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Interoperability of Court Information Systems: The case of the Integrated Administrative Court Case Management System of Greece (IACCMS)

Master Thesis

Epameinondas Troulinos

Thessaloniki, February 2020

INTEROPERABILITY OF COURT INFORMATION SYSTEMS: THE CASE OF THE INTEGRATED ADMINISTRATIVE COURT CASE MANAGEMENT SYSTEM OF GREECE (IACCMS).

ΔΙΑΛΕΙΤΟΥΡΓΙΚΟΤΗΤΑ ΠΛΗΡΟΦΟΡΙΑΚΩΝ ΣΥΣΤΗΜΑΤΩΝ ΔΙΚΑΣΤΗΡΙΩΝ: Η ΠΕΡΙΠΤΩΣΗ ΤΟΥ ΟΛΟΚΛΗΡΩΜΕΝΟΥ ΣΥΣΤΗΜΑΤΟΣ ΔΙΑΧΕΙΡΙΣΗΣ ΔΙΚΑΣΤΙΚΩΝ ΥΠΟΘΕΣΕΩΝ ΓΙΑ ΤΗ ΔΙΟΙΚΗΤΙΚΗ ΔΙΚΑΙΟΣΥΝΗ (ΟΣΔΔΥ – ΔΔ).

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Master Thesis

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Abstract

The European Union introduced the European Interoperability Framework to support member states in facilitating interoperability between their information systems. In its last version of 2017 this framework introduced the concept of ‘interoperability governance’ as a key to interoperability.

The aim of this thesis is to examine the emerging research field of ‘interoperability governance’ in an information system for the judiciary. It particularly explores how the governance structure of the Integrated Administrative Court Case Management System of Greece affected the decisions regarding interoperability. We use a case study methodology to achieve this goal. By using a literature review, we identify the theory that deals with the concept of ‘interoperability governance’ and we examine if there is a consensus among scholars about a model of governance that fosters interoperability. We further introduce relevant concepts of both information technology and law, including ‘governance’ and ‘interoperability’ along with some basic information about Administrative Justice in Greece.

Our findings are consistent, in most parts, with the conceptual model of the European Interoperability Framework. We affirm that the constitutional requirement of independence of the judiciary imposes certain limits that have to be respected in an interoperability governance structure of the courts. We emphasize on the importance of dealing with certain issues of interoperability before the introduction of an information system in an organisation. We conclude that a ‘dynamic’ governance structure, that is a structure that changes during the life cycle of an information system, is consistent with real world challenges that arise regarding interoperability.

The contribution of this thesis to the research is a literature review that is missing from the field. It is also a case study on the effects that a governance structure of an information system for the judiciary has on the interoperability of the system, yet being absent from the field.

Keywords: interoperability, governance, Administrative Justice, IACCMS.

Περίληψη

Η Ευρωπαϊκή Ένωση εισήγαγε το Ευρωπαϊκό Πλαίσιο Διαλειτουργικότητας για να διευκολύνει τα κράτη μέλη να επιτύχουν την διαλειτουργικότητα των Πληροφοριακών τους Συστημάτων. Το προαναφερόμενο πλαίσιο στην τελευταία του έκδοση (2017) εισήγαγε την έννοια «διακυβέρνηση της διαλειτουργικότητας», ως ένα σημαντικό στοιχείο για την επίτευξη της διαλειτουργικότητας.

Ο σκοπός της διπλωματικής εργασίας είναι να εξετάσει το ανερχόμενο επιστημονικό πεδίο της «διακυβέρνησης της διαλειτουργικότητας» σ' ένα πληροφοριακό σύστημα για την δικαιοσύνη. Συγκεκριμένα, εξετάζει πως η δομή διακυβέρνησης του Ολοκληρωμένου Συστήματος Διαχείρισης Δικαστικών Υποθέσεων της Διοικητικής Δικαιοσύνης (ΟΣΔΔΥ-ΔΔ) επηρέασε τις αποφάσεις που λήφθηκαν αναφορικά με την διαλειτουργικότητα του πληροφοριακού συστήματος. Για την επίτευξη αυτού του στόχου επιλέξαμε τη μεθοδολογική μέθοδο της μελέτης περίπτωσης. Επιπλέον, χρησιμοποιήσαμε τη μεθοδολογική μέθοδο της βιβλιογραφικής επισκόπησης με σκοπό αφενός να ανευρεθεί η θεωρία για την έννοια «διακυβέρνηση της διαλειτουργικότητας», αφετέρου να διερευνηθεί αν υπάρχει συμφωνία στην ακαδημαϊκή κοινότητα σχετικά με το βέλτιστο μοντέλο διακυβέρνησης για την επίτευξη διαλειτουργικότητας. Επιπλέον, παρουσιάζουμε βασικές έννοιες τόσο της τεχνολογίας της πληροφορίας όσο και της νομικής, συμπεριλαμβανομένων των όρων «διακυβέρνηση» και «διαλειτουργικότητα», καθώς επίσης και κάποιες βασικές πληροφορίες για την Διοικητική Δικαιοσύνη στην Ελλάδα.

