help define quality mostly represent an attempt to objectively assess a subjective matter, a daunting task since quality is easier assessed *ex post* rather than defined *ex ante* (Jobidon et al. 2018). These formal criteria give little to no help to public bodies wishing to select a collaborative partner for the realization of a project. The very essence of the BIM collaborative process is the human nature and the participants' interactive qualities, since BIM is considered 10% technology and 90% sociology (Paranandi 2015). The ability to communicate clearly, open-mindedness, walking the extra mile, cooperative behaviour, trustworthiness and creativity are essential qualities, although complex to assess and evaluate.

Once again, a possible solution is the use of a rank-and-run or BAFO process. The RFQ and RFP processes should help public bodies select an appropriate tenderer on an objective quality basis. A more subjective evaluation of tenderers, assessed through predetermined rules in contractual documents, could include interviews with prospective team members and real time sample problems relating to BIM, such as interference detection workshops, for tenderers to demonstrate their ability to work collaboratively (IPDA 2018).

Following this step, public bodies and the top-ranked tenderer could enter a second step during which team alignment and contract negotiation workshops are held to ensure cohesion and the implementation of collaborative practices (IPDA 2018). This stage would also serve to develop a binding target cost. If for some reason previously stated in the RFQ and RFP documents, whether for failing to agree on commercial terms or the tenderer's lack of collaboration, this process was to fail with the top-ranked tenderer, public bodies could go to the next-best ranked tenderer and start all over again. This type of process would help strike balance between the evaluation of objective qualities and the more ineffable ones necessary to achieve fully collaborative BIM, while also ensuring fairness.

Delivery methods other than integrated ones can benefit from BIM. Therefore, it is important to address Quebec's mixed contracts price–quality formula. An evaluation of the price–quality formula using the  $k$  coefficient has recently been conducted in Quebec. It was found that in more than 74% of the cases studied, the variation of the  $k$  coefficient makes no difference in the choice of the tenderer (AAPPQ 2019). The regulatory requirements regarding the  $k$  coefficient are too low for quality to really have an impact. The study suggests that the federal formula, which gives a maximum of 90% of the score to quality and 10% to price, makes quality the paramount adjudication criterion (AAPPQ 2019). When this formula is used, the firm obtaining the best quality rating is favored in all cases and configurations of procurement compared to the firm offering the lowest price. Quebec should therefore consider incorporating the federal formula, or a version thereof, to ensure that tenderers are selected based on the quality of their propositions and not only, or mostly, their price.

### 3.3. Prequalification to Ensure Integration

One important legislative principle is the opportunity for qualified tenderers to compete in calls for tenders, which includes SMEs, suppliers and manufacturers. Since 2016, public bodies must adopt guidelines which must ensure openness of public markets to competition and SMEs (Conseil du Trésor 2019). This has led to various practices such as inviting at least one SME in an invitational tender, and the creation of a public market accessibility index, which denotes a high degree of variation in terms of best practices for SME inclusion (Conseil du Trésor 2019). Quebec also offers financial support to companies wishing to acquire the required equipment and software to use BIM (Gouvernement du Québec 2016). Furthermore, Quebec's regulations provide for prequalification of contractors and service providers.

DB contracts in Quebec include provisions mandating the creation of a project management control committee, composed of public and private actors, whose role is notably to review all matters concerning design and construction issues. The committee, at its discretion, may invite any relevant party to meetings, which broadens the possibility of key stakeholders' involvement. The design builder can also voluntarily implement multidisciplinary workshops. Furthermore, BIM projects are usually coupled with publicly mandated integrated design workshops, during which any collaborator can be invited, such as a manufacturers or end-users (Jobidon et al. 2019).

#### 3.3.1. Functions of Current Rules

Rules and regulations aim to entertain healthy competition by ensuring the fair treatment of tenderers and by giving qualified tenderers and opportunity to compete. Regulations enable the use of a flexible prequalification mechanism, while some contracts allow the inclusion of key stakeholders during various project stages. Although silent in regard to SME or manufacturer inclusion, legislation, regulations and contracts are complemented by different governmental initiatives.

#### 3.3.2. BIM-Specific Requirements

Since BIM intends to support a more integrated team approach, procurement models need to emphasize the early contributions of contractors and specialist contractors to the BIM model to develop functional specifications and thus facilitate information management, communication and collaboration (Vidalakis et al. 2020).

SMEs barriers to BIM implementation notably include legal ambiguity in terms of roles, responsibilities and distribution of benefits (Sun et al. 2017). The prefabrication industry, for which BIM can serve as a helpful tool to facilitate on-site assembly services, can benefit from the BIM collaborative environment and visualization of the physical and functional representations of prefabricated components (Khosrowshahi and Arayici 2012). However, few prefabrication projects have benefited from BIM, and vice versa, notably because of a lack of common BIM standards and of understanding firms' readiness to adopt BIM (Khosrowshahi and Arayici 2012).

Many different frameworks and tools exist to assess firms' BIM performance, such as Succar's BIM capability framework and BIM Quickscan (Mahamadu et al. 2017). Prequalification helps minimize the risk of selecting unsuitable firms for BIM projects by shortlisting potential suppliers and partnering (Porwal and Hewage 2013). Most of the BIM performance assessment models used for prequalification and qualification of suppliers focus on the physical resources and processes required instead of softer measures such as behavioural and organisational factors (Mahamadu et al. 2017).

#### 3.3.3. Dysfunctions of Current Rules

Among dysfunctions figure the difficulty to include specialist contractors and manufacturers during the early design stage. Although DB or other early contractor involvement delivery methods allow for the inclusion of different stakeholders, this can only occur once the contract is awarded which means a significant portion of the design has already

been advanced by the master team. The absence of subcontractors and manufacturers in the selection process can also lead to inequities regarding risk–reward sharing and hinder information management and the harmonization of BIM processes. As of right now, no prequalification for SMEs, specialist contractors or manufacturers has been published in Quebec’s electronic tendering system. Quebec has also not provided for guidelines, manuals or any form of standardization of BIM capability for prequalification.

#### 3.3.4. Tension Resolution

BIM projects necessitate the inclusion of SMEs, manufacturers and specialist contractors in early design stages, but not at the expense of fairness. The only way to assess firms’ skills, capacities and maturity regarding BIM, such as prefabrication companies, remains the RFQ process, which requires time and money both for public bodies and tenderers, and which is based on non-standardized quality criteria rather than BIM-specific indicators.

Including a standardized questionnaire, such as the UK’s PAS 91:2013, in the prequalification mechanism would reduce legal uncertainties and allow the evaluation of BIM capability, notably the interoperability of software and models, process harmonization and staff training, while still preserving fairness ([British Standards Institution 2013](#)). A standardized questionnaire, which focuses on physical resources and processes, should be complemented with the evaluation of softer factors such as behavioural attributes and collaborative attitudes, since these factors influence BIM delivery success ([Mahamadu et al. 2017](#)). Interviews with prospective team members and sample problems relating to BIM would serve this purpose. The questionnaire could also give the public sector quality information on the capacity and maturity of the market, and firms could adjust their practices to those implemented in public projects.

The use of IPD would allow the integration of specialized contractors and manufacturers upstream of the project while including them in team alignment and contract negotiation workshops ([IPDA 2018](#)). It is necessary to include the right people in the project team before their tasks are to be performed, hence the importance of the presence of specialist contractors and manufacturers early in the process to notably help with the development of the target cost ([Zimina et al. 2012](#)).

## 4. Enabling Risk and Reward Sharing

This section addresses Quebec’s rules applicable to risk–reward allocation mechanisms, notably through remuneration regulations, intellectual property, stipends, liability and insurance. We argue that legislation, regulations and contracts should move from risk–reward allocation to a risk–reward sharing paradigm.

### 4.1. Sharing Risks

The construction contracts regulation provides compensation for tenderers when the selection process is canceled. Tenderers’ compensation is CAD 5000 for projects with a value greater than CAD 1 million. Quebec’s latest alternative delivery methods RFQ and RFP documents diverge from this regulatory standpoint by offering significantly larger stipends to unsuccessful but compliant tenderers, thus indicating the use of the derogation procedure.

In traditional delivery methods, the public sector is notably responsible for planning, design, operation, maintenance, financial and legal risks, while the private contractor is mainly responsible for execution of the works. Alternative delivery methods transfer a larger share of the risk to the private sector. Subject to the public body’s risk transferring decisions as negotiated in the selection process, Quebec’s contractual documents state that contractors are notably responsible for permits and authorizations, design, construction, respect of costs and schedule, insurance and project management.

Insurances include a construction all risks insurance, which provides protection against loss or damage regarding works, equipment and machinery and third-party claims for property damage or bodily injury. Contractors in DB projects must also take a wrap-up

liability policy as well as professional liability to cover losses resulting from any error or omission in design and construction. Contractors also need performance bonds to cover their contractual obligations, as well as a labor and material payment bond to ensure the payment of subcontractors and suppliers for their work and the material they supply. Finally, a parent company guarantee might be necessary to protect the client in the event of a contractor's default.

#### 4.1.1. Functions of Current Rules

Regulatory stipends ensure light compensation for firms participating in a canceled selection process while stipends provided through the derogation procedure aim to share the financial risks associated with propositions development. Public bodies aim for the optimal risk transfer to the private sector by pegging risks to the party best positioned to manage it. Insurance, to protect the insured against claims, and liabilities, to protect losses incurred by third parties, enable risk distribution and contingency provisions. Performance bonds guarantee against the failure of the other party to meet contractual obligations and ensure claims against the other party in the case of default.

#### 4.1.2. BIM-Specific Requirements

Tenderers deliver a substantial design effort in preparing proposals, especially in BIM projects which necessitate extra efforts in the early design stage, and stipends compensate this effort. Stipends increase competition, bidding pool diversity, SME inclusion in public procurement and quality of proposals, while the design level of effort reduces cost growth, and their absence can lead contractors to not participate in the process. The appropriate level of a stipend is somewhat flexible, but the rule of thumb for a two-stage process is one-third of the design effort (Alleman et al. 2020).

Level 3 BIM, through integration of the team, may blur the levels of responsibility and enhance risk and liability (Azhar 2011). Risks must be identified and allocated, especially regarding responsibility for the accuracy and coordination of data as well as updating information in collaborative models (Porwal and Hewage 2013). The BIM addendum addresses the risk of project participants assuming contributions made by other parties are accurate and provides for claim waivers (Porwal and Hewage 2013). The BIM addendum also specifies that the participation of the contractor, subcontractors and suppliers in a model does not constitute design services, although this cannot be applied to DB because of its single point of responsibility, which means parties only assume their traditional roles (Currie 2014). CIC BIM Protocol limits project team members' liability by stating that there is no warranty to the integrity of electronic data transmission and no liability for corruption or alteration occurring after transmission (Mosey et al. 2016).

Traditional insurance is not easily adaptable to BIM level 3, and new insurance products better tailored to collaborative projects are needed (Currie 2014). One possible solution is Integrated Project Insurance (IPI), which can be used in alliancing or IPD models. This model covers all major parties under one single policy and includes all the insurances needed for infrastructure projects (Currie 2014).

#### 4.1.3. Dysfunctions of Current Rules

Regulatory stipends do not reflect the actual work carried out by tenderers in BIM projects, and public bodies must use the derogation procedure to offer better compensation. Absence of stipends can disinterest firms and competition and favor firms with stronger financial records to the detriment of smaller ones. Risks are allocated and not shared, which does not reflect the collaborative BIM process and furthers the silo effect. Furthermore, Quebec's contractual documents do not provide for BIM-specific liability limitations or claim waivers.

#### 4.1.4. Tension Resolution

Stipends provided for through the derogation procedure better compensate tenderers for their proposal development efforts. Since tenderers' intellectual property developed throughout the selection process is transferred to public bodies, stipends merely represent small compensation for the accomplished work. Stipends do not need to cover the full costs of preparing the proposal, as there is an inherent cost to business development which should not be fully borne by the state. Several jurisdictions reasonably compensate tenderers to ensure healthy competition and involve smaller players in the selection process. Quebec's regulations must be revised to benefit from stipend's advantages and lessen public bodies' administrative burden regarding the derogation procedure.

IPD is one of the most effective ways of dealing with BIM-specific risks because of its pain-gain sharing mechanism (Azhar 2011). The target cost includes a single project contingency intended to reduce construction costs. The cost-sharing mechanism must define the risk-reward proportions of parties whose overhead costs are at-risk (Zhang and Li 2014). IPD also waives or limits claims against the other parties (Ashcraft 2008). Liability limits such as the ones provided for in the CIC BIM Protocol help strive towards a no blame culture (Currie 2014; Mosey et al. 2016). The CCDC 30 contract stipulates that parties must waive all claims against each other.

IPI has been proposed as a solution to the issue of the blurred levels of responsibility in BIM level 3, and aims to align parties' interests, ensure the development of achievable and affordable solutions and cover project outcomes rather than individual liabilities, such as insuring the potential cost overrun (Currie 2014). IPI collectively insures all partners of an alliance or IPD model, such as the client, designers, consultants, manufacturers, constructors and their supply chain. In IPI, insurers are more involved in the project through the participation of an independent facilitator and a technical independent risk assessor (Cabinet Office 2014a; Currie 2014). With IPI, parties' contributions are not fixed and can be reallocated during the project. Disputes could thus arise amongst project participants, without affecting the client, but it also could encourage the exercise of reasonable skill and care (Currie 2014).

In order to move from a risk allocation to a risk-sharing paradigm, Quebec should therefore consider revising the regulatory indemnity regime, use the IPD pain-gain sharing mechanism of target costing and include waivers and liability limitations in its contractual documents, as well as enter discussions and negotiations with the insurance industry to develop an IPI model to move towards a no-blame culture.

#### 4.2. Sharing Benefits

BIM-specific services are considered as additional, or special, services under the regulatory fixed-remuneration scales for professional services (AAPPQ 2016). Those services are not included in the applicable percentages for services rendered during preparation of plans and specifications, whether preliminary or final, and during construction. Public bodies pay for these services on a lump sum basis, provided the scope is well defined, negotiated on the basis of an estimate of the number of hours necessary to complete the services (AAPPQ 2016). As for engineers, their professional order does not offer any guidance on the topic.

Canada's Copyright Act provides that architects can claim copyright ownership on drawings, a fixation of an original idea, a principle also present in the Fee Rate for Professional Services Provided to the Government by Architects (FRA) and the Fee Rate for Professional Services Provided to the Government by Engineers (FRE). It also states that joint authorship is possible in situations of collaborative or collective works. Quebec's contractual documents provide that exclusive intellectual property is transferred from contractors to public bodies, which in exchange grant contractors a license. Project data are transferred to public bodies for the management and operation of the building, as well as for future projects. These data, including all copyrights attached, become the exclusive property of public bodies (AOI 2016b).

#### 4.2.1. Functions of Current Rules

Remuneration regulations value fairness through standardization, which reduces uncertainty and enables budget control. Contractual payment mechanisms in traditional delivery methods reduce financial pressure, while milestones transfer the risks of temporary financing to firms and ensure completion of projects. The legislative intellectual property regime creates economic rights with the purpose of providing payment to the author or copyright owner. Legislation provides for joint authorship, but not contractual documents which instead ensure acquisition of intellectual property on a fixed price basis for potential future works.

#### 4.2.2. BIM-Specific Requirements

Since BIM improves service delivery, there is a need for commensurate compensation through scales of fees (Hamil 2012). Change of standard in professional practice, notably through clash detection, development of 3D models, simulations, training, time inputting, reviewing and transferring usable data to public bodies, should lead to a design fee rise for designers (Ashcraft 2008). While traditional delivery methods hinder performance-based remuneration because of silos, alternative delivery methods have been found to better distribute the benefits (Sacks et al. 2018).

Issues of model ownership need to be stipulated and standardized to facilitate BIM implementation. Ordinarily, the ownership of the design belongs to the designer following the completion of a project, but since BIM facilitates infrastructure management, models have a significant value for public bodies, which should use and develop BIM in the entire project life-cycle (Porwal and Hewage 2013). Most BIM manuals state that public bodies are the owners of the digital models, information and other deliverables (Sacks et al. 2018).

#### 4.2.3. Dysfunctions of Current Rules

The FRA and the FRE, the remuneration regulations applicable to professional services, have not been substantially revised since 1984 and do not reflect the computerization of professional practice, while fee scales have not been indexed for 9 years. Contractual payment schemes are task-led instead of performance-led, and progressive payments do not reflect the additional efforts needed in the early design stage of BIM projects. The rules applicable to benefits harm team integration, further the silo effect and do not reflect the collaborative and multidisciplinary reality of BIM (Ghassemi and Becerik-Gerber 2011). Quebec's contracts do not address the issue of joint authorship when BIM level 3 sometimes makes it impossible to determine where the contribution of one party ends and the other begins.

#### 4.2.4. Tension Resolution

Balance must be struck between the desire to treat all firms equally through anticipation of the terms of the exchange, a form of fairness, with providing the necessary structure to facilitate collaborative processes in BIM projects. It is necessary to undertake a revision of remuneration regulations through negotiations between the state and professional associations to mutually and adequately adapt them to the computerization of professional practice. This adaptation should consider the efforts provided to generate quality information to meet public bodies' needs. This mutual revision would ensure fairness, whether through the negotiation process or regarding the final fee scales.

Repartition of payments should roughly be spread out evenly during the four major stages since the early design stage of BIM projects is more intense. To ensure collaborative work and a focus on project goals, BIM projects must shift from task-led to performance-led payments. The IPD compensation mechanism ensures participant's success is tied to the overall project success (O'Connor 2009). This compensation mechanism relies on the implementation of a target cost combined with an estimated maximum price during the negotiated phase of the RFP, which enhances value for budgeting (Chan et al. 2011). The estimated maximum price can motivate the project team to achieve better value by aligning

their financial objectives with that of the project (Darrington and Lichtig 2010). Corollary, the tenderers' ability to develop a target cost should be thoroughly evaluated during the first stage of the RFP.

The target cost is comprised of reimbursable costs, which are not at risk and include direct and indirect costs such as overhead costs specific to the project, project-specific costs and risk contingencies, while profit margins and company overheads are at risk (O'Connor 2009). Savings on the actual costs, as compared to the target cost, can be shared according to agreed-upon percentages, although public bodies could opt to set tentative percentages with arbitral adjustments to avoid gross inequities that could result from the set percentages (O'Connor 2009).

As for intellectual property, it has been found that contractual documents that not providing for joint authorship could discourage collaboration at an advanced level, especially with BIM level 3 (Currie 2014). Quebec's contractual documents should include the concept of joint authorship by defining it and by recognizing the right of the original author to accept or reject additions. The original authors would thus be saved from any liability if an erroneous addition is made without their consent (NBIMS 2007).

## 5. Conclusions

This paper notably highlights the need to rely more heavily on legislation, regulations, contracts and infra-regulatory rules to clarify public bodies' expectations, to standardize collaborative mechanisms, to reduce uncertainty and to clarify the status of the model between the procurement and the realization phase. Contractual mechanisms such as requests for information, requests for optimization measures and commercially confidential meetings provide some form of collaboration, but none of these mechanisms allow the assessment of tenderer's BIM competence before the adjudication of the contract. Tenderers are thus not evaluated, or very lightly so, regarding their capacity to carry out BIM projects and when they are, it is formally rather than substantially, such as through interactive scenarios or problem solving. This is partly caused by the imperatives of fairness whereby public bodies must publicly share responses to requests for information and requests for optimization measures. One possible solution to this problem would consist of integrating solicitation methods, such as rank-and-run or best and final offer (BAFO), which would enable public bodies to enter bilateral negotiations with the highest scoring integrated team of the first stage of the request for proposals, thus ensuring the refinement of more confidential aspects of the proposals, whether technical or commercial, during the second phase of the request for proposals.

Since BIM is 10% technology and 90% sociology, it is essential to adjust award criteria for integrated projects. The tension between the desire to ensure equal treatment of tenderers objectively and formally through price-based competition and the need to assess the inherent qualities of the parties in order to achieve optimal collaboration must thus be resolved. The essence of BIM lies in human interactions, clear communication, open-mindedness and cooperative behaviour. The use of negotiated two-stage procurement processes can help resolve this tension. The request for qualifications and the first stage of the request for proposals process would allow public bodies to assess objective qualities, such as experience and similar projects carried out, and subjective qualities through interviews and real-time problem-solving scenarios. The second stage of the request for proposals would ensure the co-development of technical and financial matters through multiple workshops enabling the development of trust and the harmonization of processes between public and private parties.

Furthermore, the use of a negotiated two-stage procurement process—during which a risk-reward sharing mechanism is developed through target costing combined with an estimated price—as well as incorporating an integrated project insurance model, claim waivers and liability limitations should allow better team integration and collaboration. Additionally, since BIM and IPD encourage upstream participation from a wide range of stakeholders, suppliers and manufacturers could be prequalified by completing a standard-



ized questionnaire to assess their BIM capability and maturity, while also assessing softer traits such as behavioural attributes and the propensity to collaborate. Their presence and participation in the request for proposals process would facilitate target costing and the inclusion of innovative delivery solutions for the project.