Τα αποτελέσματα της έρευνά μας είναι καταρχήν συνεπή με το εννοιολογικό μοντέλο του Ευρωπαϊκού Πλαισίου Διαλειτουργικότητας. Επιβεβαιώνουμε ότι η συνταγματική πρόβλεψη για ανεξαρτησία της δικαιοσύνης επιβάλλει συγκεκριμένους περιορισμούς, που πρέπει να είναι σεβαστοί σε μια δομή διακυβέρνησης των δικαστηρίων σχετική με την διαλειτουργικότητα. Τονίζουμε την σημασία να επιλύονται συγκεκριμένα ζητήματα διαλειτουργικότητας πριν από την εισαγωγή ενός πληροφοριακού συστήματος σ' έναν οργανισμό. Καταλήγουμε ότι ένα 'δυναμικό' μοντέλο διακυβέρνησης, δηλαδή μια δομή διακυβέρνησης που μεταρρυθμίζεται - ανάλογα με τις ανάγκες- κατά την διάρκεια λειτουργίας ενός πληροφοριακού συστήματος είναι συνεπές με τις πραγματικές προκλήσεις που προκύπτουν όσον αφορά την διαλειτουργικότητα.

Η συνεισφορά της διπλωματικής εργασίας στην ακαδημαϊκή έρευνα είναι αφενός μια βιβλιογραφική επισκόπηση, σ' ένα πεδίο για το οποίο δεν υπάρχει προηγούμενη έρευνα, αφετέρου μια μελέτη περίπτωσης σχετικά με την επιρροή που έχει ένα μοντέλο διακυβέρνησης ενός πληροφοριακού συστήματος για την δικαιοσύνη, στην διαλειτουργικότητα του συστήματος αυτού, ζήτημα για το οποίο επίσης δεν υφίσταται προηγούμενη έρευνα.

Λέξεις Κλειδιά: Διαλειτουργικότητα, Διακυβέρνηση, Διοικητική Δικαιοσύνη, ΟΣΔΔΥ-ΔΔ.

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I am thankful to Ioannis Symenonidis, Commissioner at the General Commission of State for Regular Administrative Courts and Professor at the Public Law Department of the Faculty of Law of Aristotle University of Thessaloniki. Our discussions were invaluable; he supported me in pursuing this thesis, which main part is not legal. He also granted me access to the Central Organisational Committee of IACCMS.

I also want to thank Dimitris Tsarouchas, Auditor of the Council of State, for his valuable comments to an earlier draft of Section 5.

I would like to give special thanks to Alexandra Papandreadi, court officer and member of the ICT Division of the Registrar of the Council of State, who helped me to understand, from a technical and practical point of view, the way IACCMS works. She spent a lot of her time diligently answering all my questions.

Special mention goes to Elena Panagiotou, court officer and president of the Central Organisational Committee (COC) for IACCMS, who gave me a thorough overview of both the day-to-day function of IACCMS and the problems faced and solutions reached by COC during the piloting and operational phases of IACCMS.

Argiro Paschalidou and Olga Mouratidou, court officers at the administrative court of first instance of Serres contributed in this thesis by letting me understand –and observe- the way a court officer works in IACCMS. The former also granted me access to the archives of the court where I discovered valuable documentation for the case study.

Last but not least I am very grateful to my wife and my daughter who supported and encouraged me during the MSc. Programme “Law and Informatics”, which I have been completing with this thesis.

Epameinondas Troulinos

Thessaloniki, February 2020.

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Abbreviations

ACFI&A: Administrative Courts of First Instance and Appeal

COBIT: Control OBjectives for Information and related Technology

CCJE: Consultative Council of European Judges

CEPEJ: European Commission for the Efficiency of Justice

COC: Central Organisational Committee

CoE: Council of Europe

CS: Council of State, Greece's Supreme Administrative Court

EIF: European Interoperability Framework, see References

EU: European Union

General Commissioner: General Commissioner of State for Regular Administrative Courts

IACCMS: Integrated Administrative Court Case Management System of Greece

IDA: Interchange of Data between Administrations, see references

ICT: Information and Communication Technology

IQAT: Interoperability Quick Assessment Toolkit

IS: Information System

ISACA: Information Systems Audit and Control Association

IT: Information Technology

JT&HR Ministry: Ministry of Justice, Transparency and Human Rights

Olomeleia: Greek Lawyer's Information System

1 Introduction

1.1 Problem Statement

The enthusiasm of solving every problem in justice through technology fostered the introduction of Information and Communication Technologies (henceforth, ICT) in the judiciary. Countries introduced ICT in their justice systems in order to improve both the efficiency of justice and the accessibility to justice. For digital technology to be efficient for justice, it is necessary to encourage the secure flow of data between various Information Systems (henceforth, IS); i.e. the data should circulate and be used easily. The IS have to be made interoperable; that is there is a need to achieve interoperability between all those involved in the justice system, both within and outside the judiciary.