The importance of preliminary design in IPD and BIM shifts design efforts to the early stages of the project. However, regulatory remunerations have not been updated or indexed for 9 years to reflect the evolution of professionals' practice resulting from new technologies and the early-stage intensity of design. The benefits do not only take pecuniary forms but are also reflected in intellectual property. Contractual documents should therefore reflect the interwoven, multidisciplinary and collaborative design processes that blur the lines of parties' roles and responsibilities and thus provide for joint authorship.

The authors suggest that the use of IPD should help mitigate legal barriers hindering BIM implementation, while preserving balance between fairness and encouraging collaboration. This would ensure public bodies reap the full benefits of the BIM process such as better design, controlled life-cycle costs, production quality, automated assembly, cost savings and reduction in project time. To do so, revisions must be made to legislative, regulatory and contractual norms to facilitate an optimal implementation of BIM for future public infrastructure projects to enable the achievement of the public interest by obtaining.

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## Abbreviations

BAFO	Best and final offer
BIM	Building information modeling
CCM	Commercially confidential meetings (CCM)
DB	Design-build
FRA	Fee Rate for Professional Services Provided to the Government by Architects
FRE	Fee Rate for Professional Services Provided to the Government by Engineers
IPD	Integrated Project Delivery
IPI	Integrated Project Insurance
RAIC	Royal Architecture Institute of Canada
RFI	Requests for information
RFQ	Request for qualifications
RFP	Request for proposals
ROM	Requests for optimization measures
SME	Small and medium-sized enterprises



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Article

# “Our Laws Have Not Caught up with the Technology”: Understanding Challenges and Facilitators in Investigating and Prosecuting Child Sexual Abuse Materials in the United States

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**Abstract:** With technological advances, the creation and distribution of child sexual abuse material (CSAM) has become one of the fastest growing illicit online industries in the United States. Perpetrators are becoming increasingly sophisticated and exploit cutting-edge technology, making it difficult for law enforcement to investigate and prosecute these crimes. There is limited research on best practices for investigating cases of CSAM. The aim of this research was to understand challenges and facilitators for investigating and prosecuting cases of CSAM as a foundation to develop best practices in this area. To meet these objectives, qualitative interviews and focus groups were conducted with participants throughout the western United States. Two major themes arose from this research: Theme 1: Challenges to investigating and prosecuting CSAM; and Theme 2: Facilitators to investigating and prosecuting CSAM. Within Theme 1, subthemes included technology and internet service providers, laws, lack of resources, and service provider mental health and well-being. Within Theme 2, subthemes included multidisciplinary teams and training. This research is a first step in understanding the experiences of law enforcement and prosecutors in addressing CSAM. Findings from this study can be used to support the development of best practices for those in the justice system investigating and prosecuting CSAM.

**Keywords:** child sexual abuse material; child pornography; law enforcement; multidisciplinary work

## 1. Introduction

The investigation of child sexual abuse (CSA) has become increasingly complex with technological advances and the widespread use and availability of the internet. In the United States, the creation and trafficking of child sexual abuse material (CSAM) online is among the fastest growing illicit online industries (Binford et al. 2015). Prior to the digital age, CSAM was typically shared among perpetrators through the physical sharing of hard-copy images either by mail or face-to-face encounters. Unfortunately, the internet has facilitated offenders' ability to exchange and distribute CSAM, as well as evade detection by law enforcement.

### 1.1. Definition of CSAM

U.S. federal law defines child pornography as “any visual depiction of sexually explicit conduct involving a minor (someone under 18 years of age)” (18 U.S.C. § 2256). To be considered sexually explicit,

the image does not need to depict the child engaging in sexual activity; a sexually suggestive photo of a naked child may still meet the legal definition (18 U.S.C. § 2256). Possession, creation, reception, and distribution of child pornography is illegal under both federal and state law in all 50 states (US DOJ 2017). Offenders may be prosecuted under federal law, state law, or both (US DOJ 2017). Differences in federal and state sentencing of CSAM-related offences can make it challenging to understand the potential inconsistencies or differing lengths of sentences. Under federal law, statutory minimums range from five to 20 years for first-time offenders who transport child pornography interstate or for foreign commerce to life imprisonment if the offender has prior convictions for child sexual exploitation, or if the images are violent and the child was sexually abused (US DOJ 2017). Child pornography is not protected under the First Amendment of the U.S. Constitution, but instead considered illegal contraband under federal law (US DOJ 2017). While all states criminalize child pornography, the investigations and prosecutions of cases can become complicated, as not all state laws are identical. States vary as to whether first possession offenses are considered felonies or misdemeanors. However, federal jurisdiction nearly always applies when a child pornography violation occurs using the internet (US DOJ 2017).

As mainstream cultural attitudes generally regard the production of adult pornography as consensual and at least legally acceptable, it is important to differentiate child pornography. Child pornography can be further qualified as visual depictions of CSA. In this paper, child pornography is referred to as CSAM to more accurately underscore that these images and video footage depicts sexual abuse and exploitation of children.

### *1.2. Prevalence of CSAM*

The National Center for Missing and Exploited Children (NCMEC) manages the CyberTipline, a national service through which the public and internet service providers (ISPs) can report suspected child sexual exploitation. From its inception in 1998, the CyberTipline has received over 50 million reports and this number has grown exponentially in recent years (NCMEC 2019). The CyberTipline now receives over one million reports every month, with 18.4 million reports received in 2018 alone (NCMEC 2019). Research into actively trafficked images of identified victims depicts alarming trends including more egregious sexual content over time and increased trafficking of images of prepubescent victims (Seto et al. 2018). Similar trends have been noted in Canada. A study by Cybertip.ca, a tip line for reporting online sexual exploitation of minors, reports that 78% of CSAM on the internet depicts children under the age of 12 with the majority (63%) being under the age of eight (CCCP 2016). As the age of the child decreases, these images are becoming increasingly violent and containing more explicit sexual acts (CCCP 2016). Once these images enter cyberspace, they become next to impossible to permanently destroy, contributing to the ongoing victimization of affected children that continues into adulthood (Binford 2015; Bursztein et al. 2019; Martin 2014).

Each time a child's image is redistributed, collected, and viewed, the child's abuse is perpetuated. The child victims in these images continue to endure the "forced recording of non-consensual sexual victimization and the subsequent and equally non-consensual circulation of those images world-wide" (Butt 2007, p. 7). This lack of control over the continued sharing and public access to their abuse images is one of the most challenging aspects of their abuse to overcome and many victims report the resurfacing of these images is worse than the hands-on abuse itself (Binford et al. 2015; CCCP 2017). Adults whose CSA was recorded and distributed online worry constantly about being recognized by someone who has seen images of their abuse even years after the abuse occurred (CCCP 2017).

### *1.3. Current Challenges to Investigating CSAM*

#### *1.3.1. Procedural Challenges to Investigating CSAM*

Law enforcement professionals face numerous challenges in investigating and prosecuting cases of CSAM. The sheer number of CSAM reports to NCMEC's CyberTipline, currently surpassing one million a month, far exceeds the capabilities of NCMEC and law enforcement to adequately respond

(Bursztein et al. 2019; NCMEC 2019). While the number of reports is astounding, this likely accounts for only a fraction of the CSAM in existence. Although federal law mandates that ISPs report known or suspected cases of child victimization to NCMEC's CyberTipline "as soon as reasonably possible," ISPs are not required to actively look for CSAM on their internet platforms, and savvy perpetrators can easily evade detection (18 USCA Section 2258(A); Henzey 2011). As ISPs are for-profit entities, committing personnel and resources to monitoring servers for CSAM may not be a top priority (McCabe 2008). However, the drastic increase in ISP reports may indicate these companies are beginning to take the issue of CSAM on their networks more seriously (Keller and Dance 2019). Google, Microsoft, Facebook, and Twitter are utilizing technologies to block trafficking of CSAM and user accounts through technology that generates a digital fingerprint for known abuse imagery and then scans user-generated content for these digital fingerprints (Bursztein et al. 2019).

However, once a report is made, police records show that ISPs often take weeks or months to respond to inquiries from state and local law enforcement agencies regarding CSAM—if they respond at all (Keller and Dance 2019). When they do fully cooperate, encryption technology meant to safeguard user privacy facilitates perpetrator concealment of CSAM (Keller and Dance 2019). Frustrating law enforcement investigations further, users may be notified by ISPs that their accounts are being blocked or taken down, giving perpetrators a head start in hiding or destroying evidence. Additionally, federal law only requires ISPs to preserve user material pertaining to CSAM for 90 days (18 USCA Section 2257(A)).

Furthermore, offenders who traffic CSAM are often on the cutting edge of technology, utilizing virtual private networks (VPNs), encryption techniques in messaging apps, peer-to-peer sharing networks (P2P), and Tor (Dark Web) to conceal their online activity (Bursztein et al. 2019; Keller and Dance 2019). One research study into Tor hidden services found that 80% of total requests were for abuse sites, predominantly CSA (Owen and Savage 2016). The authors indicated that these abuse sites were "easily identifiable in the meta data, suggesting webmasters had confidence that Tor would provide robust anonymity" (Owen and Savage 2016, pp. 4–5).

### 1.3.2. Challenges of CSAM Disclosure to Investigators

In investigating hands-on abuse, law enforcement investigators cannot depend on victim disclosure of CSAM to determine whether the abuse was recorded by photo, video or both. It is estimated that 60–80% of victims of CSA do not disclose that their abuser took photos or videos until adulthood (Alaggia 2010; CCCP 2017; Hébert et al. 2009). Furthermore, most cases of CSA are not reported to law enforcement, and of the reported cases, even fewer appear before the courts (Martin 2013). The CCCP (2017) Survivors Survey found a multitude of reasons why CSA victims may not disclose that there is photo or video documentation of their abuse, including shame, fear of consequences if the footage is uncovered, and a belief that the existence of their CSAM somehow incriminates them as well. Most often, the existence of CSAM is ascertained when a victim discloses to their therapist (86%) and is rarely uncovered as part of a police investigation (12%) (CCCP 2017). Disclosure to law enforcement of CSAM at the time of hands-on abuse may increase the likelihood that police can confiscate and contain these images before they are trafficked on the internet.

Unfortunately, investigators unfamiliar with the complex nature of enduring CSA trauma may not consider victims to be "credible" when they disclose their abuse while it is ongoing, let alone months or years after the abuse has occurred (CCCP 2017). This skepticism toward victims' testimonies not only compounds the victim's trauma, but is also one of the principle reasons perpetrators are not identified, charged, and prosecuted (CCCP 2017). The disclosure of the existence of CSAM when hands-on abuse is disclosed could have significant implications for the success of CSA investigations, as CSAM is a visual depiction, and thus, irrefutable evidence that the abuse occurred (CCCP 2017).

### 1.3.3. Effects of CSAM Exposure on Investigators

Several studies have researched the effects of CSAM on the mental health and well-being of investigators. Repeated exposure to CSAM is reported as a significant stressor for law enforcement professionals (Powell et al. 2014a; Violanti and Aron 1995). As a result of regular exposure to this material, investigators are more likely to experience secondary traumatic stress and burnout (Bourke and Craun 2014; Burns et al. 2008). Powell et al. (2015) concluded investigators of CSAM experience “salient emotional, cognitive, social and behavioral” consequences due to viewing this material in both the short and long term (p. 103). CSAM investigators vary in their perceptions of their main work stressors: some report organizational stressors including heavy caseloads and insufficient resources to cause more stress than exposure to CSAM itself (Powell et al. 2014a, 2015).

Despite evidence of profound effects on mental health, several studies have concluded most CSAM investigators feel positively about their work and are able to successfully manage the majority of stressors in their profession (Brady 2016; Powell et al. 2015; Wolak and Mitchell 2009). However, this perceived sentiment may be due to the dominant work culture in law enforcement which deters expressing vulnerability and weakness, and could indicate persistent problems remain unrecognized (Powell et al. 2014a; Wolak and Mitchell 2009). Furthermore, even if CSAM investigators are coping well with work stressors overall, this does not mean that consistent exposure to CSAM does not inflict psychological harm (Powell et al. 2014a).

There also exists a mixed perception of debriefing strategies among many law enforcement professionals who work with CSAM. Several studies highlight the importance of close professional relationships and frequent informal opportunities to process the psychological effects of exposure to CSAM with other colleagues (Burns et al. 2008; Powell et al. 2014a). Research is mixed on the benefit of therapy on coping with the mental health effects of CSAM. While some studies report CSAM investigators highly value annual psychological assessments, others are hesitant to divulge their experiences to workplace psychologists due to concerns regarding confidentiality or skepticism regarding the benefits of therapy (Burns et al. 2008; Powell et al. 2014a). Investigators also report workplace psychologists and Employee Assistant Programs are generally perceived as incompetent at addressing the specialized nature of CSAM investigations and their effect on investigators (Powell et al. 2014b; Wolak and Mitchell 2009). This echoes the experiences of victims of CSAM, who also report that therapists were not adequately trained or prepared to address the impact of the CSAM on their lives (CCCP 2017).

### 1.4. Rationale

To date, we located only one study that explores the existing procedural challenges of CSAM investigations from the perspective of investigators. Powell et al. (2014b), utilized anonymous telephone surveys to interview investigators of CSAM across multiple jurisdictions in Australia. The study published findings on the operational stressors that investigators of CSAM face and discussed how these stressors affect investigators’ capacity to perform their role. Their study concluded the chief challenges investigators faced included the following: a lack of supportive work relationships and high staff turnover, poor work resources due to large case volume, inadequate staffing and insufficient training, and open-plan workspaces where CSAM investigations could only be conducted with minimal privacy. Previous research has focused on the content of CSAM and the trauma experienced by law enforcement and other personnel who review these images (Burns et al. 2008; Krause 2009; Powell et al. 2014a, 2015). However, there is limited research on best and emerging practices for investigating cases of CSAM, including methods to facilitate CSAM disclosure, identifying victims portrayed in CSAM, identifying offenders and employing methods to deter creation and distribution of CSAM. Extending beyond a primary focus on the impact of exposure to CSAM on investigators, the purpose of the current study seeks to understand factors influencing best practices and common challenges for investigating and prosecuting cases of CSAM.

## **2. Methods**

### *2.1. Participants*

This research study was approved by the Willamette University Institutional Review Board. Service providers from law enforcement agencies and legal representatives were invited to participate in this research study. Using snowball sampling, participants were recruited from various cities in Washington, Oregon, and California. Agencies dealing with CSAM were contacted by a member of the research team and asked to participate in this research study. In total, 65 participants from 21 different agencies and/or organizations participated in semi-structured qualitative interviews or focus groups. The majority of participants were from local, state and federal law enforcement agencies as well as various district attorneys' offices. While we had a total of 65 participants, data used for this analysis were from interviews and focus groups with 50 participants, from 16 agencies and/or organizations. This included 33 participants from law enforcement, 11 participants from the legal profession, and six from community organizations. The exclusion of the remaining 15 participants from 6 agencies/organizations were due to technical difficulties in a few instances. In the other instances, participants asked for their interviews to be off the record, and as such, were not recorded or used in data analysis. While these interviews and focus groups were not utilized in data analysis, many participants who asked to remain anonymous work in federal positions and have invaluable knowledge of CSAM and the legal system. These individuals provided context and information to support the research team in focusing the interview questions and in understanding the background of the issue of CSAM in the United States, and in particular in Washington, Oregon, and California.

### *2.2. Data Collection*

Data collection occurred from January to May 2018. Qualitative data were collected through the use of semi-structured interviews and focus groups. Focus groups were used to highlight differences and similarities across participant experiences (Marshall and Rossman 2014). Focus groups are also useful to be able to include multiple participants in a shorter time frame from the same organization (Marshall and Rossman 2014). As many professionals expressed concern about limited time and high caseloads, focus groups were utilized to enhance maximum participation within a shorter time. All interviews and focus groups were conducted in person by at least one senior member of the research team. A total of 10 focus groups (44 participants total) and 19 individual interviews were conducted. A comprehensive interview guide was created with input from academics, content experts in the field, and an individual with lived experience. Interview questions focused on protocols and procedures used when evaluating or responding to cases of CSAM, as well as challenges and possible opportunities to enhance practice in this area. Interviews and focus groups were recorded, transcribed verbatim, and reviewed for accuracy. Interviews ranged from 45 min to an hour and a half. Participants were informed that they could decline to answer any questions or withdraw from this study at any time; informed consent was gained prior to beginning the interview or focus group.

### *2.3. Data Analysis*

The framework method, falling within thematic analysis (Gale et al. 2013), was utilized for data analysis in this research study. The framework method is particularly useful for multidisciplinary research teams (Gale et al. 2013), as was the case in this study. The framework method is also useful when researchers seek to compare and contrast data emerging from qualitative interviews and focus groups (Gale et al. 2013). Following the stages of analysis set forth in the framework method, the interview and focus group data were analyzed. After familiarizing ourselves with the data, the research team coded five initial interviews to develop the initial framework. The research team met to discuss the initial codes and agreed on a framework for subsequent transcripts. The data were analyzed by three independent coders. All coders kept notes of questions or impressions and all discrepancies were discussed at bi-weekly meetings. The analysis process was overseen by a senior



member of the research team experienced in qualitative data analysis. Data collection was considered complete once thematic saturation occurred and the research team did not identify novel concepts through the interviews and focus groups.

### 3. Findings

In this findings section, we will describe the two major themes that arose out of this research. These themes are interrelated as there are many overlapping challenges to investigating and prosecuting CSAM, and challenges and facilitators both impact the way that service providers are able to work within the area of CSAM. The roles in which participants work are diverse and include representatives from law enforcement and district attorneys' offices. Within these roles, participants varied in seniority and included managerial, frontline, and support staff. Further, jurisdiction and location of participants ranged from local to state to federal. Some participants had specialized training and/or worked specifically in the area of CSAM, while others had broader professional roles, though all had some experience working with CSAM. This diversity will be evident throughout this section, as there was not always consensus amongst participants. All quotes are identified using either FG (focus group) and a number to identify different participants in the focus groups, or II (individual interview). FG identifiers are followed by a number (e.g., FG1, 1) to indicate the FG and participant number within the FG.

#### 3.1. Theme 1: Challenges to Investigating and Prosecuting CSAM

All participants identified some unique experiences and challenges that arose when investigating and prosecuting CSAM. The four sub-themes identified were technology and ISPs, laws, lack of resources, and service provider mental health and well-being.

##### 3.1.1. Technology and Internet Service Providers (ISPs)

Participants frequently described difficulties maintaining their knowledge of technology because of its continuously changing nature. Participants from both law enforcement and the judicial system identified that they are often several technological steps behind perpetrators both producing and trafficking CSAM. The participants in this study identified challenges keeping up with and identifying new apps, software, and programs commonly used by perpetrators of CSAM. When talking about specific devices, such as cell phones, some participants further noted that the increases in storage capacity was another challenge, as was the inability to crack passwords on encrypted devices. The following quotes speak to the challenges with rapidly changing technology:

*The technology is clearly the biggest thing. I mean there's a new app, new program, new security, just about every day, let alone every month, or year. So as an organization . . . we're always kind of playing catch up and trying to figure out what the next thing is. (FG4, 1)*

*I think law enforcement is really constantly trying to catch up. I feel like no matter what, we're always going to be behind unless, as the companies develop it, they keep us in mind . . . And this is how we help law enforcement, but we're always the afterthought. (II9)*

In addition to technology changing rapidly, one participant also noted that the physical size of devices and hard drives that store CSAM are becoming smaller; as such, the ability to hide material is becoming easier and law enforcement has a harder time searching for and finding these devices. Further, participants noted that the almost universal access to technology such as cellphones, computers, and the internet has meant that it is easier than ever for perpetrators to produce and traffic CSAM. Participants identified that advances in technology have allowed perpetrators to more easily connect with one another around the globe and remain anonymous while easily trafficking materials, as well as exchanging strategies to evade law enforcement investigation and prosecution.

Some participants perceived perpetrators as continuously updating their efforts to access and traffic CSAM. For example, participants explained that perpetrators are using everything from easily

accessible chat rooms and peer-to-peer networks to the Dark Web. One participant noted that some perpetrators continue to use peer-to-peer file sharing because it is easy to access and trade files, though at the same time, it is easier for law enforcement to monitor their activities on these types of networks. On the other hand, participants noted that many perpetrators have moved to using the Dark Web because it is more secure and encrypted, which aids in users' anonymity, making it more challenging for law enforcement. In the following quotes, participants discuss the different ways CSAM perpetrators use technology:

*There are different avenues for people to trade this imagery, through Bit Torrent and the Dark Web, you know we're just beginning to get access to that stuff. The file sharing stuff has been active for 10 plus years and I'm still kind of astounded how many people use it because it's open information that law enforcement monitors, but yet people continue because it's the easiest way for them to access this data. (FG16, 3)*

*You see horrible things on both sides [Dark Web and traditional platforms]. It's not necessarily a matter of what they're trading, it's just their knowledge in where and how to trade it . . . I think just the ones [perpetrators] who understand how to use communication on the dark side of the web, that's where they're going to go to just because they know it's more secure and they've got a better chance of staying anonymous on that side. (FG4, 1)*

Many participants noted the challenges in working with technology companies, particularly when companies must respond to warrants or provide investigators with information on user profiles. Generally, participants noted struggles with some technology companies that they perceived prioritized client privacy over prosecuting perpetrators and protecting children. In particular, one participant called it the "Snowden effect," indicating that since Edward Snowden, it has become significantly more difficult to work with ISPs, who have become much more concerned with client privacy. Participants identified that some companies were more responsive to law enforcement warrants than others. This was particularly evident when warrants came from federal as opposed to local or county authorities. For participants who worked within federal jurisdictions, they generally indicated that technology companies were forthcoming and responsive if they, as investigators, had the appropriate warrants. However, one participant spoke to both state and federal interactions with technology companies and stated:

*I don't imagine that the state system would get much response. And so, on occasion I have weighed in from my federal phone or email and that has been more helpful. (FG13, 1)*

With respect to technology company responsiveness, other participants felt strongly that certain companies were not willing to work with law enforcement, were not responsive, or tried to actively work against law enforcement, even with signed warrants. Other participants noted that the protocols in place at technology companies make investigating and retrieving information difficult. For example, certain websites will notify the account holder when served with a warrant, or the companies will shut down user accounts, tipping the user to the fact that they may be under investigation. The following quotes portray participant frustration with technology companies:

*I don't have data from [Company X] because I don't have cyber tips from [Company X]. I know we are either getting images straight off the phone or we're not doing anything with [Company X] because [Company X] doesn't play ball. (FG13, 2)*

*[Company Y] showed this video . . . about how they review every search warrant and they look for whatever they can to reject it so they don't have to provide this information to law enforcement. (FG10, 1)*

*They [technology companies] shut the account down. They don't tell them why, but if a person has half a brain, they're thinking, 'okay, I just uploaded three child porn images and lo and behold, within a day my computer got shut down.' (FG10, 2)*

### 3.1.2. Laws

Often, participants pointed out that the laws and legal framework that guide CSAM investigations and prosecutions are outdated and do not reflect the changing nature of technology. The following quotes exemplify what participants said about outdated laws:

*Our laws have not caught up with our technology and the reality of our situation. (FG1, 2)*

*If you look at the statutes governing this area [CSAM], most of them were written in the seventies, some are written in the eighties. There was no way that they'd envision what we're seeing today. (FG13, 3)*

The previous participant also noted that current statutes of limitation are not long enough, and thus, rarely protect victims or account for images being stored online rather than just hard-copy formats. While some participants noted that laws are changing in some states, generally participants agreed this was not happening consistently or quickly enough.

Participants also talked about challenges in writing and obtaining warrants. Participants explained that difficulties with warrants are related to having to write warrants for specific devices or accounts, which may require more specific evidence and expertise. The next two quotes demonstrate these challenges:

*I applied for the search warrant. We got the search warrant, did the search of the house and everything went fine. But that is in itself a problem because you know, the old way, you just write it, you go seize everything and analyze it. We can't do that anymore. You have to specifically identify which device you want to search [and] explain your probable cause to search that device. And so it's created a whole other set of challenges. (FG10, 1)*

*You have to develop the expertise over the years to be able to feel confident in your ability to write solid warrants for a variety of different internet platforms like Google Mail and Snapchat and Facebook. And so, he's really been focused on that for the last several years. (FG8, 2)*

Further, participants talked about challenges in obtaining appropriate sentencing, and creating effective probation conditions for CSAM-related offenses. In terms of sentencing, they specifically discussed inconsistencies across jurisdictions. For example, one participant noted that in some states child pornography offences were a misdemeanor whereas other states treat such offences as a felony. Another participant further noted that sentencing even differed by county where some offenders only received probation, yet in nearby counties, other offenders received more significant sentences. Additionally, participants in the current study felt that child pornography offenders often received substantially lesser prison sentences than hands-on child abuse offenders. Finally, participants shared that probation terms do not always reflect the need to limit offender access to the internet and technological devices.

While these challenges were frequently discussed, some participants indicated that having CSAM as evidence was helpful in the investigative process and aided in gaining both confessions and plea deals from perpetrators. This idea is highlighted in the next quote:

*There is corroboration through an image. The likelihood that we would get a plea on that case, it would be very high, I would say above 90 percent ... it's [an image] a damning piece of evidence for the defense. (FG7, 1)*

### 3.1.3. Lack of Resources

With participants identifying such high volumes of CSAM, some of the most common barriers identified by participants were high caseloads, not enough staff, and the lack of financial resources to be able to adequately investigate or address all cases. Some participants outlined that while their

caseloads have been increasing, they have actually been losing staff, making the issue of resources even more of a barrier for them. Participants noted that because they have limited trained staff, they are not always able to triage cases as they would wish, but rather will pursue cases with clear evidence. Another participant noted that they are only ever able to address the most imminent threat cases, which can leave victims and families feeling unsupported. Further, one participant outlined that even if they had all the images and all the disclosures, they do not have enough staff to support these investigations, particularly the technological side of investigations. The following quotes describe these sentiments:

*We don't have enough people [to investigate] so we can really only get the low bearing fruit. (I19)*

*We regularly gripe amongst ourselves about how our caseload is different than those who are doing property crimes . . . it would be wonderful if there was an acknowledgement about the content we deal with. (FG7, 1)*

*Always [investigating] the ones that were the most imminent. Never get to triage it, but it was most imminent threat to offend. Those were your priorities, and it may make a lot of folks upset because it might take a while to get to their case, but there were cases coming in every day. (FG10, 3)*

*I am concerned that if we had access to all the images that were out there, had all the disclosures in the world, that we wouldn't be able to tackle that [and] the system would become overwhelmed . . . we are fortunate that we have two people dedicated to this work. That's unheard of in this area to have two people dedicated to child pornography investigations. And even these two find themselves constrained by forensic processing and the length of time that it takes. (FG16, 1)*

Some participants talked about having to compete for resources with other departments or investigations. One participant spoke about competing for resources in terms of forensic examiners and people who are able to find information on seized devices, as both the technology and the expertise are very expensive. Another participant noted that big operations or high priority cases will get adequately resourced, but the day-to-day investigations need more resource allocation. It is important to note that not all participants described a lack of resources. Participants noted that smaller jurisdictions or departments are at more of a disadvantage as they have even fewer resources in general, and specifically to deal with in-depth CSAM investigations. The following quotes describe competing for resources and a discrepancy in resources between areas:

*We're competing with every single other law enforcement investigation because you better believe that every gang shooting, they need to know what those texts were on those cell phones . . . so we need more resources, more forensically trained examiners for these devices . . . Both the hardware and the expertise is incredibly expensive. (FG7, 1)*

*If we have a big operation, [we] will get resources. We can always pull people, but it's the day-to-day investigations that build up . . . we need more investigators that are dedicated to this and allocated to this full-time. (FG12, 1)*

*These small departments . . . these really strapped departments, have no capacity to do any of this kind of in-depth stuff. (FG1, 1)*

One participant summed up the challenges and the need for more resources and staff in saying:

*not enough investigators, money for training, money for technology . . . The bad guys on the internet . . . are able to get this high level of technology that law enforcement can't compete with because we're not a multimillionaire business. So that makes it really, really challenging. (FG10, 4)*

### 3.1.4. Service Provider Mental Health and Well-Being

Many participants shared that investigating and prosecuting CSAM can have a significant impact on service provider mental health and well-being. Participants employed in the justice system discussed the adverse impact that viewing CSAM had on their mental health and quality of life. Indeed, some participants shared that the exposure to CSAM was a traumatic experience for them. Participants said:

*You don't get these images out of your head. It doesn't leave. So even though they [investigators] always say it doesn't bother them, that it's okay, I think it's there. What does it do long-term? (II9)*

*You view these images and it's traumatic. (FG14, 1)*

Other participants highlighted the importance of focusing on staff mental health and encouraging staff to seek professional assistance to maintain mental health wellness:

*I mean, honestly, folks who do anything to do with child sex abuse should be going to talk to someone on a regular basis just for their own mental health. (FG10, 3)*

*How are our staff getting that support to address the vicarious trauma? And to make sure that we're at least identifying it and recognizing it when we train. We always include that piece and talking about how people can develop their resilience around that kind of stuff. (FG7, 2)*

Participants in senior or leadership roles specifically delineated concerns for their staff's well-being and noted the importance of establishing protocols to mitigate against the negative effects of CSAM. It was noted that people in leadership should check on their staff regularly and let them know they have support. Importantly, one participant shared:

*I think the population we generally forget about, too, is we have secretaries. They are in the trenches with us . . . We don't talk about their exposure to this stuff [CSAM]. We assume that we're the only ones who have to go in and do all the hard work and the reality is just not true and it trickles all the way down to anybody who touches our file. (FGS7, 1)*

When talking about the impact of CSAM on service providers, many identified that by the time investigators and prosecutors have expertise in this area, they may be burnt out or transferred out of these units due to high levels of exposure to CSAM content. By the time people are competent in these roles, they are transferred to a different department or promoted to another position. As one participant notes, regarding the turnover in staffing:

*We've had a number of employees that have needed to get out, and once that happened it needed to happen pretty quick. (FG13, 2)*

Another participant highlighted the problems with turnover and the challenges that brings in adequately training staff:

*Every few weeks there's people turning over in SVU [Special Victims Unit]. So as soon as someone gets capacity or training, then they move on. (II15)*

The majority of participants indicated that addressing and seeking mental health support was essential for those working in the area of CSAM. However, some participants worried about the possible repercussions of utilizing available psychological support. For instance, law enforcement was especially concerned about seeking therapy and having it used against them in the future, such as during a review for promotion or if there was an internal investigation. As one participant said, this concern stops many officers from coming forward with mental health concerns:

*It's a tough business to be in because we need it [mental health support]. We need the help. We're just a little worried about what will happen if it went against you. (FG9, 2)*

Many participants noted that supportive management, peer support, and a work environment that encourages staff to address mental health and wellness, were factors that made this challenging work more manageable. For example, relating to their workplace, one participant noted:

*They offer all the resources that I think someone could need, whether it be therapy, whether it be time off, or whether it be just someone to talk to. A majority of all that comes with the people you're working with. That's why this unit's really tight knit. (FG14, 1)*

Another participant stated that self-care was essential in this field:

*The importance of self-care for frontline service providers and law enforcement is critical to being able to maintain just a personally healthy perspective within work that we're doing because it's really traumatic work to deal with. (FG13, 1)*

### 3.2. Theme 2: Facilitators to Investigating and Prosecuting CSAM

Although numerous challenges were identified, participants also highlighted facilitating factors that aided their CSAM investigations and prosecutions, including multidisciplinary teams (MDT) and training. However, it is important to note that there was not consensus about all of these factors being utilized in CSAM investigations and prosecutions. This tension will be discussed throughout this section.

#### 3.2.1. Multidisciplinary Teams (MDTs)

Some participants identified MDTs as a best practice in investigating and prosecuting CSAM and supporting victims and their families. Participants spoke about MDTs enabling these incredibly complex investigations to be more effective and thorough through streamlined communications and coordinated efforts, as well as making sure that all professionals involved kept the victims' best interests at the center of their work. Some participants shared that at least one state legislates the use of MDTs for the same reasons, as the following quote illustrates:

*So when we say MDT, we mean multidisciplinary team, and public policy in the state of [X] says that investigating allegations of child abuse or neglect is very complicated and so the major agencies involved should work together and the district attorney in every county in [state] shall convene a multidisciplinary child abuse team or MDT to assist in that investigation. On that team, you should have representatives of your district attorney's office or law enforcement agencies, your local [state] Department of Human Services, child protective workers or CPS workers, schools, healthcare [or] hospital personnel. Who else is on there? Other advocacy groups and then your child advocacy center or [also known as] the child ... intervention center. (FG6, 1)*

Participants working within MDTs noted that the approach fostered a climate of collaboration and information sharing. Additionally, using MDTs aided in creating a child-centered and sensitive approach, in that it minimized the need for multiple interviews with victims, which is considered best practice by most professionals working in the areas of child abuse investigations. Participants also believed that MDTs aided in the most effective and efficient use of scarce resources through pooling and sharing the funding, technology, and the professionals needed to do the work.

#### 3.2.2. Training

Another factor that participants perceived facilitated effective CSAM investigations and prosecutions is specific and focused training for professionals involved in these types of cases. Participants noted that the type and amount of training they have received varied between jurisdictions. For example, some participants said that they received training about CSAM in their professional education prior to entering the field, while many others shared that they needed to seek out local, regional, or national workshops and conferences, noting that the annual interdisciplinary Crimes

Against Children Conference in Dallas, Texas, includes a particularly effective CSAM-focused stream. One issue raised by some participants about training is that it is not always effective. Both the importance of training and this drawback are included in this quote:

*So many of these trainings I go to and they're just not that helpful. You come away disappointed because you're going away from your family, your organization, spending all this money, you had to travel all the way over there. And this one [Dallas Crimes Against Children Conference] is just spectacular. It's done for any kind of crime involving children, not just sex abuse. It's for physical abuse, strangulations, domestic stuff. And it's not just prosecutors, it's for law enforcement, it's for social workers. I'm sure the pediatricians who do this kind of stuff as well, therapists, all of that. It's a fantastic training. That is . . . where the light bulb started to really light up for me. (FG8, 3)*

In terms of topics, participants identified various potential subjects, including how to navigate and access specific platforms or technology (including the Dark Web), how the needs of CSAM victims and their families differ from and are similar to victims of other crimes, how to build investigations and prosecutions that comply with legislation that applies to CSAM, self-care and peer support, and discipline-specific issues such as advanced suspect interviewing, advanced forensics, and how to write effective warrants in CSAM cases.

While most participants agreed with the need for formal training, some made the case that learning on the job is most effective, as illustrated in this quote:

*I tell people it took me about a year and a half to really grasp this type of investigation and I kind of just learned by asking them questions and then just getting into it. Training's been great, but [there is] nothing like real life, real world experience. (FG14, 1)*

Overall, participants clearly stated that training is helpful and needs to be a focus of organizations and leaders in the field of CSAM.

As illustrated, there are many challenges to investigating and prosecuting CSAM, as well as barriers and facilitators impacting professionals in this field. The findings in this section demonstrate the complexities faced by service providers who investigate and prosecute CSAM related offenses. While discussed in the previous section as distinct categories, the findings are highly interrelated and influence one another.

#### **4. Discussion**

The present study sought to understand factors that influence best or emerging practices in investigating and prosecuting CSAM, as well as understanding what challenges arise for individuals working in this area. To date, the research team located only one study that explored existing procedural challenges of CSAM investigations from the perspective of investigators themselves (Powell et al. 2014b). Extending beyond a primary focus of the impact of exposure to CSAM on investigators, the current study looked at factors influencing best practices and common challenges.

##### *4.1. Theme 1: Challenges to Investigating and Prosecuting CSAM*

###### **4.1.1. Technology and ISPs**

Technology was consistently identified as a leading challenge for investigating and prosecuting CSAM. The rapidly changing nature of technology makes it particularly difficult to adequately prepare or train investigators, especially as it relates to specific types of technology or platforms (Seigfried-Spellar 2018). Participants highlighted the difficulties in keeping abreast of new technologies. The plethora of online platforms available for perpetrators to access and traffic CSAM makes it challenging for investigators to keep up, and it is thought that P2P networks are responsible for the large growth in availability of CSAM on the internet (Bissias et al. 2016; Henzey 2011). P2P networks are free and relatively simple to employ so many perpetrators are thought to be sharing CSAM on these

platforms (Bissias et al. 2016). While law enforcement does monitor online platforms, the volume of CSAM and the ease with which perpetrators can traffic materials on the internet makes it challenging for investigators to fully address the problem. Further, as one platform or technology is discovered, perpetrators move to other technologies such as social networks, cellular messaging, and the Dark Web (Bissias et al. 2016). Technology companies and ISPs were also cited as a major challenge when investigating and prosecuting CSAM. Legally, in the United States, ISPs are required to report instances of child pornography on their platforms (McCabe 2008) and while ISPs are making these reports to law enforcement, challenges remain. Participants highlighted that ISPs often prioritize users' rights and are not always willing to provide timely information to law enforcement even with warrants. Further, while it is a legal requirement for ISPs to report CSAM if found, they are not required to look for it. Creating laws which require ISPs to implement server monitoring to combat CSAM would be one approach to addressing the ever-increasing challenges of investigating and prosecuting perpetrators of CSAM. While some companies, such as Google, Microsoft, Facebook and Twitter, utilize technologies to search for and report CSAM, these companies, along with others (such as Amazon) have continued to be criticized for not doing enough to address this problem (Keller and Dance 2019). The International Centre for Missing and Exploited Children (ICMEC 2018) has recommended that there be legislative and policy language enacted which clearly outlines ISPs' obligations to not report CSAM. Further, they recommend legislative considerations for clear, sufficient, and substantial penalties to incentivize companies to be "proactive and responsible" in their reporting of CSAM (ICMEC 2018, p. 11).

Given that law enforcement agencies already feel overwhelmed and unable to process the volume of CSAM, ISPs may pose additional challenges to investigators when they feel the priorities are not the same. While perpetrators are becoming increasingly proficient with advances in technology, there have also been technological developments that can be used to support law enforcement. These technologies can help in detecting and deleting CSAM more efficiently, potentially reducing the amount of times images or videos of children are shared online (Lee et al. 2020). In addition to speeding up the detection and deletion process, using automated technologies can help to limit the amount of CSAM that investigators must look at, and in turn the vicarious trauma experienced by those who manually search CSAM. Some of the primary technological tools that have been used to support investigators include digital fingerprints and image hash databases, which scans user-generated content on various platforms for known abuse images (Bursztein et al. 2019; Lee et al. 2020). Web crawlers, or search bots, are also important technologies being used to combat CSAM. Web crawlers use pre-defined criteria to automatically browse websites and download data (Lee et al. 2020). Web crawlers have been shown to be successful in identifying CSAM. Project Arachnid, a web crawler created by the Canadian Centre for Child Protection (CCCP) is one such example of a successful web crawler and is able to search the Dark Web as well as open web pages (Lee et al. 2020). When researchers have partnered with law enforcement to test algorithms which are used to detect CSAM, these have shown more accuracy and reliability in detecting such material (Lee et al. 2020). It is necessary for ISPs, technology companies, law enforcement, and other organizations to work in collaboration to ensure technologies are being implemented in ways that optimize their capabilities to detect and delete CSAM. This in turn will support more thorough investigations and prosecutable cases, while supporting victims and families in comprehensive ways.

#### 4.1.2. Laws

The current study found that laws and legal frameworks guiding CSAM investigation and prosecution are limiting and unreflective of the changing nature of technology. Henzey (2011) states that "current laws and enforcement strategies are insufficient to suppress child pornography production and distribution" (p. 2), which is supported by the results of this research. A major challenge to investigating and prosecuting CSAM cited in the literature is the lack of legislation or varying legislation between and across jurisdictions, specifically as CSAM is often trafficked across local jurisdictions as well as across international borders (Hillman et al. 2014). This may hinder the ability of law



enforcement to hold perpetrators accountable, can impact cooperation between law enforcement in various jurisdictions, and interfere with timely access to evidence when evidence is located in different jurisdictions (Hillman et al. 2014). Lee et al. (2020) note that when there is inconsistency in legal and policy frameworks, perpetrators are able to find loopholes or simply move the jurisdiction and server location where they house CSAM content. For instance, Steel (2015) found that perpetrators in the United States, where there are laws and deterrence strategies in place, began searching in other jurisdictions, such as Russia, to avoid US laws. Lack of consistency in criminal procedures and laws across jurisdictions may also complicate prosecution procedures (Hillman et al. 2014) as was poignantly noted by some participants. To successfully follow a digital trail often requires quick responses and coordination between law enforcement agencies, both nationally and internationally, which adds to the difficulties (Hillman et al. 2014). While participants in the current research study described many challenges pertaining to laws, participants also highlighted that having CSAM as evidence was helpful in obtaining confessions and plea deals. Supporting this, Henzey (2011) highlights that in the United States, federal and state prosecutors have been highly successful in prosecuting CSAM cases, though federal cases show more success. Similarly, Von Weiler et al. (2010) note that interviewees in their German study generally suggested that having images led to more convictions and higher sentencing. While having CSAM as evidence has generally been noted as helpful in prosecuting cases of CSA, it is often noted that sentencing continues to be inadequate. Participants in the current study highlighted inconsistencies across jurisdictions, with some jurisdictions considering CSAM offenses a misdemeanor and with perpetrators of CSAM often receiving lesser sentences than perpetrators of hands-on abuse. Federal statutory minimums for child pornography trafficking offences are 5 years if no prior sex convictions involving a child and 15 years with prior convictions, while the maximums are 20 and 40 years, respectively (Dillof 2016). These base sentences exclude enhancements such as trafficking in imagery that is violent, sadistic, abusive, etc. (Dillof 2016). However, Dillof (2016) notes that the median sentence for these offenses was 6.5 years with variance in charging practices across the country making sentencing predictions challenging. Importantly, this is data on trafficking of child pornography and does not account for production offenses. Statutory minimums for production offenses are 15 years with a 30-year maximum prison sentence for first-time offenders (US DOJ 2020). While participants in the current study noted many challenges and inconsistencies in sentencing, it is a challenge to make direct comparisons. Hands-on sexual abuse offenses are likely to be prosecuted using state law, while CSAM offenses can be prosecuted using federal law, state law, or both (US DOJ 2020). State laws differ significantly, as do prosecutorial practices and sentencing. To support enhancing legislation and consistency in legislation, ICMC (2018) has outlined a model of legislation after undertaking a global review. Documents like this can be helpful in having a common framework for law enforcement professionals around the globe (ICMC 2018).

#### 4.1.3. Lack of Resources

Many participants in the current study discussed the lack of resources facing law enforcement. Participants highlighted that there is an insufficient number of investigators and that caseloads are too high to be able to investigate and prosecute any meaningful amount of CSAM. Similarly, Bissias et al. (2016) noted that while there may be a downward trend on some P2P networks due to successful law enforcement actions, the numbers are still so high that the population of CSAM traffickers overwhelms the number of law enforcement agents who can address these crimes. With limited resources and staff, law enforcement must decide how best to triage resources they have without clear information on the most effective strategy for combatting CSAM (Bissias et al. 2016). Further, institutional pressures to arrest and prosecute can lead law enforcement officials to seek “low-bearing fruit” (US9, 1), a sentiment heard both in the current study and other research literature (Bissias et al. 2016; Henzey 2011). This often leads law enforcement to identifying “inexperienced pedophiles” or those using unsophisticated technological methods (Henzey 2011, p. 53). Finally, a lack of resources adds to the difficulty in technological training for law enforcement officers

(Seigfried-Spellar 2018). If law enforcement, ISPs, tech companies, and other organizations combatting CSAM worked collaboratively together, some of these resource (and technological) challenges could be better addressed. Certain industry or researcher created technologies, such as Microsoft's PhotoDNA, are freely available to eligible customers and was donated to NCMEC, the organization that receives CSAM reports in the United States (Lee et al. 2020). The Internet Watch Foundation's Hash List, or list of digital fingerprints to identify CSAM, is freely available to ISPs and is utilized by platforms such as Google and Facebook (Lee et al. 2020). With the lack of resources being highlighted by law enforcement, and the increase in reports of CSAM, Bursztein et al. (2019) highlight the potential for various technological tools to enhance the detection process and automatically detect actionable or priority cases. Enhancing the collaboration and utilization of technology could be an essential step in supporting under-resourced CSAM investigators.

#### 4.1.4. Service Provider Mental Health and Well-Being

Participants in the current study spoke about the impact of CSAM on their mental health and well-being. This is aligned with previous research, which has identified that repeated exposure to CSAM is one of the top stressors for law enforcement (Powell et al. 2014b; Violanti and Aron 1995). Further, research has shown that repeatedly viewing CSAM can lead to secondary traumatic stress and burnout (Bourke and Craun 2014; Burns et al. 2008). This was confirmed in this study, where participants discussed the mental health toll of doing this work and the high turnover rates for CSAM investigators.

One issue consistently raised by participants in this study was that, even when mental health services are available, there is a stigma in accessing professional mental health support and that doing so could be used against them later. Additionally, participants in this study noted that mental health services are often inadequate at addressing mental health and coping issues that relate directly to an individual's work in the field of CSAM. They stated that often psychologists or other mental health professionals do not have adequate training or knowledge to address CSAM. This has been echoed in previous research, with investigators of CSAM highlighting that workplace psychologists or employee assistance program service providers are not able to address the specialized nature of CSAM and the impact on those investigating such crimes (Powell et al. 2014a; Wolak and Mitchell 2009). This is an essential point and has been brought up not only by investigators, but also victims and survivors of CSAM as well as mental health providers trying to support CSAM-affected populations. The Canadian Centre for Child Protection (CCCCP) Survivors Survey highlighted that many survivors believe mental health providers are not adequately trained (CCCCP 2017). In their survey with mental health service providers, Von Weiler et al. (2010) showed that service providers themselves often felt ill-equipped to provide support for survivors of CSAM. This amplified the need for service providers in this area to have adequate and specialized training.

While it did not come up as often, participants in this study highlighted that when they had policies and procedures in place that made mental health and wellness mandatory, this increased staff well-being. Supporting the idea of mandatory wellness programming, the CCCC was mentioned as a promising approach. At the CCCC, staff who view images are required to attend weekly group therapy and individual sessions, have a limit set on the amount of time they process images, have one "wellness" day per month, and have other policies and procedures in place that support the well-being of staff—especially those who are exposed to images on a regular basis. Within the current study, the traumatic nature of viewing and investigating CSAM was highlighted. Thus, having wellness programming in place is essential and should be a priority within these settings.

## 4.2. Theme 2: Facilitators to Investigating and Prosecuting CSAM

### 4.2.1. Multidisciplinary Teams (MDTs)

Repeatedly throughout this research, participants highlighted the benefits of multidisciplinary teams, which entails a team of multiple professionals such as law enforcement, prosecutors,

child protection workers, and counselors all working together. Multidisciplinary teams have shown to be helpful not just for professionals dealing with CSAM, but also for children and families (Slane et al. 2018). Multidisciplinary teams lead to better decision-making and use of resources, as well as a reduction in staff burnout and less trauma for children and families (Slane et al. 2018). Multidisciplinary teams are also shown to improve coordination of CSAM investigations (Slane et al. 2018).

In their research with counselors who worked with victims of CSAM, Von Weiler et al. (2010) noted that professionals believed strongly in the necessity of cooperation with other professions and institutions, namely social welfare services, prosecutors, and law enforcement. They noted that professionals believed cooperation and collaboration with members of the legal system would greatly improve if law enforcement agencies had access to knowledge about the adverse effects of CSAM on victims. Further, participants suggested it would be beneficial to work together so that law enforcement and counselors/therapists understood the others' procedures and potential limitations of these various professions (Von Weiler et al. 2010). Participants in the current study also noted that other professionals would benefit from understanding the law and legal systems. Multidisciplinary teams are a way to ensure professionals are informed about one another's roles as well as policies and procedures of different professions or organizations.

#### 4.2.2. Training

Training was considered an important part of improving CSAM investigations and prosecutions by participants in this study. Some noted the need for specialized training in areas such as forensic interviewing, understanding technology usage, and how to draft successful warrants. Edinburgh et al. (2015) found a dearth of literature about what lines of questioning by interviewers yield useful information in cases of CSAM and other forms of child exploitation. While research highlights that forensic interview protocols improve the quality of interviews, not all questions may be equally relevant depending on the type of abuse/exploitation. Further, while obtaining information about technology may be highly relevant in CSAM cases, these questions are not always asked (Edinburgh et al. 2015). To address some of these challenges, participants in the current study highlighted specific training initiatives and best practices that they integrate into their work. These include trainings on conducting internet investigations, advanced forensics, and advanced interviewing. These were generally discussed as state or organization specific trainings. Participants identified the Dallas Crimes against Children Conference as one example of an effective and impactful national training opportunity. This conference was highlighted by participants as providing practical and interactive training across professionals working with child victims of crime. This training has been further highlighted by the Council of Europe (2019) as being beneficial for law enforcement and other professionals seeking training on CSAM. By understanding training opportunities like this as best practice for those working in the area of CSAM, professionals can become more equipped to successfully investigate and prosecute cases of CSAM and support victims and families. Expanding training initiatives and building on what is working locally, regionally, and nationally would help to support CSAM investigators and prosecutors, and ultimately victims and their families.

#### 4.3. Strengths and Limitations

To our knowledge, this is the first study to empirically investigate what, if any, best practices exist for investigating and prosecuting CSAM. This may be one of the first studies to focus on law enforcement and prosecutors' perspectives of the challenges and facilitators to investigating and prosecuting CSAM. A strength of this study is the interdisciplinary nature of our research team consisting of individuals including a member with lived experience of exploitation, legal experts, social workers, and a nurse. Interviews and focus groups were conducted by this interdisciplinary research team. Further, the data analysis was done by a research team with different academic and career backgrounds in order to bring different lenses to the analysis.

This study has several limitations. First, given the time and resource limitations, the geographic area for recruitment was limited to a few cities in a similar geographic region, though recruitment did occur across multiple states. This may have impacted results as law enforcement and prosecutors may have different experiences in other areas of the country governed by different legislation and policies and sociopolitical contexts. Another limitation of this study was that in a small number of focus groups, there were people in leadership roles as well as frontline participants. This power differential may have influenced what some participants shared within focus groups. Although this is not ideal for focus groups, it allowed for more members of law enforcement teams to be able to participate in the research in a shorter time period. A final limitation noted in this study was that our research team did not include individuals with expertise in law enforcement and technology.

## 5. Conclusions

The findings from this study demonstrate both challenges and facilitators to investigating and prosecuting CSAM. Many of the findings are interrelated and both challenges and facilitators can differentially impact how service providers work to combat CSAM. Participants in this study shared critical information, which can help to improve future practice and outcomes for victims and their families. This study demonstrates the complexities faced by service providers who investigate and prosecute CSAM-related offenses. This research is a first step in understanding the experiences of law enforcement and prosecutors in addressing CSAM and may be employed to launch a large-scale study to understand the perspectives of others in similar positions across the US.

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Article

# Legaltech and Lawtech: Global Perspectives, Challenges, and Opportunities

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**Abstract:** Legaltech refers to the application of new technologies to the world of law, to carry out tasks that, until recently, were performed by lawyers or other personnel working in law firms. From 2015 onwards the Lawtech alternative has emerged. In this work, the concepts of Legaltech and Lawtech have been analyzed by searching the two main scientific information databases such as Scopus and Web of Science (WoS). There has been a clear trend to use the concept of Legaltech against Lawtech. Six clear research lines have been detected from the whole of the published documents regarding these concepts. These are the related to Computer Science, Justice, Legal profession, Legal design, Law firms, and Legal Education. It is proposed to use the term Legaltech to include all technological advances in the legal field. From the point of view of opportunities, the irruption of Legaltech will be able to offer accurate legal advice to the public, reducing the price of this and on the other hand, analyze large amounts of data that law firms and legal advisors will use to improve their management and increase their productivity. In short, Legaltech and Lawtech are opening up new opportunities in the legal sector encouraging technological innovation, giving greater access to legal services, even try to achieve the goal of universal access to justice.

**Keywords:** legaltech; lawtech; justice; legal profession; legal design; law firms; legal education



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## 1. Introduction

The advance of information and communication technologies has led to changes in the way in which we relate to each other and to the administrations (Fang 2002). Law is no exception to these changes, its mandatory duty to modernize points to a new concept called Legaltech, which, despite its difficult conceptualization, has positioned itself as a relevant advance in the way in which law is conceived, through the inclusion of technological tools (Pasquale and Cockfield 2018). These days, legal technology such as software solutions for the delivery of legal services have become the key element in the current competition among the players in the legal market (Hongdao et al. 2019).

It should be noted that, although the concepts of Legaltech may seem recent, as early as 1873 Shepard developed a citation index following the codification that applied to federal trial judgments in the United States. This is even the background for the proposed importance of citations in bibliometrics and the impact of scientific papers (Garfield 1955). Another great example of how the legal services is a pioneer of bibliometrics is the West-law database, founded in the early 1970's and acquired by Thomson Corporation (now Thomson Reuters) in 1996. As is known, Thomson Reuters owns Web Of Science (WoS).

In the early 1970s, the US company Lexis Nexis was a pioneer provider of computer-assisted legal research services. It introduced the world's first terminal with a telephone dialer that connected the very few law firms that could afford it to the law and jurisprudence databases of some U.S. libraries. Initially they offered full text search of Ohio and New York case law (Dale 2019). In the last 40 years, much progress has been made in legal technology, and the concept of technology applied to the supply or business of legal services has certainly become more popular from 2008 onwards (Mandel 2017).



In fact, the Legaltech landscape has grown so large and extensive that competing concepts such as Lawtech have emerged and the definition of what Legaltech does or does not mean has been widening or narrowing depending on the case and the context (Dubois 2020).

Legaltech is the acronym for Legal Technology, although at first it was used as legal tech (separate), it was undoubtedly the first way to talk about legal technology. In that sense, Legaltech is commonly understood to refer to the use of technology to provide legal services (Munisami 2019). That would be Legaltech, which could be defined as the use of technology in legal services to create:

- Online services that reduce or eliminate the need to go to the legal sector in its most traditional form;
- Online services that accelerate the procedures and the management of tasks of the lawyers themselves, reducing the cost and time that a professional must invest in many of their tasks;
- Online services that simplify and modify the form of contact between legal professionals and potential clients.

The objective of this work is to analyze the two terms described, Legaltech and Lawtech in the main scientific databases, Scopus and WoS, to determine their possible differences if any, and on the other hand to determine which are the main lines of research in which scientific works related to this discipline are being developed. Note that the advantages and disadvantages of the technology's uses is not the focus of this study. It is about seeing how the concepts have arrived on the scientific agenda and how those concepts have taken shape.

The roadmap of this article has been, first, to review the background of both concepts in the scientific literature. Secondly, to see the relative importance of both terms in the two main scientific databases, Scopus and WoS. Thirdly, analyze the scientific fields and their temporal evolution in which the term Legaltech is being used, to try to identify the challenges and opportunities of research in this area.

## 2. Background: Legaltech or Lawtech

The transformation that the legal industry is suffering with the introduction of technology is driving the emergence of these new concepts. Since the emergence of Legaltech in 2017, the concept has continued to grow in popularity and variety, and it is when new versions of it have begun to emerge. For example, in the U.S. and U.K., the term Lawtech is also appearing. In fact, for The Law Society of England and Wales there is only Lawtech, not Legaltech. The Law Society of England is the professional body representing solicitors in England and Wales. For example, there are those who understand Legaltech as solutions for lawyers who do their work cheaper and efficient (Bues and Matthaei 2017), while Lawtech would be legal self-services for small companies and without the need for lawyers.

In line with the above, there are those who propose the differentiation of how Legaltech implies the digital transformation of the legal profession, emphasizing the idea of Legaltech as tools for lawyers (Navas 2019). Lawtech, on the other hand, is the concept of tools that replace lawyers, and also feature a high component of artificial intelligence and other computer science techniques.

Regarding the legal profession, lawyers skilled in technology, willing to adapt to the opening of new or specialized legal markets by technological changes, could also find lucrative market opportunities by pursuing low-level litigation that can be more easily and cheaply resolved through legal technology (Caserta and Madsen 2019).

For other researchers (Susskind 2008), Lawtech is a broader concept since Legaltech is associated with back-office technologies such as accounting systems, and less with new technologies such as artificial intelligence or expert systems related to lawyers, online courts, etc., which was the focus of the 1980s (Susskind 1986). Finally, they consider Legaltech to be more used and applied by the legal sector, while Lawtech would be more inclusive and open to technologists from any field (Susskind and Susskind 2015). However, this is not what the data obtained show, in fact the opposite is the case. Lawtech is the

term used to describe technologies that aim to support, supplement, or replace traditional methods for delivering legal services, or that improve the way the justice system operates (Webley et al. 2019). So, Lawtech covers a wide range of tools and processes, such as:

- document automation;
- advanced chatbots and practice management tools;
- predictive artificial intelligence;
- smart legal contracts;
- knowledge management and research systems.

The Lawtech sector consists of law firms delivering legal services through technology, and the vendors that develop and supply technology solutions to those firms.

Other authors consider that Legaltech would be the appropriate term as it describes the activities of the legal sector, as does RegTech, the technology that helps to comply with regulation, for example helping to reduce the large amount of time and high costs that banks spend on regulatory compliance (Butler and O'Brien 2019), InsurTech as technologically-based insurance service (Gramegna and Giudici 2020), or FinTech as finance and technology to accelerate the digitalization of both the financial and insurance sectors (Rundo et al. 2019). Wealthtech can also be considered a subcategory of Fintech, given that its objective is to manage and grow people's financial wealth through technological advances (Chishti and Puschmann 2018). Therefore, all these sub-concepts can be understood to fall under the term Legal since we are talking about the legal industry, the legal market, and the legal sector, i.e., they are included in the broad concept of Legaltech.

Both concepts, Legaltech and Lawtech benefits legal services by:

- increasing efficiency, productivity, and growth;
- reducing costs;
- better outcomes for clients and organizations.

Nowadays there are systems that can draft documents, conduct legal research, disclose documents in litigation, conduct due diligence, provide legal guidance, and resolve litigation online. Note that only in 2018, USD 1663 million has been invested in legal tech (Caserta 2020).

In summary of this section, it is noted that the two terms and their respective merits are not always clearly distinguished in the reviewed scientific literature.

### 3. Significance of Both Terms in the Scientific Literature: Results

In this section the indexing of scientific articles with the terms Legaltech and Lawtech in the two major scientific databases, Scopus and Web of Science, will be briefly analyzed. Table 1 summarizes these terms according to the database consulted. It can be seen that both databases show a higher number of documents for Legaltech. To make a comparative view, a word cloud has been elaborated with all the keywords of both terms used in the scientific literature, obtaining Figure 1 for Lawtech and Figure 2 for Legaltech. In Figure 1, from the first place, the term human in Lawtech is remarkable, and analyzing the issue a more in depth, these documents focus on the impact of new technologies on the rights of individuals, such as the cyberhate (Blaya 2019), the impact of biotechnology as an example in reproductive medicine (Griffiths 2016), or Genetic Intervention and Bioethics (Conti 2017). Undoubtedly, the latter perspective is far from the object of this research.

**Table 1.** Legaltech and Lawtech del 2000 al 2020.

Database	"Legal Tech" or "Legaltech"	"Lawtech" or "Law Tech"
Scopus	54	10
WoS	45	10

Figure 2, for Legaltech, shows the predominant terms used as techniques: Artificial Intelligence, Machine Learning, or Natural Language Processing Systems. As well, on the other hand, the target application is Legal Education or Law Students, Legal Profession,



From Table 2 it is remarkable that Legal education occupies the first position, this is due to the fact that a low number of documents makes collective works such as books, which are indexed by chapters, significantly increase the number of documents compared to the rest, e.g., the book “Modernizing Legal Education” (Denvir 2020).

#### 4. Discussion: Main Clusters on Legaltech

To analyze in which scientific fields or research clusters Legaltech-related works are present, a scientific community detection software, vosviewer, has been used (Van Eck and Waltman 2010). This software has proven to be useful in the analysis of many fields of knowledge such as medicine (Garrido-Cardenas et al. 2020), social sciences (Muyor-Rodriguez et al. 2019) or engineering (Salmeron-Manzano and Manzano-Agugliaro 2018). Thus, Figure 3 was obtained. This figure shows 4 different clusters that currently exist in the scientific literature, which can be distinguished according to the different colors of each one. The clusters are linked by the common keywords of all the documents analyzed. For each cluster, the main associated keywords are summarized in Table 3, and finally, a name is given to encompass the topic of each cluster.

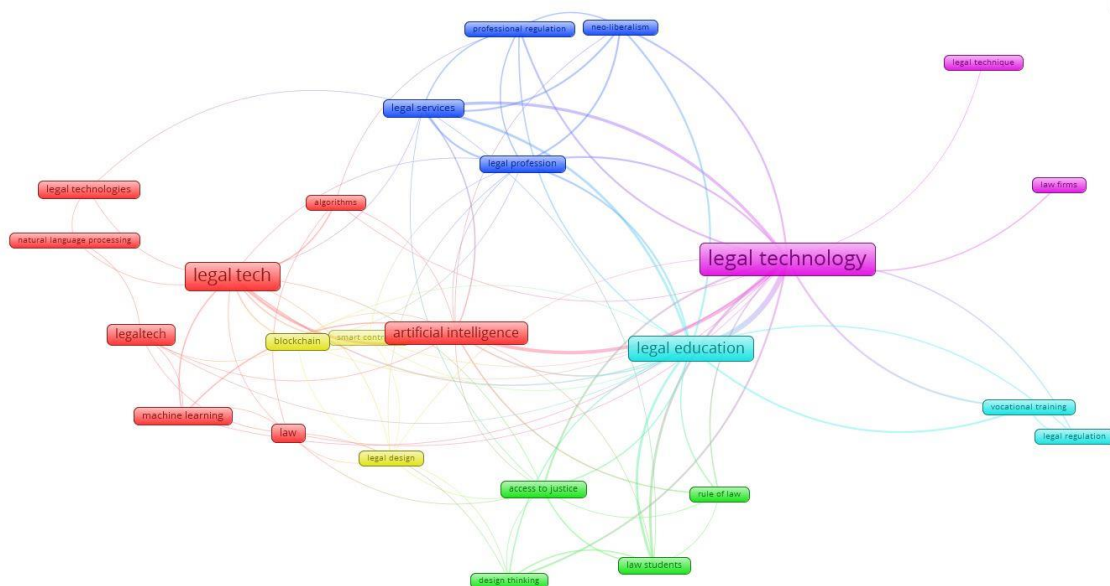


Figure 3. Main clusters detected on Legaltech documents.

Table 3. Main clusters detected on Legaltech documents.

Cluster	Main Keywords	Name
Red	Algorithms, artificial intelligence, law, legal tech, legal technologies, legal tech, machine learning, natural language processing	Computer Science
Green	Access to justice, design thinking, law students, rule of law	Justice
Blue	Legal profession, legal services, neo-liberalism, professional regulation	Legal profession
Yellow	Blockchain, legal design, smart contract	Legal design
Purple	Law firms, legal technique, legal technology	Law firms
Cyan	Legal education, legal regulation, vocational training	Legal Education

The first cluster is focused on computer science as verified by the main keywords involved: Algorithms, artificial intelligence, law, legal tech, legal technologies, machine learning, natural language processing. Regarding Artificial Intelligence, the first paper in this regard was “Can the mechanization of law triumph over lawyers?” from 2017 (Fortuit and Hamidou 2017), should be highlighted. The use of machine learning (ML)

techniques for legal analysis and decision making in the U.S. judicial system has recently been analyzed (Delgado 2019), concluding how ML came to be adopted as a standard tool for automating fact discovery for high-stakes civil litigation.

Regarding natural language processing (NLP), there are five areas of legal activity where NLP is playing an increasing role (Dale 2019):

- Legal research: Finding information relevant to a legal decision;
- Electronic discovery: Determining the relevance of documents to an information request;
- Contract review: Checking that a contract is complete and avoids risk;
- Document automation: Generating routine legal documents;
- Legal advice: Using question-and-answer dialogs to provide tailored advice.

The second cluster is focused on Justice, as evidenced by the main keywords involved: Access to justice, design thinking, law students, rule of law. Within this topic there are works within what one could classify as philosophy of law, who argue that advances in equal access to justice and the rule of law lie primarily in the introduction of lawyers' own cognitive operations in contexts where human lawyers cannot be deployed for purely economic reasons (Gowder 2018).

The third cluster is focused on the legal profession, as can be seen from the main keywords involved: Legal profession, legal services, neo-liberalism, professional regulation. Within the field of legal services, it is worth mentioning the analysis of automated Online Dispute Resolution (ODR), where 3 cases can be identified (Barnett and Treleaven 2018):

- Consumer ODR, which seeks to facilitate the resolution of disputes between parties to electronic commerce, typically online suppliers, and consumers;
- Judicial ODR, involves means of resolving "ordinary" disputes where a hearing is held (using technology) but outside the courtroom, such as divorce or personal injury cases;
- Corporate ODR, focused on managing the resolution of any contractual disputes that may arise from large multipartner projects or financial transactions.

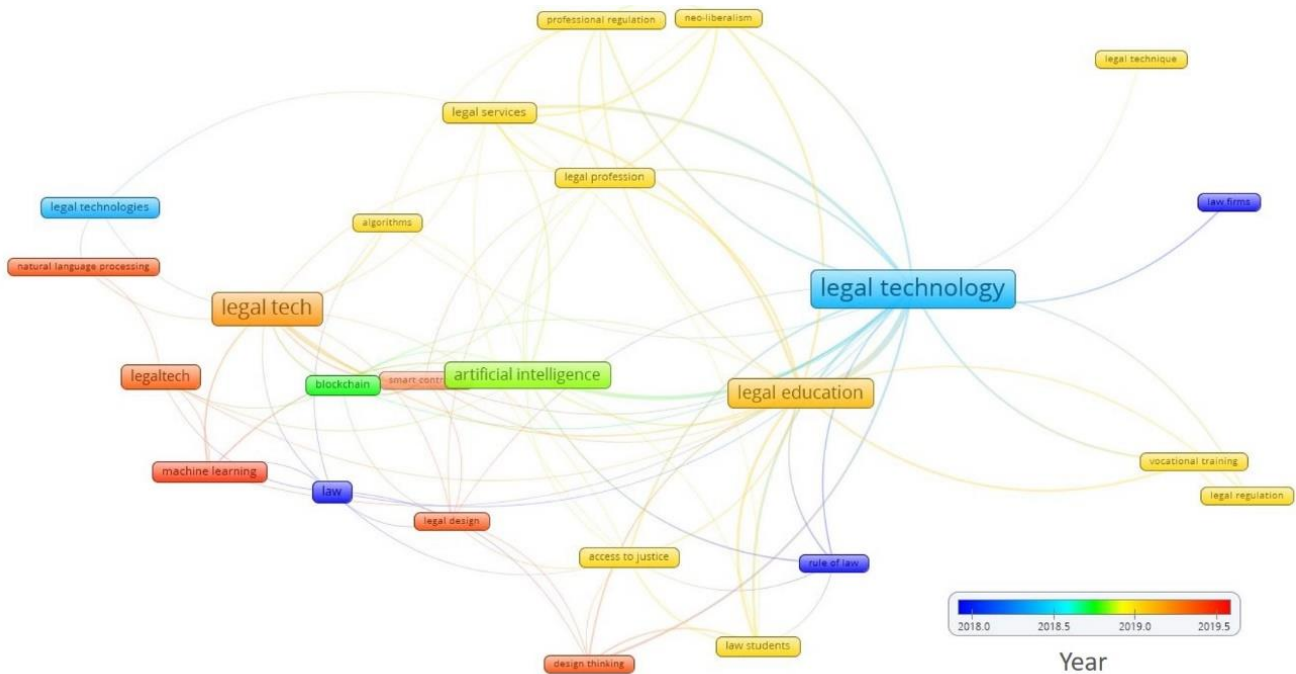
The fourth cluster is focused on Legal design as evidenced by the main keywords involved: Blockchain, legal design, smart contract. The blockchain technology has several legal consequences and the one with the greatest need for legal regulation are cryptocurrencies such as bitcoins (Salmeron-Manzano 2017). Legal design aims to apply human-centered design to the world of law, to make legal systems and services more human-centered, usable, and satisfying (Hagan 2017). In short, legal Design is an interdisciplinary approach to apply human-centered design to prevent or solve legal problems. The legal design manifesto is available on-line (LeDA 2021). On the other hand, "smart contract" means the specific use of the use of software code to formulate, check and enforce an agreement between contracting agents (Salmerón-Manzano and Manzano-Agugliaro 2019).

The fifth cluster is centered on Law firms as evidenced by the main keywords involved: Law firms, legal technique, legal technology. Law firms are increasingly adopting digital technologies to make their work more efficient as opposed to traditional work methods. The business model of many law firms, like the legal professions as a large whole, will face a significant paradigm shift, as the work provided by law firms in the form of billable hours largely consists of services that do not require higher legal training, but involve mere data processing (Kerikmäe et al. 2018).

The sixth cluster is focused on Legal Education as evidenced by the main keywords involved: Legal education, legal regulation, vocational training. Anticipated changes in the training needs of lawyers and solicitors present a challenge to law schools to revise their curricula (Ryan 2020). Thus, as the legal profession begins to seriously deploy digital technology in the delivery of services and information, more law schools are including technology education in their curricula (Jackson 2016).

The evolution of the concepts related to Legaltech are shown in Figure 4. The colors represent the evolution over time, with blue being the oldest and red the most modern. It can only be seen in the last two years of the study, observing how it evolves from law firms and rule of law at the beginning of 2018, to artificial intelligence or machine learning,

i.e., incorporating technologies from computer science. The most occurrence of Legaltech related terms is mostly in 2019. See for example, legal profession, professional regulation, legal services, legal regulation, vocational training, access to justice or law students.



**Figure 4.** Evolution of subjects related to Legaltech.

Regarding the concept itself, it can be seen that at the beginning it was legal technology, later legal tech, and finally it has been coined as a term in itself Legaltech. Legaltech appears as an author keyword, according to WoS, in 2017, with no previous records found.

## 5. Conclusions, Challenges, and Opportunities

In short, from the comparison of the two terms studied, there is no clear difference between the two terms, although it has been observed that there is a greater tendency to use Legaltech in the USA and Lawtech in the UK.

According to the databases analyzed and summarizing everything studied above, Legaltech is the most widespread and oldest concept; its most common use refers to the use of technology to provide legal services and aims to increase the effectiveness of the services provided. From 2015 onwards the variant of Lawtech arises.

Legaltech as reflected in the scientific literature is a considerably more holistic concept and is associated with the incorporation of new technologies such as artificial intelligence or machine learning, while Lawtech is more focused on the legal sector itself. Thus, it is common to associate Lawtech to technologies or tools that aim to help the legal sector, while Legaltech also encompasses the development of tools such as artificial intelligence, machine learning, or natural language processing. In view of the results found in the scientific literature, and for better searchable indexing in scientific databases related to this scientific field, it is proposed to use the term Legaltech to include all technological advances in the legal area, i.e., Legaltech is a concept that encompasses Lawtech.

The greatest challenge of this study is that the legal professions are undergoing major changes with the introduction of the new technologies, which will transform the sector, requiring it to become reinvented. In addition, legal knowledge has a number of features that facilitate its digitization and automation, in fact, it has been seen to be the precursor of scientific fields such as bibliometrics, and even bibliometric indicators of citation index measurements. It is therefore not understandable how this issue has been left aside for so long, perhaps because now with the era of communications is the right time.

As drawbacks, one can cite that on the one hand legal technology tools can also pose risks, especially because of the biases perpetuated by algorithms. As well, from a legal perspective, ensuring that the ethical issues surrounding legal technology are fully considered. As in other sectors, there is a potential for a dangerous concentration of Legaltech in high-tech industries. As in other sectors, there could be a dangerous concentration of Legaltech in high-tech industries that consider it a great business potential, therefore it is necessary that the law continues to ensure antitrust regulation as it does in the USA and the European Commission.

From the point of view of opportunities, artificial intelligence-based systems can provide accurate legal advice and analyzing large amounts of data that law firms and legal advisors will use to improve their management and increase their productivity. Therefore, this technology should be applied in the administrative and civil fields, as well as in those that speed up the administrative process. Like other technological advances, these will reduce legal costs and thus improve universal access to justice.

In short, Legaltech and Lawtech offer us the opportunity and challenge to promote a just and equitable society, and to empower individuals. Thus, giving greater access to legal services and the possibility of achieving the goal of universal access to justice.

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Article

# Digitalization of the Legal Field and the Future of Large Law Firms

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**Abstract:** This paper discusses how large law firms should re-organize themselves to maintain a competitive edge in the increasingly digitalized legal field. While providing a brief historical introduction to the rise of large law firms and the challenges posed by the rise of digital capitalism and the gig economy, the paper proposes an original and radical approach to reforming large law firms in the light of the digitalization. Among other things, the paper discusses (I) the partnership as organizational tool for large law firms in an increasingly digital and agile legal field; (II) the importance of multidisciplinary practices and of the relationship between lawyers and non-lawyers within firms; and (III) the centrality of outsourcing strategies to legal tech companies and other actors in order to deliver legal services more effectively and in a more client-oriented manner.

**Keywords:** digitalization; large law firms; sociology of law

## 1. Introduction

Digitalization has become a buzzword in the legal world, stirring significant interest in the future of the legal profession. A host of innovative legal-tech companies have entered the market of legal service providers, presently challenging the lawyers' monopoly over the practice of the law and, ultimately, altering the mode of production in the legal field.<sup>1</sup> We have already witnessed a significant digitalization in due diligence, contract review, legal research, e-discovery, prediction technology, and document automation, while tools such as client portals and intranet-based collaborative platforms are becoming more sophisticated every day.<sup>2</sup> These developments did not go unnoticed by the giants of the tech industry. Recently, the online retailer Amazon has made its first step into the legal services industry, launching a curated network of IP law firms that provide trademark registration services at pre-negotiated rates.<sup>3</sup> There is no doubt that Google, Microsoft, and the like will soon follow suit, thus contributing to the already ongoing de-professionalization, corporatization, and, ultimately, commodification of legal practice. In the light of the above, commentators have predicted the disruption of the legal field,<sup>4</sup> the future replacement of lawyers by robots,<sup>5</sup> and a radical restructuring of the modalities of delivering legal services.<sup>6</sup> Others have argued that lawyers should change their way of

<sup>1</sup> See, Valentin Pivovarov (2018). 713% Growth: Legal Tech Set an Investment Record in 2018. Forbes. Available online: <https://www.forbes.com/sites/valentinpivovarov/2019/01/15/legaltechinvestment2018/#d2b100b7c2ba>, claiming that only in 2018, USD 1663 million has been invested in legal tech.

<sup>2</sup> For an overview of these dynamics, see (Caserta and Madsen 2019; Thornton 2019).

<sup>3</sup> See, Robert Ambrogi (2019). With IP Accelerator, Amazon Edges Into The Legal Services Arena. Above The Law. Available online: <https://abovethelaw.com/2019/10/with-ip-accelerator-amazon-edges-into-the-legal-services-arena/>. For some, this constitutes the beginning of a long-term strategy to gain control of large sectors of the legal market for service providers. Interview with CEO of English large law firm, 1 May 2020.

<sup>4</sup> (McGinnis and Pearce 2014).

<sup>5</sup> (Rostain 2017).

<sup>6</sup> (Susskind 2008, 2013; Susskind and Susskind 2017).

working and become T-shaped lawyers,<sup>7</sup> get a business education,<sup>8</sup> and/or act more as transaction engineers than as classic advocates.<sup>9</sup>

In response to this increased digitalization of the legal field, especially large law firms<sup>10</sup> across the globe have begun to massively invest in legal-tech solutions in an attempt to maintain a competitive edge.<sup>11</sup> Some firms even developed incubators directed at creating and developing technology.<sup>12</sup> Yet, at least for now, these initial movements have not been coupled with substantial changes in the internal organizational structure of large law firms. The result is that such firms are not fully exploiting the potential that new technologies offer to legal practice, and they thus risk losing the dominant position in the market of legal service providers which they enjoyed since the early 20th century.

This paper discusses the organizational changes that large law firms should endeavor in order to maintain a competitive edge in the increasingly digitalized present legal field. To this purpose, the paper begins by recapitulating the dynamics that allowed large law firms to become the contemporary leading business model for legal service providers. The focus is on what has come to be widely known as the “tournament of lawyers”, which has arguably been the main driver of the growth of large law firms in the last decades.<sup>13</sup> In the second section, I discuss some of the dynamics that led the business model of large law firms to crack during the 1970s and 1980s, namely, the excessive commodification of the practice of the law and its internal bureaucratization. In the third section, I argue that the entrance of new technologies in the legal field has exacerbated the ongoing crisis of large law firms by continuing to erode the classic politics of professionalism<sup>14</sup> in favor of the dynamics of digital capitalism and the gig-economy.<sup>15</sup> The fourth section presents and analyzes a host of recent proposals for reforming large law firms, such as, among others, the one of the Boston Consulting Group and the Bucerius Law School<sup>16</sup> as well as the one provided by the Cambridge Strategy Group.<sup>17</sup> While valuable, it will be argued that these proposals share the shortcoming of trying to make digital developments fit into the present structure of large law firms. For this reason, in my view, they will not allow these firms to fully embrace the potential of new technologies. Accordingly, in the fifth section, I propose an original and more radical approach to reforming large law firms in the light of the digitalization. Among other

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<sup>7</sup> The T-shaped lawyer is the lawyer with a set of interdisciplinary skills developed to face the challenges of technological developments and to deliver legal advice more efficiently. See, (Mak 2017).

<sup>8</sup> Even more than they do today. See, (Jacob et al. 2017).

<sup>9</sup> (Fenwick and Vermeulen 2019).

<sup>10</sup> The term “large law firm” is a relative and, somehow, elusive concept, especially in the light of the fact that there are a number of indicators by means of which one can measure and assess law firms (number of lawyers, revenue per partner, partner to associate ratio, and so on). For the purpose of this paper, I adopt an overly inclusive definition characterized by the following features, namely that these firms: (I) provide full-service, as they cover the most important areas of law; (II) are generally considered top-tier (or elite) law firms in their country; (III) employ a significant number of attorneys, usually 200 and often many more; (4) their lawyers have the best salaries in the industry; (IV) their lawyers are often recruited from the top law schools in the country; (V) their lawyers are expected to bill about 2.300 h per year. This, in turn, covers what is often described in the literature as global mega law firms (Flood 1996; Galanter 2014) and BigLaw (Galanter and Palay 1991; Galanter and Henderson 2008).

<sup>11</sup> See, for instance, the various tech reposts of the American Bar Association [https://www.americanbar.org/groups/law\\_practice/publications/techreport/abatechreport2019/](https://www.americanbar.org/groups/law_practice/publications/techreport/abatechreport2019/).

<sup>12</sup> This is the case of Fuse, launched by the United Kingdom firms Allen & Overy, and of Next Law, who established the Dentons law firms. See, How Are Law Firms Investing in Technology to Remain Cutting-Edge? *Alvarez Technology Group*. Available online: <https://www.alvareztg.com/how-are-law-firms-investing-in-technology-to-remain-cutting-edge/>.

<sup>13</sup> (Galanter and Palay 1990, 1991) But see, (Wilkins and Gulati 1998; Galanter and Henderson 2008). The core institutional characteristic of this organizational structure of large law firms is the “promotion-to-partner tournament”, structured around a simple promise made by senior lawyers (partners), who have excess human capital, to junior lawyers (associates), with little human capital but abundant supply of labor. In return for the associates’ work, the partners promise that at the end of the probationary period, they will promote a fixed percentage of them to partnership (Galanter and Palay 1991, pp. 77–120).

<sup>14</sup> In general terms, professionalism is a relationship among producers, consumers, and the state for the production and distribution of expert services (Abel 2003, p. XV). Thus, the politics of professionalism involves two main aspects: (1) the political confrontation between governments and the professions in relation to the regulation of the production and distribution of expert services and (2) the internal conflict engendered by different segments of the professions taking different views as to how to respond to the opportunities and threats triggered by political, societal, and technological changes.

<sup>15</sup> (Schiller 1999, p. XVI).

<sup>16</sup> (Vieth et al. 2016).

<sup>17</sup> (Cambridge Strategy Group 2018).

things, I will discuss: (I) the partnership as organizational tool for large law firms in an increasingly digital and agile legal field; (II) the importance of multidisciplinary practices and of the relationship between lawyers and non-lawyers within law firms; and (III) the centrality of outsourcing strategies to legal tech companies and other actors in order to deliver legal services in a more client-oriented manner. The final section draws broader conclusions on the sociology of large law firms in the light of the societal changes triggered by the rise of a digital capitalism. In particular, I will argue that large law firms would benefit from an internal process of de-bureaucratization that would rebalance the practice of the law in favor of a renewed ethos of professionalism. This new professionalism, I shall argue, will set the basis for a freer, autonomous, and more creative legal practice and, ultimately, for a return of large law firm lawyers to embody the most respected form of delivery of legal services in both the private and public sphere.

This article is part of a broader project on the digitalization of large law firms in Europe<sup>18</sup> inspired by the seminal work of sociologists such as Luc Boltanski and Richard Sennett on the new culture of capitalism.<sup>19</sup> In terms of methodology, the article builds upon the existing literature on the impact of new technologies on legal work and complement it with seventeen semi-structured interviews with CEOs of legal-tech companies and senior partners as well as heads of innovation of large law firms in Denmark and the United Kingdom.<sup>20</sup> The reason for focusing on Denmark and the United Kingdom is two-fold. Firstly, because historically in each of these two countries the legal profession positions itself rather differently vis-à-vis the state. Similar to the United States, the English legal profession developed largely in autonomy from the state and, at least in the early days, it organized itself in response to expanding market opportunities and entrepreneurially led patters of industrialization and urbanization.<sup>21</sup> Like in other countries of continental Europe (most notably, Germany and France), the Danish legal profession developed in close relationship with the rise of the modern (bureaucratic) state, which provided the base for the growing utilization of legal services, it being the power base of the legal profession and the main purchaser of expert legal knowledge.<sup>22</sup> Although in recent times there has been a convergence toward the marketization and commodification of legal practice, this different relationship between the legal profession and the state in the two countries impacted

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<sup>18</sup> The project, DigiProf—A Digitalized Legal Profession: Challenge or Opportunity (See the project's webpage <https://jura.ku.dk/icourts/research/digiprof-a-digitalized-legal-profession/>), is financed by the Danish foundation *Dreyers Fond* and is focused on understanding the broader and multiform impact on new technologies in the European landscape of private law firms. The project is set to explore how changes in the capitalist forms of production have cultural, organisational, and ultimately societal implications, not only for the practice of the law, but also the work environment and the legal professionals' daily life.

<sup>19</sup> (Boltanski and Chiapello 1999; Sennett 2006).

<sup>20</sup> This article constitutes a preliminary study on the impact that digitalization is having and will have on large law firms; the study involves a relatively limited amount of actors interviewed and the limited focus on the United Kingdom and Denmark. Future studies within the framework of the DigiProf project will deepen the analysis by both testing these preliminary results on a large number of actors and by adding case studies studies from Germany, France, and Italy. Given the preliminary nature of the study, it is important to clarify the role that the interviews have played in the construction of my narrative. In broader terms, the DigiProf project is aimed at constructing original research based on extensive field work on large law firms in the above mentioned countries. It will do so by relying on a Bourdieusian approach with the goal of exploring the construction of a digitalized legal field and the underlying power battles that the rise of digital capitalism will bring about in the organizational structure of the profession (Bourdieu et al. 1991). For the more limited purpose of this paper, the interviews occupy a more marginal role as they have been used to complement existing visions of the impact of new technologies on legal work and on the legal profession. The data collected during field work were also particularly important to construct the more constructive part of this paper in which I propose to reform several aspects of the existing model of the large law firm. While my proposal is not entirely based on the interview, my conversation with my interviewees played an important role in shaping and refining my views. A word on the ethical guidelines followed during the field work is in place. At the beginning of each interview, the interviewees were provided with a brief but comprehensive explanation of the project and with an informal statement that the interviews would be recorded, but that the informant would remain anonymous when and if some of the statements released in the interviews were to be cited. All the interviewees accepted these ethical guidelines without problems.

<sup>21</sup> (Rueschemeyer 1986). The autonomy of the profession in the Anglosaxon/common law world, however, should not be overblown, as in this context also there were instances of state-sponsored professionalization. But, in general, the claim still stands.

<sup>22</sup> (Hammerslev 2003). See in general, (Weber 1978).

significantly on the organizational structure, ideology of professionalism, and working culture of legal professionals in Denmark and the United Kingdom. This, in turn, has caused digital developments to have a different impact on large law firms and the legal profession more generally. Secondly, the reason to focus on Denmark and the United Kingdom is given by their different level of liberalization of legal services in the two countries. The English market has been substantially liberalized, starting from the 1970s and culminating with the Legal Service Act of 2007.<sup>23</sup> The same cannot be said for the Danish market in which, for instance, restrictions for law firms ownership still apply. Presently, law firms in Denmark can only be owned by people who work in the firm, and lawyers must own at least 90 percent.<sup>24</sup> In turn, this different level of liberalization will also influence how new technologies are to make their way into large law firms, and, in the legal field more generally.

## **2. The Origins of the Current Business Model: A Commercially Oriented Professionalism**

The emergence of large law firms is perhaps the most significant development of the legal world in the last century, as it caused a radical shift in the nature of the work of (elite) lawyers from courtroom advocates to business advisers.<sup>25</sup> Most law practice before the emergence of large law firms was conducted either by solo practitioners or by larger law offices where lawyers shared space and overhead costs, but often conducted their own separate practices. The developments in society occurring at the beginning of the 20th century in terms of technological innovations, rising complexity in the law, and early emergence of a globalized society, however, made it almost impossible for individual lawyers to perform their job in a competitive and effective way.<sup>26</sup> To cope with such developments, lawyers began to associate in larger firms, where the experience of older partners was mixed with the work force of junior lawyers. While the former were the actual owners of the firms, the latter were (well-paid) employees moved by a powerful incentive, the race to win “the promotion-to-partner tournament.”<sup>27</sup> This model has become widely known as the “Cravath system”, from the name of the lawyer, Paul D. Cravath, who was the first to organize his firm (Cravath, Swaine & Moore) along these lines.<sup>28</sup> The model was straightforward. The firm committed to hire only outstanding new graduates from top law schools on the promise that they might progress to partnership after an extended probationary period. In exchange, the firm would pay junior lawyers salaries, provide them with extensive training, and increase their responsibility over time.<sup>29</sup> Internally, the firm was arranged in a strict hierarchical system with command and supervision in the hands of the partners.<sup>30</sup>

Starting from the early decades of the 20th Century, this new organizational form radically changed the way of performing legal work and the very nature of the legal profession. To begin with, the so-called Cravathism transformed the classic work of advocates into professionally driven corporate counseling. Perhaps the most important sociological consequence of these developments was the occurrence of a generational shift in legal elites worldwide. While in the old days, elite lawyers relied on family capital to legitimize themselves,<sup>31</sup> the younger generation of Cravath lawyers, for the most part at least, lacked the symbolic capital embodied in and accumulated by families and, for this

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<sup>23</sup> (Boon 2011).

<sup>24</sup> In 2014, however, an inter-ministerial committee set up by the Danish government as part of the Growth Package 2014 has been working toward analyzing the situation concerning the liberalization of the legal profession. (Okholm 2015).

<sup>25</sup> (Stevens 1987).

<sup>26</sup> In the hundred years from 1850 to 1950, the world witnessed major technological developments, such as the discovery of electricity and the replacement of old means of transportation with cars, airplanes, and space rockets, as well as of communication with telephones and computers. For an overview of this, see (Cambridge Strategy Group 2018, p. 12).

<sup>27</sup> (Galanter and Palay 1991).

<sup>28</sup> (Swaine 1946) Other lawyers such as Walter S. Carter and Louis D Brandeis have developed similar arrangements contextually to Cravath. See, for instance, (Hobson 1986).

<sup>29</sup> (Galanter and Palay 1991, p. 9).

<sup>30</sup> Ibid. p. 28.

<sup>31</sup> (Dahrendorf 1969).

reason, they needed to find other ways to accumulate capital.<sup>32</sup> Accordingly, they invested substantial resources in legal education, while at the same time, turned their attention toward the world of business. This combination of merit, social class, elite school ties, and a commercial approach to the profession allowed them to become the new and powerful legal elite and to gain immense power in the state and economy. Some of the partners of these large law firms ended up even becoming part of the American and European ruling class.<sup>33</sup>

When read through the lens of Weberian sociology, the high level status achieved by the early Cravath lawyers is a consequence of the fact that their professional trajectory substantially overlapped with the broader process of rationalization of law and the rise of legal specialists in advanced capitalist societies.<sup>34</sup> Throughout the first half of 20th century, large law firms and their lawyers projected an ideal of traditional (although revolutionary for the time) professionalism, which predicated strict adherence to the profession's code of ethical conduct and a private practice at the service of both private clients and the public interest. As put by Robert Nelson: "Occupying the most prestigious segment of the profession, free from economic dependence on any given client, the large firm seemed to be a bastion of professional autonomy. In private practice the large-firm lawyer was deemed to be in a position to exert a positive moral influence on the powerful corporate actors he represented. In public affairs he was motivated not by narrow self-interest but by a commitment to enhancing the fairness and rationality of the law as an instrument of ordering society."<sup>35</sup> In other words, while slowly transforming the practice of the law into a commodity to be bought on the marketplace at a very high price, early large law firms lawyers portrayed an image of themselves as politically committed individuals, who identify with noble political ideals, such as the nation-state, democracy, human rights, and civil society. As put by Yves Dezalay and Bryant Garth: "As Kantorowicz noted some time ago, the king's notaries on the European Continent had to distance themselves from their master in order to serve him better. Similarly, we can suggest that Wall Street lawyers serving the robber barons of the nineteenth century gained a distance from their clients in part through the emerging antitrust law and the Progressive Era regulation more generally, and that the distance and investment in the law made them both more valuable and more legitimate."<sup>36</sup> In particular, this capacity of manipulating the law in favor of powerful clients, while at the same time, maintaining an aura of moral entrepreneurs promoting ideals of pure law, professionalism, and justice granted these lawyers a high status in American and European societies.<sup>37</sup> The reproduction of this power elite was then supported by the high economic, social, and cultural barriers of entry in the profession, which served as a filter to restrict access of a very limited number of newcomers. Particularly relevant in this regard were the high cost of the studies and the long years of apprenticeship required to become a part of the elite which obviously favored those in possession of the most social and economic capital.<sup>38</sup>

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<sup>32</sup> (Dezalay and Garth 2004, p. 621) In this paper, the two authors discuss the different situations in Europe and in the United States.

<sup>33</sup> Ibid. p. 624. See also, (Smigel 1969). By elite lawyers or lawyers belonging to the ruling class, I mean members of the legal profession who have a strong influence both on the production of professional ideology and more generally on public life. As to the first, elite lawyers are those that produce a language that is ratified by the state and then used to justify and legitimate what lawyers do. As to the second, elite lawyers are those that enjoy a close connection with national fields of state power. As shown by much sociological research on the legal profession, lawyers often play multiple roles in society in addition to exercising private practice. Lawyers act as founding fathers, interpreters of constitutional norms, advisors to holders of state power, brokers, politicians, agents of colonialism and imperialism and so on. See, among others, (Dezalay and Garth 2011).

<sup>34</sup> See, in general, (Weber 1978).

<sup>35</sup> (Nelson 1988, p. 271).

<sup>36</sup> (Dezalay and Garth 2004, p. 618).

<sup>37</sup> Some scholars have shown how this idealistic representation of professionals as guardians of public interest and common good was not entirely in synch with the reality of the profession also in the early days. In particular, Magali Sarfatti Larson analyzed how the construction of this narrative was part of the broader process of professionalization of the lawyers as a corporatist strategy of gaining power and constructing a monopoly (Sarfatti Larson 1977). However, for the purpose of the brief historical reconstruction of the role of elite lawyers in society, the generalization that early large firms lawyers presented themselves as private and public engaged professionals still stands.

<sup>38</sup> (Bourdieu 1998).

### 3. The First Cracks: Commodification and Bureaucratization

While the Cravath system enjoyed a golden age during the 1950s and 1960s, it soon showed some weaknesses. As large law firms achieved economic success, they moved away from the more traditional values of the profession such as collegiality, autonomy, and public commitment. Market forces increased competition among firms and between these and corporate counsels, leading to uncertainty in economic terms.<sup>39</sup> Moreover, from the 1980s, the mode of production of legal expertise was transformed by a series of corporate reorganizations, the opening of new markets (for instance, the European Single Market), the internationalization of deregulated financial markets, and horizontal competition from large accounting firms.<sup>40</sup> At the same time, the underlying logic of the “promotion to partner”, together with an unprecedented surge in demand for corporate legal services that followed businesses facing increased government regulation in various areas, led these firms to grow exponentially in size.<sup>41</sup> These developments were coupled with the growth of in-house counseling, which transformed the nature of the business of law as well as of the law firm’s clients, who were now increasingly constituted by well-informed consumers of legal services.<sup>42</sup> In particular, the influential general counsels of large companies started shifting more work in house, using the competition between large firms to negotiate better rates for their companies.<sup>43</sup> All of the above led large law firms to start losing revenue, a fact that pushed them to enlarge even more in order to maintain the incredibly high profits of the partners. The means of this expansion were often mergers with and acquisitions of other firms;<sup>44</sup> a trend that continues to this day following a presumed client demand for “one shopping”.<sup>45</sup> The history of the well-known contemporary mega-firm DLA-Piper best represents these developments. This firm came into being in the early 2000s, when two little-known regional law firms initially merged. This initial movement was then followed by additional mergers with three smaller firms and by an additional international merger with an English firm, resulting in the creation of a firm that at the time was behind only to Clifford Chance and Baker & McKenzie in number of attorneys. Aggressive expansion continued thereafter, as in 2005 the new firm of DLA Piper Rudnick Gray Cary acquired a seventy-seven lawyers from Ernst & Young’s Russia, instantly giving it the largest law office in Moscow. Subsequently, the firm acquired forty-two lawyers from the disbanded Coudert Brothers to open a Beijing office at the end of 2005. By mid-2006, it was the world’s second largest law firm with 3,100 lawyers in twenty-two countries and fifty-nine offices. Today, it counts about 3600 lawyers.<sup>46</sup> Same dynamics occurred in the United States, Germany, Denmark, and other European countries, as well as in Japan. On an international level, nine out of ten law firms in Germany entered into international mergers or alliances in the year 2000; the same could be said for the five biggest firms in Denmark, which are all the result of mergers between smaller firms.<sup>47</sup>

With this came the need to specialize, which in turn pushed these firms to stop training their associates (at least in part), but to acquire them from other firms.<sup>48</sup> Same dynamics occurred at the level of partners, as often lawyers able to attract business (the so-called rainmaking partners) were lured into shifting firms after receiving important economic offers.<sup>49</sup> In this changing environment,

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<sup>39</sup> See, for instance, (Heineman 2016).

<sup>40</sup> (Dezalay and Garth 2004).

<sup>41</sup> (Galanter and Palay 1991, p. 52; Bruck and Canter 2008).

<sup>42</sup> (Regan 2004, p. 33).

<sup>43</sup> (Bruck and Canter 2008) Others have also convincingly argued that the rise of the in-house counsels led to a “decline of relationship lawyering” as these grow less attached to their law firms, and are more likely to shop for cheaper or more effective solutions. See, for instance, (Baker and Parkin 2006, p. 1637).

<sup>44</sup> (Harper 2013).

<sup>45</sup> (Aronson 2007). A viewpoint confirmed by many informants in the interviews, in particular by senior partners of large law firms in both Denmark and the United Kingdom.

<sup>46</sup> A timeline of the DLA-Piper expansion is available here: <https://www.dlapiper.com/history/#year2005>.

<sup>47</sup> (Madsen 2008).

<sup>48</sup> (Regan 2004, p. 35).

<sup>49</sup> (Fergus 1995).

profits were also maximized by increasing the ratio of non-partners lawyers to partners through the creation of a variety of non-partner permanent positions within the firm (permanent associates) or by hiring contract and temporary lawyers.<sup>50</sup> Some firms also began to differentiate among classes of partners, creating categories such as non-equity partners and partners without voting rights.<sup>51</sup> In this regard, it is important to mention that the lockstep compensation system based on seniority was largely abandoned in favor of a compensation system reflecting productivity of each lawyer, the so-called “eat what you kill” approach, at least in the United States.<sup>52</sup> These dynamics have been made even more evident by the more recent developments related to globalization, which triggered the transformation of many large law firms into mega firms, with thousands of partners in different geographical locations and armies of more or less young associates, non-equity partners, and the like among their ranks.<sup>53</sup>

Thus, large law firm lawyers were led to abandon the corporatist and elitist logic that had characterized the early Cravath system and to orient the professional project toward marketization and commodification. In short, the professional project was now almost entirely turned toward the relentless pursuit of growth and profit at the expense of the public commitments of the new legal elite.<sup>54</sup> Moreover, the immense growth in numbers pushed these firms toward internal bureaucratization, resulting in the adoption of forms of central direction and rationalized management presided by full-time professionals; development of high levels of specialization, with firms divided in departments and organized to coordinate the work of the various specialists on the problem of the client; and high level of stratification and hierarchy, with the number of partners that fell dramatically in proportion to all other lawyers.<sup>55</sup> The ethos of professionalism was, thus, replaced by the ethos of bureaucratization and rationalization. In other words, while in the early decades of the 20th century large law firms lawyers were associated with patrician airs and professional nobility, they were now businesslike organizational men devoted to the interests of clients. Among other things, this had the side effect of creating a growing dissatisfaction among lawyers and clients. The latter started complaining of the exceptionally high prices for legal services that this system had created and started shopping around for legal services, becoming used to shifting from one provider to another when obtaining competitive and pricing advantages.<sup>56</sup> For their part, lawyers, especially associates, started complaining about long hours spent on mundane matters, such as reviewing documents and/or tweaking version after version the same deal documents, without client contact or a say so in the legal strategy.<sup>57</sup> In the post-2008 financial crisis legal world, the complaints among young lawyers are perhaps even stronger. Whereas previously the associates would at least receive high salaries and substantial prestige for performing

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<sup>50</sup> (Galanter and Henderson 2008). Non-equity partners are attorneys who are treated as partners in terms of outward appearance (i.e., in relations with clients and other outside parties) but do not share in a percentage of the firm’s profits and are therefore not owners of the firm. A majority of large law firms now have non-equity partners, and their numbers are increasing. According to the AmLaw 100, 2020, non equity partners are, on average, 44%, and only 15 firms have only equity partners.

<sup>51</sup> According to Steven Harper, the creation of a large cadre of permanent non-equity partners can result in big problems for a firm. This is because it can create second-class lawyers but also may result in depriving young lawyers of many opportunities (Harper 2013, p. 82).

<sup>52</sup> (Regan 2004). As put by Aronson: “Under the traditional lockstep system, younger partners were generally underpaid for their efforts, while older partners tended to be overcompensated relative to their contribution to the firm. This system worked in a well-capitalized firm in a stable setting where young partners were confident that the system would still be in place and work to their benefit when they became senior partners. However, as firms grew and it became common for partners to move among firms, it became increasingly difficult to pay partners on any basis other than current performance. Young partners will generally not agree to delay receiving compensation and invest in a firm’s future when other firms will pay them more in accordance with their current market value (Aronson 2007, p.771).

<sup>53</sup> (Flood 1996).

<sup>54</sup> This led scholars to call into question the professional ideal of public service. See, for instance, (Kronman 1993). See also, (Halliday et al. 2008).

<sup>55</sup> This is similar to the path previously followed by other large professional service organizations, such as accounting firms, and includes, in many cases, a change to a limited liability partnership when that corporate form became available in the mid-1990s.

<sup>56</sup> (Guttenberg 2012). A viewpoint expressed by all my informants in the interviews.

<sup>57</sup> (Wilkins and Gulati 1998).



mundane tasks as associates at top law firms, these now hire fewer associates and rely instead upon “staff attorney” or “temporary” positions, which do not provide the same prestige, security, or salary as the traditional law firm associate job.<sup>58</sup> Today, even the partners of these large firms score relatively high in terms of job dissatisfaction. In a world in which clients no longer remain loyal and law firms compete intensely for business, law firm partners find themselves spending more time on business development and management and less time practicing law.<sup>59</sup> This growing dissatisfaction among large law firms lawyers was also confirmed by many of my informants in the interviews. Particularly relevant here are the statements of a number of former large law firms partners, now CEOs of legal tech companies, who have deliberately chosen to leave their very remunerative practice to build independent companies not only to unleash their entrepreneurial mentality frustrated by the nature of the work in large law firms, but also to pursue a better work life balance.<sup>60</sup> The statement of the Managing Partner of a Danish large law firm summarizes the issues at stake:

A: During the last two or three years we said goodbye to very skilled and talented people; even people that we put on our partner track. The first couple of times this happened we were a little bit amazed, because we thought we gave these people the very best offer available. You can become a partner in one of Denmark’s largest law firm with, at least in our opinion, the most spectacular cases you may get. You can appear before the Court of Justice of the EU if you like, you can go litigate in Greenland, and so on. We have the work. So, when they left to go fund their own company, often a two men company, then we were quite amazed and said: “Hey, what happened there, why would they do that?” But instead of saying, they must be idiots, we sat down and thought: “maybe we are not as attractive as we thought we were.” And why is that? Well, I think that, as firms grow bigger, even though you do become a partner, you will become one out of 60 or more partners. It is not as prestigious as it was before and if you really do have an entrepreneurial side inside yourself, then what does it mean to be one out of 60? It means that you still have to follow orders—unless you have my job of course.<sup>61</sup>

The consequences of these trends have been varied. Some commentators have documented the demise of the full-service law firm. Others have underlined that these developments may bring about significant changes in firm work culture and life, especially in terms of increased flexibility. Today, many lawyers are already changing their work rhythms and locations, some preferring to work remotely from home rather than from the office. My guess is that this trend will continue, ultimately resulting in a change in the law firm business model and associated culture, and possibly its traditional use of imposing office buildings in down-town settings.<sup>62</sup> What is sure is that less office space will be needed.<sup>63</sup> Others emphasized the perpetual instability in relation to clients and lawyers hired in a firm and the consequent need for large law firms to continuously move into new markets, pursue new alliances, and expand operations, at times even globally.<sup>64</sup> For one thing, while historically corporate lawyers belong to a relatively small and socially homogenous group of “old boys groomed and trained in elite institutions”,<sup>65</sup> at the turn of the century, they found themselves inhabiting “a universe whose governing laws are those of the market.”<sup>66</sup> In other words, large law firms lawyers ended up being

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<sup>58</sup> (Molot 2014, p. 17).

<sup>59</sup> (Baker and Parkin 2006, p. 1638).

<sup>60</sup> Interview with CEO of Danish legal tech company. Interview with CEO of new-tech based law firm in the United Kingdom.

<sup>61</sup> Interview with Managing Partner of Danish large law firm, 20 September 2019.

<sup>62</sup> See, among others, (Caserta and Madsen 2019).

<sup>63</sup> (Baker and Parkin 2006).

<sup>64</sup> This instability is also reflected in that, in the past decades, many major firms with more than 1000 partners have collapsed entirely. The surviving lawyers live in fear of suffering a similar fate, driving them to ever-more humiliating lengths to edge out rivals for business. See, (Scheiber 2013).

<sup>65</sup> (Dezalay and Garth 2004, p. 625).

<sup>66</sup> (Regan 2004, p. 42).

associated with the businesses and the business tactics they assisted, and not with a legal elite anymore. This ultimately resulted in firms significantly losing autonomy from the clients; that autonomy in part had allowed the early Cravath lawyers to present themselves as the moral entrepreneurs of the new capitalistic society and, ultimately, in actively participating in the construction of the state and economy. According to Dezalay and Garth, at the turn of the century, large law firm lawyers “appeared much more like multinational conglomerates of professional mercenaries in the service of big financial interests than guardians of the public interest.”<sup>67</sup>

#### 4. The New Challenges Posed by the Rise of Digital Capitalism and the Gig Economy

From the discussion conducted above, it emerges that the rise and fall of large law firms is inherently linked to the development of both the contemporary nation states and financial capitalism. These links are the most evident when analyzing the rise of the Wall Street law firms, which operated in symbiosis with the financial drift of capitalism. The model, with some twists and turns, was then exported to other geographical locations, contributing to a global marketization and commodification of the practice of the law. If anything, the developments described above have been accentuated by the recent entrance of new technologies in the legal field and by the consequent adoption by lawyers of the dynamics of digital capitalism and the gig-economy.

Broadly defined, digital capitalism is the latest transformation of the capitalist system of production in which digital technologies constitute “the central production and control apparatus of an increasingly supranational market system.”<sup>68</sup> In other words, capitalism becomes digital when the production process of certain commodities is performed by and through privately owned digital technologies.<sup>69</sup> In this light, digital capitalism constitutes the collection of processes through which digital technology mediates the structural tendencies of capitalism. In this, I follow the dialectic approach of Johnathan Pace in defining how digital processes actualize capitalism. Firstly, digital capitalism is a property type, as digital networks are increasingly becoming an important part of capital assets worldwide (i.e., meta-data collected through internet platform; digital currencies such as Bitcoin, and so on).<sup>70</sup> Secondly, digital capitalism provides for the opening and creation of new market types, as digital technologies have become circulation infrastructure for the exchange of goods, service, and money (i.e., online exchange platforms such as Amazon and Alibaba). Thirdly, digital capitalism entails new work types, as digital technologies serve as labor tools and infrastructure (i.e., smart-working, work oriented around information technology, and/or the possibility for storing records and worker performance online). Fourthly, digital capitalism plays an increasingly central role in certain production styles, as digital media are today both productive technologies and methods. Fifthly, and finally, digital capitalism produces new managerial styles, as digital technologies are often developed as managerial tool within firms.

All of the above has important consequences for the legal field. For the purpose of this paper, I emphasize two aspects of digital capitalism that are particularly relevant for large law firms. To begin with, the rise of digital capitalism allows for a different organization of labor (through, for instance, remote access), which allows for transnational production chains, also known as post-Fordism.<sup>71</sup> Perhaps the most significant recent development in this regard, especially in the period that followed

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<sup>67</sup> (Dezalay and Garth 2011, p. 40).

<sup>68</sup> (Schiller 1999, p. XIV). The other historical manifestations of capitalism are: agricultural capitalism (Aston and Philpin 1985), merchant capitalism (Braudel 1982), industrial capitalism (Hobsbawm 1999), and financial capitalism (Lapavistas 2014). The author is aware that there are numerous, and at times conflicting, theories of capitalism. These include, among others, classical political economists (Smith, Ricardo, Mills, Marshall), 20th-century economists (Keynes, von Mises, Friedman, Stigler, Hayek), Marxist economists (Mandel, Kalecki, Baran, Sweezy), and heterodox economic thinkers (Schumpeter, Polanyi, Wallerstein).

<sup>69</sup> (Pace 2018).

<sup>70</sup> (Pace 2018, p. 263).

<sup>71</sup> (Pace 2018, p. 255) See also, (Fuchs 2013).

the 2008 financial crisis, is the coupling of digital capitalism with the rise of the so-called “gig economy”. The latter is part of a shifting cultural and business environment, in which traditional employment relationships are fragmented into “short term, intermittent work for multiple engagers (“gigs”).”<sup>72</sup> The relationship between digital capitalism and the gig economy is that digital platforms often play a central role in allowing individuals to organize themselves as independent contractors, and work remotely as freelancers or through temporary jobs and projects, while employers select the individuals that best fit their need from a larger pool than that available in a given area. While this phenomenon was often considered to be almost entirely the province of low-skilled and low-paid workers, other professionals have increasingly organized their work along these lines.<sup>73</sup> In relation to the legal field, the coupling of digital capitalism and gig economy has allowed for the rise of a number of legal platforms connecting lawyers and clients online. These platforms are, not only challenging lawyers’ monopoly over legal practice of the law, but also constituting new players that legal actors must interact with. Well-known examples of such platforms are Legal Zoom<sup>74</sup> and Rocket Lawyer<sup>75</sup> in the Anglo-American world. In Denmark, the legal-tech start-up Legal Hero fits within this model.<sup>76</sup> Related to this is also the notion of virtual law offices, which are law firms delivering legal services exclusively online, such as DirectLaw<sup>77</sup> and Synchlaw.<sup>78</sup>

The second relevant consequence of the rise of digital capitalism for the legal field is linked with the property regime and a management style that characterizes the former. In terms of property regime, digital capitalism is characterized by private ownership of digital networks, while for management styles it entails the employment of digital networks for expanding intra-firm activities.<sup>79</sup> Applied to the legal field, these dynamics signify the introduction of private owned, market oriented, companies in the legal field, and, thus, of profit-driven processes of outsourcing, automatization, dispersion, and commodification in the practice of law.<sup>80</sup> These processes take various forms, such as the above noted creation of a platform of lawyers in different geographical locations,<sup>81</sup> computer programs able to assist and even substitute lawyers in their work,<sup>82</sup> and the deployment of artificial intelligence, machine learning, natural language processing, and big data to perform legal tasks.<sup>83</sup> Although the technology behind many of the presently available tools is still underdeveloped, this will inevitably cause important changes in the structure of the legal profession. First, as software and programs refine their technology, the more routinized forms of legal practice are increasingly automatized. Thus, those today performing repetitive tasks in the legal world, such as journeymen lawyers, and paralegals are likely to face large challenges. Others sectors of the profession, however, are expected to gain from these innovations. Among some top-tier law firms and elite lawyers, new technologies are increasing their potential market share, allowing them to reach far more clients with a smaller work force. The essential service they provide in terms of advice and argumentation on behalf of clients based on high-level legal understanding is, in fact, not easily replaced. Finally, new technologies are challenging the traditional control (and monopoly) of jurists on the production of law in the legal field. In particular, as the production and application of law becomes increasingly intertwined with digital

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<sup>72</sup> (Adams et al. 2018, p. 475).

<sup>73</sup> (Thornton 2019).

<sup>74</sup> <https://www.legalzoom.com/>.

<sup>75</sup> <https://www.rocketlawyer.com/>.

<sup>76</sup> <https://legalhero.dk/>.

<sup>77</sup> <https://www.directlaw.com/>.

<sup>78</sup> <https://synchlaw.se/da/>.

<sup>79</sup> (Schiller 1999).

<sup>80</sup> These are often triggered by an increased push from clients to lower the costs of legal services (Bruck and Canter 2008). In this work, the authors listed the escalating billable hours requirements, a lack of diversity, and high associate attrition rates as the main issues of criticism raised by clients.

<sup>81</sup> (Noronha et al. 2016; Ribstein 2012).

<sup>82</sup> (Granat and Lauritsen 2004).

<sup>83</sup> (Ashley 2017).

media, privately owned non-legal companies are making their way into the market of legal service providers. This may hold significant consequences for the legal field's own socio-political dynamics and power relations, especially in terms of cultural, organizational, and societal implications for the practice of the law and the work environment.<sup>84</sup>

At the moment of writing, three categories of legal tech start-ups can be distinguished. The first category includes those companies that offer a number of online legal services, while the second involves online "matching" platforms that connect lawyers with clients. Examples of these two kinds of new technology based companies are provided above in this section. In general terms, these platforms basically replicate the business model of companies such as Uber and Airbnb. They provide lawyers with online visibility and access to clients that they would not have been able to reach otherwise. Like Uber and Airbnb, they also allow the clients to share their views on the lawyers and their performance. The third category, which is arguably the more disruptive, entails start-ups that use AI tools to perform time consuming and expensive legal research activities such as reviewing, understanding, evaluating, and reapplying contracts. In relation to this, we can differentiate among three kinds of technologies: (I) those that store and distribute knowledge; (II) those that extend the human mind; and (III) those that perform autonomous work.<sup>85</sup> Tools that store and distribute knowledge are the so-called Document Information Systems and Work Flow Management Systems. These databases either locate documents within an organization or support processes within an organization or administers deadlines.<sup>86</sup> For instance, *CaseShare*<sup>87</sup> and *LextraNet*<sup>88</sup> offer online repositories of pleadings, decisions, exhibits, transcripts, and other materials in pending cases. *Intelligent Legal Searches* instead are systems that review and categorize large bodies of documents, thereby allowing lawyers to retrieve information in a very efficient way. This technology has implications for legal practice as it is claimed to clearly outperform paralegals and junior lawyers.<sup>89</sup> For instance, the online platform *Justis* offers legal analytical services, such as identifying leading authorities, discovering relationships between cases, searching between more than a hundred legal databases, exploring and categorizing precedents and citations, just to name a few.<sup>90</sup> By drawing on large extensive online databases of judicial decisions, this technology helps lawyers to make informed judgements about risks, costs, and litigation strategies in their cases.<sup>91</sup> Finally, among the tools that potentially can perform tasks autonomously we have *IBM's Watson*; a system able to answer (legal and other) questions. A similar technology is developed by the Toronto-based *Blue J Legal*, a start-up developing an AI-powered legal prediction engine with an initial focus on tax law,<sup>92</sup> and by *Luminance*, which is capable of rapidly analyzing and forming an understanding of documents, combining a number of disciplines within the field of machine learning, natural language processing, and pattern recognition.<sup>93</sup>

In relation to this, the digitalization of the legal field is accelerating already on-going processes of change with regard to the legal profession. This includes the above noted economization and commodification of the practice of law, whereby lawyers are decreasingly disinterested brokers in society and defenders of the public good, but increasingly service firms at the cutting edge of the capitalist economy.<sup>94</sup> This has also resulted in an important shift in the power dynamics at the top

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<sup>84</sup> Similar to what is generally claimed in, (Boltanski and Chiapello 1999; Sennett 2006).

<sup>85</sup> (Lauritsen 2006).

<sup>86</sup> (Lodder 2006, p. 5).

<sup>87</sup> [www.caseshare.com](http://www.caseshare.com).

<sup>88</sup> [www.lextranet.com](http://www.lextranet.com).

<sup>89</sup> (Susskind 2013).

<sup>90</sup> <https://www.justis.com>.

<sup>91</sup> (Gerami 2017).

<sup>92</sup> <https://www.bluejlegal.com/>.

<sup>93</sup> <https://www.luminance.com/>.

<sup>94</sup> See, (Caserta and Madsen 2019) It must be mentioned that the entrance of economic and commercial rationalities in the practice of the law has also important positive aspects. For instance, as argued by Bruck and Canter: "If mobilized properly, the consumers of corporate legal services can use their new market power to address some of the most critical problems facing

of elite law practice, with clients and other legal service providers placing a lot of pressure on large firms to modify their way of providing legal services. Hence, the developments discussed thus far pose important challenges to the present organizational structure of the large law firms. In particular, they put a particular strain on the core dynamic of the tournament of lawyers, most notably on the implicit social and professional contract between the partners and the, now varied categories, of junior lawyers in such firms. While the tournament of lawyers was already put into discussion by the increased deployment by large firms of staff attorneys, contract hires, and foreign lawyers that occurred in the last decades,<sup>95</sup> this process has only been reinforced by the development of legal software, which can perform independent legal tasks, such as writing of standard contract, discovery of documents, prediction of outcomes of future cases, and similar. This, in turn, will alter the dynamics of competition which today allow junior lawyers to climb up the ladder to become partners. For this reason, it is crucial that large law firms must rethink their organizational structure in order to face these challenges. It is to this topic that the paper now turns.

## 5. Existing Proposals for Reforming Large Law Firms: The Rocket Firm, and Beyond

As noted above, what used to be the bread-and-butter of the junior associates in large law firms—and, consequently, their ticket to be trained and become partners—is now being (or will be) automated or outsourced. This calls for a reformation of the organizational structure of large firms, which, to a certain extent, is already taking place. In relation to this, several proposals for reforming these firms have been recently published. One suggestion came from a combined study conducted by the Boston Consulting Group and the Bucerius Law School.<sup>96</sup> This report argued that large law firms must change their value proposition and offer diversified services to remain competitive in the present market. This chiefly means that, in addition to the more classic legal services, these firms should provide their clients with other services, such as legal project management, outsourcing management, and advanced legal analytics. More specific to new technologies, the report argues that large law firms should turn into “master legal-tech vendors” and/or “legal-tech consultants”. The first role entails that law firms would take upon themselves the role of guiding clients to the right legal outsourcing partners for handling standardized and low-skill tasks. In this way, law firms would retain control over entire mandates and thus strengthen their business ties.<sup>97</sup> In the second role, law firms would become intermediaries between their clients and the tech providers, guiding the former to the right legal-outsourcing partnerships.<sup>98</sup>

Most importantly, the report maintains that the new technological developments are pushing large law to modify elements of their organizational model. In particular, it is argued that the traditional pyramid model (with few partners at the top and many junior lawyers and associates at the bottom) will likely be replaced by an organization shaped more like a rocket.<sup>99</sup> In this new configuration, each law firm would be able to reduce the ratio of junior lawyers to partners by up to three quarters of the ratio seen in the current pyramid model. Another consequence will be that other types of employees who are not lawyers, such as project managers and legal technicians, would join the ranks of the firms.<sup>100</sup>

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the elite firms, especially the lack of diversity within firm leadership, rising associate attrition rates, and an over-reliance on the billable hour. The “professionalism” that dominated elite firms in the middle of the twentieth century undoubtedly encouraged civility and trust between lawyers. But it also operated as a mechanism for shielding the narrow financial interests of big-firm partners and for marginalizing lawyers based on religion, race, and gender”. (Bruck and Canter 2008, p. 2088.).

<sup>95</sup> See, among others, (Theis 2010).

<sup>96</sup> (Vieth et al. 2016, p. 7).

<sup>97</sup> Ibid. p. 9.

<sup>98</sup> Ibid.

<sup>99</sup> Ibid. p. 11.

<sup>100</sup> Ibid.

The rocket law firm is not the only possible approach to reforming large law firms. Others have argued that, instead of a rocket, the present pyramid of large law firms is increasingly turning into a diamond.<sup>101</sup> More than a proposal, this is an interpretation of the existing drift of American large law firms in the last decade. Backed up by statistics on the numbers of junior and associate lawyers hired, George Baker and Rachel Parkin argue that the pyramid that for more than a century characterized the organizational structure of large law firms is unraveling into a diamond (and not into a rocket as argued by the other report discussed above in this section). This is characterized by a relatively small number of entry-level associates, a growing amount of non-equity ranks, an important group of permanent staff attorneys and a smaller number of equity partners who control client relationships. This is, however, likely less a product of a careful strategy of law firms, but rather a the consequence of a series of short-term decisions to navigate a harsh and unfamiliar market, characterized by legal and tech savvy clients increasingly asking for more efficient and cheaper services and an increased complexity of legal work.<sup>102</sup>

These approaches provide a sensitive first stab to analyze the situation concerning large law firms in the present market of legal service providers. Yet, understanding these new developments as a mere passive or even coincidental reshaping of large law firms from pyramids into rockets or diamonds is, however, in my view not taking the developments and innovations that law firms these days face far enough. To see the true potential of the emergence of these new technologies for law, one has to look beyond a mere description of organizational structure toward the question: how may law firms deliberately reshape their organizational structure and business models in order to maintain and develop their competitive edge? In what follows I shall make an attempt to answer this question

## 6. The New Law Firm

In this section, I outline three core features of my proposal for reforming large law firms in the light of digitalization. These are: (I) the traditional form of the partnership should give way to a more corporate organizational form; (II) the importance of multidisciplinary practices; and (III) the centrality of outsourcing strategies to legal tech companies and other actors.

### 6.1. A Corporate Law Firm

Even though large law firms have experienced important structural changes in the surrounding environment, they presently maintain their traditional organizational form, the partnership. Scholars have largely discussed the virtues of this form and the reason of its stickiness despite a number of societal forces pushing firms in different directions.<sup>103</sup> Starting from the late 1980s, however, sociologists such as Robert Nelson begun to underline the inherent tensions confronting the large law firm in the light of the increased bureaucratization of the profession.<sup>104</sup> In particular, Nelson found that the structural changes marking the bureaucratization of firms—specialization, departmentalization, and increasing stratification in the earnings and authority of partners—run counter to more traditional conceptions of the professional partnership in which all partners are, in some sense, peers.<sup>105</sup>

In my view, the recent advances in technological developments, together with changing social trends at the level of cultural, educational, and aspirational capitals of younger professionals, exacerbate the tension inherent within this organizational arrangement. The need of large investments in new technologies in order to maintain a competitive advantage becomes greater and greater, putting

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<sup>101</sup> (Henderson and Evan 2017) See also, (Baker and Parkin 2006).

<sup>102</sup> Ibid.

<sup>103</sup> For a good review of this literature and an informed discussion on the values of the partnership, see: (Empson 2007) discussing the ethos of partnership and its capacity of balancing the competing claims of three sets of stakeholders: professionals, owners, and clients.

<sup>104</sup> (Nelson 1988).

<sup>105</sup> Ibid. p 4. For a more recent critique, see (Molot 2014).

pressure on the traditional business model of large law firms. A number of my interviewees confessed that the classic business model of the partnership is proving itself unsuited for handling these new developments in an effective way. This is because the classic partnership model is characterized by an inherent “short-termism”, which derives from its structural features. Law firm partners, in fact, view their annual draws for their productive working years as a large part of their interest in the firm.<sup>106</sup> While this was perhaps always the case, the recent developments in terms of lateral mobility of partners and associates have made this issue more evident, as today partners with power and remunerative clients would likely leave the firm if asked to give up their yearly income to invest in future, and uncertain, earnings.<sup>107</sup> Finally, more often than not, partners with power are those with a number of years of seniority and thus closer to retirement, with the result that their interest in long-term investments is even thinner and their familiarity with legal-tech rather limited.<sup>108</sup> This was expressed quite clearly by a senior partner in a large Danish law firm when questioned about the receptiveness of his fellow partners to the proposals of investing in new technologies.

A: the main problem is the conservatism in our area. People say, well, doesn't it work out pretty fine as it is? Well, they might be right, but my concern is that the level of awareness in our firm is pretty low. I have been talking to partners in our area about this. We are about 40 partners here. I think only three or four of whom I met have [the enforcement of new technologies] as main priority. People, you know, are pretty occupied, they have their cases, the business is going pretty well, but my concern is that, suddenly, one of our competitors has a breakthrough in using these systems and it becomes suddenly a trend in the market that you need to offer this and we are not ready. So you can actually be quite rapidly out of business if you are not able to prepare. My main message to the organization is, even though you are very busy, you need to spend time on this.

Q: And, how is the organization responding to your concerns?

A: Well, you know, of course people are thinking about it, but in the end they say, *mañana*. That will happen when I will have retired.<sup>109</sup>

Similar concerns were expressed by a former lawyer of an English large law firm, who transitioned to a smaller but tech-based and innovative law firm. In describing his personal and professional trajectory, this statement was given:

A: Well, I came in in the firm [one of the biggest corporate law firm at the time] as an external recruit to create something different. They needed to leverage my knowledge, experience, and expertise in other areas of the law and start shaping it for the very large corporate global clients they had. And I quickly realized that what I had already been doing in my career, namely, mapping trends, patterns, and core processes against human behavior and against different kinds of business structures and processes, was equally valuable for large corporate firms. So, I started to use technology more and more to help and assist clients. I started training those clients and show them they should not need to use me as a lawyer in certain particular areas of operation of their business [implying that the technology would do that for them]. I told them that I would just require a training fee and as case law would change, as rules would change, a new best practice would be issued by a regulator, I would update

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<sup>106</sup> A view confirmed by all my informants in the interviews.

<sup>107</sup> Although not specifically tailored to the issue of new technologies, this view is expressed, among others, in (Harper 2013) (see also, (Westcott 2018)). According to this author: “In these days of much movement of partners from firm to firm, it can be argued that many partners place little long-term value in [investment in the future]”. p. 55.

<sup>108</sup> Arguably this problem could be minimized by adding retirement benefits for partners or by making partners permanent equity members. This means that they will maintain an economic interest in the firm also after retirement with the result that may be incentivized to approve long term investments. See, for instance, (Molot 2014). See also, (Westcott 2018).

<sup>109</sup> Interview with Senior Partner of Danish large law firm, 16 August 2019.

and maintain their system and train them on the developments. I also told them that they should not pay hourly rates and should not waste a lot of money on large law firms for that particular area of business. As the technology developed, I realized that I could do this more and more, not only in my area of law, but in any area of law. And to be brutally honest, the partners in my firm started to be more and more concerned about what I was doing and I found myself arguing with my own partners. [ . . . ] They believe I was threatening how they run their practice, which they run in the traditional model, by showing to clients how they could do things by themselves through technology by using fix prices and subscriptions. In their view, I was undermining the firm, as I was building a different kind of law firm in the law firm. And so, I resigned and left to build my own law firm.<sup>110</sup>

The difficulties of incorporating new technologies in the present structure of large law firms can also be found in the comments of one the Head of Innovation of an English large law firm.

Q: How were the technological innovations you introduced received in the firms?

A: There were people that were ready, the one I call “the coalition of the willing”. It is not always where you expect it, but they exist. Often it is said that partners are the most resistant. Generally, the most successful partners are those that often want to change. They have already changed and adapted in their career to become what they are. Then there are those that do not understand but are not against it and, finally, there are the most difficult ones, the one that do not want to do it. When I was young, I wanted to convince those that did not want to do endorse technology to do it. It is a waste of energy. You are not going to convince them and loose time and energies. Now, I go for the coalition of the willing, and then take my case to the next group. Those resisting will eventually come on board. If not, they will be out in the long-run. [ . . . ] My best allies tend to be the successful partners in their 50s. They are ready; they get it; and they want to do it. They still got 10 years left and they understand that in order to remain competitive and relevant they need to keep on adapting and perhaps they listen to their clients.”<sup>111</sup>

The above testimonies reveal how the organizational form of the partnership makes it extremely difficult to build a consensus in favor of reducing current draws in the hope of larger future earnings. The problem is that even if large law firms identify a long-term value in massively investing in digital technologies, their current ownership structure deprives them of the means to navigate that path as partners are most likely to choose short-term benchmarks. Accordingly, I propose an alternative organizational structure for large law firms to cope with the digitalization of the legal field in a more effective manner. Firstly, I argue that the organizational structure of the partnership should give way to a more corporate form, which I identify in the shareholder limited liability company.<sup>112</sup> Secondly, the hierarchical management structure should turn into a flat organization with a decentralized management system.

As for the shareholder limited liability corporate model, this organizational form has the great value of differentiating ownership from the right to manage the firm directly. Unlike the present partners of large law firms, corporate shareholders must elect a board of directors, which then hires corporate officers who manage the firm in its best interest. In turn, this means that the firm would be able to take effective and fast decisions, without having to rely on the collegial vote of a high number of

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<sup>110</sup> Interview with CEO of English large law firm, 1 May 2020.

<sup>111</sup> Interview with Head of Innovation of large law firm, 3 December 2019.

<sup>112</sup> It is worth noticing that, especially in the United States, there are other non-corporate forms of law firms, namely the Limited Liability Company (LLC) and Limited Liability Partnership (LLP). Yet, these different forms are mainly oriented to set up different forms of liability for the lawyers working in the firm and are less concerned with the internal organizational structure of the firm itself.



partners with different interests and roles in the firm.<sup>113</sup> Importantly, this would also allow detaching the long-term investments of the firm from partners' decisions, thus, in principles at least, making room for the entrance of new technologies in law firms. For the time being, this part of my proposal would be, however, limited to those countries (like the United Kingdom) where this organizational structure is allowed. In many other countries, a corporate structure for law firms is formally not allowed. In these instances, my proposal would be then to internally organize the partnership following a more business oriented (and slim) model, by, for instance, creating sub-divisions of partners with full decision powers and by delegating increasing powers to managers.

As to the flat and decentralized management system, this organizational form will allow the people employed in the firm to work more freely according to their skills and preferences as they will not be entrenched in a patriarchal and hierarchical organization with a neat division of roles and competences between partners and associates and among the partners themselves. Moreover, for how the structure of the partnership is structured today, although with various degrees and exceptions from firm to firm, a good partner must be able to perform a number of often disparate roles, such as getting and/or winning work, training juniors, taking leadership role in the team, relating to clients, and so on.<sup>114</sup> This is because, in the present system, lawyers are evaluated according to a more or less universal scorecard, which wants them to perform a number of rather different roles as dictated by the history of the profession and its moral, ethical, and professional underpinnings.<sup>115</sup> As the technology assisting lawyers improves, however, this basic and generalist way of assessing and guiding the performance of lawyers is rapidly losing its logic and purpose, and large law firms would benefit from adopting a more decentralized form of management with self-organizing teams constructed around roles and projects. This flatter structure would allow those working in the firm (young and senior) to dedicate themselves to the tasks they actually like to perform and be evaluated accordingly, resulting in increased efficiency and, probably, improved job satisfaction within the firms. Moreover, this flat structure would facilitate the usage and deployment of new technical tools to facilitate effectiveness and creative solutions from this self-organized teams of lawyers working together with the duration of a project (or longer).

Finally, a non-negligible implication of adopting these new organizational forms is that law firms will be able to re-organize their billing practices in a way that would make legal work more effective (and to a certain extent more healthy) and client centric. In other words, moving away from the traditional form of the partnership will inevitably create incentives to abandon the highly criticized and ineffective billable hour and embrace fix pricing and subscriptions, resulting in cheaper, more client oriented, and more tech-savvy legal services.

## 6.2. A Multidisciplinary Law Firm

Today the vast majority of people working in large law firms are lawyers, assisted by a growing number of support personnel. This personnel, however, has often a limited role in shaping the strategy and the practice of the partners and often sit in different locations to symbolically show their subordinate role in the firm. This well-defined division of roles reveals the bias that lawyers often share about allowing non-lawyers within law firms. This difficult relationship is confirmed by the problems often arising between, on the one hand, the partners of the firm and, on the other hand, the executive

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<sup>113</sup> Or without having to rely on a complex and often informal division of responsibility between managing partners and other partners, which often leads to internal conflicts.

<sup>114</sup> In a more or less informal way, many large law firms differentiate between categories and roles of partners. See, for instance, the well-known differentiation between the grinders, the minders, and the finders. See, among others, (Nelson 1988).

<sup>115</sup> This generalist way of evaluating lawyers has been said to derive from the so-called partnership ethos. According to this, in their practice, partners must strike a balance between their individual interest and the interest of the firm in which they work and are socialized into acquiring all the requisite technical and moral skills needed to be part of the partnership though long years of apprenticeship, (Empson 2007). This approach was also the building block of the hierarchical way of structuring large firms, where young associates were trained by the more senior partners.

directors, professional administrators, heads of innovation and the like, with the latter often tied to former's approval when it comes to annual budget, decisions of opening new offices, and large investments in technology.<sup>116</sup> More generally, in many countries (i.e., the United States and Denmark) it is still prohibited for lawyers to share legal fees or the ownership of law firms with non-lawyers. Such a prohibition reflects profound concerns about the control non-lawyers may have over the legal profession and the detrimental effect this control could have on lawyers' professional responsibility obligations.<sup>117</sup> Yet, there are also many benefits that cannot be ignored. In particular, non-lawyer partnership may increase firm profitability by allowing outsiders to contribute to the capitalization of the firm which, at least in theory, would allow the firm to generate more income. At the same time, it may increase efficiency as it allows firms to provide business and legal services from one provider.

This is not the place to enter into a deep analysis of the legal and non-legal aspects of the relationship between lawyers and non-lawyers in the practice of the law and, for those contexts in which it is not allowed, it will be necessary to await legislative developments in that direction. However, the new law firm I envision will be characterized by a multidisciplinary environment, in which lawyers coexist and work together with other professional figures, such as accountants, financial advisors, engineers, designers, architects, data analysts, psychologists, teachers, and so on. The importance of this is confirmed by the statement of the managing partner of one Danish large law firm, when asked to describe how business is run in the firm:

A: Today, your practice and specialization must be part of something bigger. Today, when we work, we work in teams that can be up to 50 people at the time in order to actually accommodate the clients' needs. And they (the clients) are OK with that, in fact, they want that. [...] This is because for certain projects we need to draw in special competences within different fields of law and put them together and we also actually employ project leaders and other non-lawyers, because when we are 50 or more people working together on large projects, we need, for instance to make reports on how the project is progressing, how is the money spent in that time, and so on. We really need to work in multidisciplinary teams.<sup>118</sup>

While each firm will structure the relationship according to preferences and legal requirements, two solutions seems to be the more plausible, depending on whether the lawyers in point prefer a more entrepreneurial and/or managerial role (those that in the classic jargon of the profession are the finders and/or minders) or a more operational role on the ground (the grinders). Entrepreneurial and management oriented lawyers could choose to assume the role of "project managers" of goal-oriented executive teams, thus setting the basic organizational framework and structure the activities of the other actors in the teams. More practice oriented lawyers, instead, could decide to focus on one or more specific legal areas and become the firm's leading specialist of the product that is being offered, namely, legal services.<sup>119</sup> In relation to this, it is worth underlining that the CEO and the member of the board of this multidisciplinary firm will not have to be necessarily lawyers, but it may be constituted by individuals with different backgrounds, ranging from business economics, marketing, technology, and the like (obviously, where this is allowed).

This move from a lawyer-centric to a multidisciplinary environment constitutes a crucial aspect of the necessary re-organization of large law firms in the light of the digitalization of the legal field. Today, and even more so in the future, the legal solutions that large law firms are asked to provide will be based on the present state of the art of the technology available and will also require a number of

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<sup>116</sup> This difficult relationship is the by-product of the historical developments of the profession. In many instances, in fact, not only was it prohibited for non-lawyers to practice law, but it was also (and in certain jurisdictions still is) prohibited non-lawyers from combining with lawyers to offer legal services for profit. (Andrews 1989).

<sup>117</sup> (Carson 1994).

<sup>118</sup> Interview with Managing Partner of Danish Large Law Firm, 20 September 2019.

<sup>119</sup> This new roles somewhat resemble the ones adopted by engineers in engineering companies or of scientist in large pharmaceutical companies such as Novo Nordisk, Bayer or Novartis, just name a few.

competences that go far beyond pure legal knowledge. From here, the need of building tech-savvy multidisciplinary teams able to both assist clients in understanding the technology and the complexity of the issues at stake and support them in their increasingly tech-oriented needs. Some of the most progressive law firms have already made movements in this direction. Exemplary is the English law firm Rradar, which counts among its ranks a high number of non-lawyers ranging from engineers, project managers, business analysis, and so on.<sup>120</sup> In Denmark, at the forefront of this development, we find a number of large law firms, which have started to include non-lawyers in key roles within the firm (although with still limited operational power), such as Plesner, Bech-Bruun, Kammeradvokaten/Poul Schnith, and Kromann Reumert.

### 6.3. *A Diffuse Law Firm*

Finally, the new large law firm will be a diffuse law firm. Up until the 2008 financial crisis, the trend among large law firms was to expand their ranks often through mergers with and acquisition of smaller or medium size firms and/or by opening new offices in strategic locations.<sup>121</sup> The logic behind these developments was that profitable legal projects could only be handled by large firms.<sup>122</sup> The financial crisis, however, showed some of the flaws of this model in terms of profitability and capacity to manage giant firms. The increasing process of digitalization of legal services is furthering these developments and showing that the strategy of having a large, but centralized, law firm may not necessarily be the best one in terms of both maximizing profits and providing effective and client-oriented legal services. In my view, the centralized law firm that was developed in the last few decades should give way to what I label “the diffuse law firm”. This will be smaller in size (perhaps reaching one hundred employees), while at the same time making a smart use of outsourcing strategies and technology to lower costs, increase effectiveness, and keep competitors at bay. In a way this is where legal practice meets the dynamics of the gig economy as interestingly put by the Managing Partner of a Danish large law firm:

A: Our organization needs to be extremely adaptable for continuing moving around the resources we have. And this also means that the lawyers we employ must be very, very adaptable themselves ... which I think, to my surprise, they are, as I would not be so adaptable. But then again, I am 47, and many of our lawyers are 30 years old. It is a different game for them. But the reason I think the future will look different is the fact that ... well, the Danish Bar Association has recently made a report on legal tech, in which they use the expression gig economy, which is defined as being: you get a job for a client and you need maybe five different competencies to solve the case, you maybe have two of them in house, so you need to obtain the three remaining. So, you go and get them, but it is not necessarily competences that you need in stock all the time, so you hire them for a particular job. For me this means that, in the future, I will not have 700 lawyers on the payroll all the time. I think we are looking to a future where we will be just as well off by hiring in the competencies that we need to solve particular tasks on a case by case basis.<sup>123</sup> Of particular interest in this regard is the, now already “old”, organizational technology known as Legal Process Outsourcing (LPO) and its newest incarnation Legal-Tech Process Outsourcing (LTPO). As expressed by Mark Ross “if law firms wish to remain the first port of call for corporate legal departments and the primary conduit for the delivery of legal services, this is predicated on their acceptance of the LPO operating model”.<sup>124</sup> LPO essentially consists of subcontracting legal work from

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<sup>120</sup> A first mover in this direction is the UK law firms Rradar. See, <https://www.rradar.com/>.

<sup>121</sup> To date, the largest law firm in the world is Dentons, with more than 8500 lawyers in its ranks, followed by a relatively large number of firms with more than 2000 lawyers.

<sup>122</sup> (Westcott 2018) See also, (Bosman and Hakanson 2017).

<sup>123</sup> Interview with Managing Partner of Danish large law firm, 20 September 2019.

<sup>124</sup> (Ross 2017, p. 77).

high-cost locations to sites where the same work can be executed at a significantly lower price. This often can be done by subcontracting the work to developing countries. Thus far, India, Chile, Hong Kong, Australia, the Philippines, and Sri Lanka have been the most frequent locations for outsourcing legal work, at least from the United States and the United Kingdom. Nearshoring to cheaper locations and providers that are geographically closer, including locations inside the home countries of law firms, is increasingly becoming an option.<sup>125</sup> A more recent version of the LPO is when legal services are offered via a model that departs from the traditional law firm, for example, by using contract lawyers, process mapping, or web-based technology.<sup>126</sup>

As revealed by several informants in the interviews, several large law firms based in the United Kingdom have recently opened alternative delivery solutions teams or offices in less costly locations, such as Hull, Birmingham, Leeds, cheaper locations in the United States, and even South Africa. Notably, Clifford Chance opened its support services and knowledge management center in Delhi in 2007.<sup>127</sup> These centers are staffed with contract attorneys, paralegals, and IT experts and their role is to execute repetitive tasks in an effective and less-costly way. More often than not, these centers make an extensive use of technology to optimize their performances.<sup>128</sup> This means that, today, LPO has become a the standard global operating model, which combines a best-practices framework with process efficiency, quality control, consultative expertise, and enabling technology at its core. Among the areas in which LPO providers have proven to be effective and tech-savvy one can find e-discovery and document review processes, contract lifecycle management, contract review and data extraction, and legal analytics, just to name a few. This allows law firms to expand the range of services offered and deliver efficiently the appropriate level of legal services required for each type of work product.<sup>129</sup> From the suppliers' side, an early mover for what concerns in-country outsourcing in the United States was the Dallas-based *Atlas Legal Research*.<sup>130</sup> The company was founded in the early 2000s by an Indian-born attorney, Abhai Dhir, immediately becoming a success, increasing its revenue by 20 percent annually since 2001. Since then, *Atlas* has hired and trained legal professionals in India to write legal briefs for American law firms at a very competitive price. Another early mover was *Pangea3*, which is now part of *Thomson Reuters Legal Managed Services*. This firm provides services such as document review and analysis, trial preparation, regulatory change management, financial trade documentation, and contract management.<sup>131</sup> Similar services are also provided by: *Mindcrest*, founded by two former McGuire Woods partners in 2001; the Indian-based *SmithDehn* (former SDD Global Solutions Pvt. Ltd., Indian), which lists among its clients large corporations such as HBO, Calvin Klein, Sony Pictures, and BBC Worldwide;<sup>132</sup> and *Quislex*, with offices—by them defined as “execution centers”—in Chicago, New York City, and Hyderabad, India. Notably, the office in Hyderabad, which has about 1000 full-time employees, is responsible for executing the majority of tasks, and it is divided into several multidisciplinary teams, which include data analysts, statisticians, process experts, software developers, linguists, and technologists.

In addition to this, the diffuse law firm will also outsource the technology used to agile and tech-savvy legal tech companies that will then develop tailored products for the firms. Until now,

<sup>125</sup> (Caserta and Madsen 2019).

<sup>126</sup> See the 2017 report of Thomson Reuters, Georgetown Law Center for the Study of the Legal Profession, and University of Oxford Said Business School entitled ‘Alternative Legal Service Providers: Understanding the Growth and Benefits of These New Legal Providers’ (Alternative Legal Service Providers Report 2017).

<sup>127</sup> See, [https://cliffordchance-businessservices.com/legal\\_support\\_centre.html](https://cliffordchance-businessservices.com/legal_support_centre.html).

<sup>128</sup> Interview with Head of Innovation of large law firm, 3 December 2019.

<sup>129</sup> See also, (Ross 2017; Beaton and Kaschner 2016). This constellation would obviously require a proper service legal agreement between the firms and the providers in order for the former to maintain control over the LPO providers.

<sup>130</sup> <http://www.atlaslegal.com/>.

<sup>131</sup> <http://legalsolutions.thomsonreuters.com/law-products/solutions/legal-outsourcing-services/Pangea3>.

<sup>132</sup> <http://www.smithdehndia.com/>.

the large majority of large law firms have been trying to develop their own products, in a way trying to become themselves legal-tech companies; the more savvy have signed contracts with external providers like IBM-Watson, Luminance, Kira, Elevate and others to have their own products developed in house by these external companies.<sup>133</sup> In the long run, however, this strategy may not work entirely. As known, new technologies, especially artificial intelligence, need a large amount of data to work properly and, no matter how large, each single law firm may not be able to provide the right amount of data for achieving groundbreaking results. Thus, I argue that large law firms should outsource their technology to a number of legal-tech companies and outside consultants. This will be a win-win situation as the firms would get the tailored technology they need, and the tech-company will be able to develop large scale well-functioning products to make available for the general market. As, however, many of the technologies discussed above in this paper are at an embryonic stage and law firms have proven rather prudent in their approaches, it is difficult to substantiate more concretely the manner in which this IT-outsourcing could take place.

This model comes with some challenges. First, outsourcing raises a host of legal questions with regard to client confidentiality. The challenge is that, by storing data on third parties' servers or communicating with clients via email, lawyers give up a certain amount of control over the documents and information, yet remain obligated to safeguard their clients' information to preserve the attorney–client privilege. Second, outsourcing raises concerns related to the nature of legal work, as these services tend to treat legal services less as expert services and more as commodities. This pushes the legal profession to be more driven by the maximization of profits, rather than by the more traditional notions of justice, public good, rule of law, and fairness. This, outsourcing is likely to cause increased inequality among classes of lawyers and, perhaps, even contribute to the proletarianization of part of the legal profession. Here I refer in particular to these new forms of legal, para-legal, and IT legal worker who will operate from the periphery and will be somehow excluded from pursuing more meaningful and remunerative careers. These will likely represent the poor segment of the new capitalism described by Richard Sennett in his seminal book on the new culture of capitalism.<sup>134</sup>

## 7. Conclusions

Thus, as it is already a reality, it is inarguable that digital technologies will significantly change the practice of law. The question that remains is how the profession will respond to this. Under the blows of digitalization, professional monopolies are breaking down and non-legal competitors are increasingly performing new roles on the market. For this reason, this paper has argued that the large law firm must change their business model in three main directions in order to remain competitive. First, they need to move away from the classic hierarchical and patriarchal organizational structure of the partnership to become shareholder limited liability corporate companies with a flat and decentralized management structure. Second, they need to develop multidisciplinary practices and teams within the firm that would allow non-lawyers to perform key roles. Third, they need to make a smart use of LPO and LTPO to cut costs and make use of cutting edge technological developments.

This article provides just a first attempt at redefining the business model of large law firms and future research will necessarily delineate the organizational details of the new large law firm more thoroughly. Yet, a move in the direction indicated in this paper will provide large law firms with a thinner, more dynamic, and effective organizational structure that would allow them to respond to the current social developments that are jeopardizing their position as leading organizations in the private sector for legal services. This is to say that the increased digitalization of the legal field is bringing large law firms to the point of crucial intervention; a point in which the elites that set the premises must

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<sup>133</sup> Interview with Head of Innovation of large law firm, 3 December 2019; interview with CEO of English large law firm, 1 May 2020; and interview with Senior Partner of large law firm, 16 August 2019.

<sup>134</sup> (Sennett 2006).

redefine the appropriate models of organizational structure and policy that have gone unquestioned for a long time before in order to remain afloat. The proposal for reforming large firms provided above in this paper is just a first stab at setting up new forms of inter-sectoral and organizational coordination that will encourage diversification, creativity rather than hastening homogenization. Further research in this area will necessarily have to grapple with developing a new sociology of the profession and of legal work that would take into account the impact of these broader societal changes, not only on large law firms, but also on lawyering in general. As to large law firms, their de-bureaucratization is the first big task that the current digitalization of the legal field is posing upon them. Although lawyers have developed into, or perhaps have always been, a conservative profession regarded as resistant to change, the current developments associated with the digitalization of the legal field are providing them with the unique possibility to abandon their iron (for many golden though) cage of organizational men in which the bureaucratization of large law firms has pushed them. This, however, will necessarily involve a rebalancing of the practice of the law in favor of a renewed ethos of professionalism able to be the basis for a freer, more autonomous, and creative legal practice and, perhaps, for the return of large law firm lawyers to embody the most respected form of delivery of legal services in both the private and public sphere.

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