The European Union (henceforth, EU) acknowledged that the lack of interoperability between the public administrations of member states was an obstacle to the four basic freedoms. Interoperability was considered an enabler of cross-border collaboration between public administrations of different member states and also an enabler of cross-sectoral cooperation of public agencies within member states, with the purpose to provide citizens of EU integrated e-services; that is the interoperability of government back offices. Those aims are thoroughly described in European Commission's 2015 "Digital Single Market Strategy" and in the "Tallinn Declaration on eGovernment" at the ministerial meeting of the Council of the EU on 6th October 2017. Furthermore, the European Commission, attempting to support the public administration of member states, developed the European Interoperability Framework (henceforth, EIF), which aims to provide guidance to public agencies to foster interoperability, via twelve principles, forty seven recommendations, a conceptual model for interoperable public services and a layered interoperability model. In its current version of 2017, EIF emphasizes the effect that the governance structure of a public administration has on interoperability and the provision of integrated public services. The concept of 'interoperability governance', that EIF (2017) introduced, is a relatively new concept not previously identified by many scholars as an enabler for interoperability.

Since a public administration body does not usually have a specific governance structure for matters of interoperability or even for technology issues, the governance structure that it already has influences the governance structure that deals with

interoperability issues. Therefore, it is crucial –from a governance point of view- to consider who is responsible for making the decisions that relate to interoperability (e.g. on technical and semantic standards, on necessary organizational and legal changes) and how it is ensured that they are adhered to; an interoperability framework could provide guidance on such issues. Furthermore, the main challenge in order to provide an integrated e-service is to make different IS interoperable by standardising technologies, data and processes, while respecting the autonomy of the different public authorities that interact via IS.

Particularly in the judiciary, its governance structure is of extremely importance because it is related to the independence of courts. Governance in the judiciary is not just a technical matter of setting up bodies and attributing responsibilities, due to legal constraints that –mainly- the constitution of a country imposes and also due to increased security needs, because sensitive data are shared. Thus, it is generally accepted that in issues regarding the technology of courts, judges should actively participate in the decision making process; i.e. that changes should be 'court-driven'. Therefore, in order to explore issues of interoperability in an IS of the judiciary one needs to investigate the governance structure of the particular organization.

The author of this dissertation has been an administrative judge in Greece for the past 14 years and has witnessed the impact that the introduction of ICT had on Administrative Justice in Greece, especially the IS that was introduced in 2015, i.e. the Integrated Administrative Court Case Management System of Greece (henceforth, IACCMS). This IS had a twofold way of dealing with interoperability issues: i) regarding existing IS of administrative courts, an integration of all -formerly isolated- systems into the new one, ii) regarding external IS, the establishment of interoperability. Thus, we considered useful to examine the way IACCMS dealt with interoperability issues

This study contributes to theory in the discipline of 'interoperability governance' by studying an IS of the judiciary in order to understand the complex issues surrounding the governance of interoperability. It also contributes to the forming of the EIF's (2017) conceptual model by practically assessing the principles and recommendations of this framework.

1.2 Research Scope and Objectives

The scope of this dissertation is to test the boundaries of EIF (2017) conceptual model regarding the concept of 'interoperability governance' in a case study of an IS that was designed for the judiciary. In other words, to assess EIF (2017) pursuant to the practical solutions that IACCMS provided in the above mentioned concept.

The objectives of this dissertation include:

- To conduct a literature review in order to:
    i. Identify the theory that deals with the concept of 'interoperability governance';
    ii. Examine if there is a consensus in literature about a model of governance that can facilitate interoperability.
- To conduct a case study on IACCMS researching the governance structure(s) that were set up from before the planning phase up to the operational phase, in order to identify relevant issues of interoperability significant to the above mentioned concepts and in particular:
    i. What were the main decisions that were taken on interoperability issues;
    ii. Who had the mandate to make them;
    iii. What was the process to reach those decisions;
    iv. How were they implemented.

1.3 Structure of the Thesis

This thesis consists of six sections:

i. The first section is an introduction to the dissertation presenting the problem that is addressed, the scope and objectives of the study and the structure of the dissertation.
ii. The second section introduces key concepts that are a prerequisite for a reader in order to have an adequate understanding of the dissertation. We also cite relevant literature regarding 'interoperability governance' before EIF (2017). In addition, we display recommendations of European

organisations regarding the introduction of ICT in justice and in particular the concept of interoperability in the justice sector. We further give a brief history of Administrative Justice in Greece along with its organization and structure.

iii. The third section, describes the methodology pursued for the literature review and for the case study.

iv. The fourth section reviews the literature of 'interoperability governance' and presents the results.

v. The fifth section presents the case study of IACCMS. After a brief introduction on the establishment of ICT in Administrative Justice of Greece, we give our research questions, we display the data we collected, we assess IACCMS through the Interoperability Quick Assessment Toolkit and we analyse the data presenting our findings.

vi. The sixth section summarises the dissertation, encompasses our findings, but also the limitations of our research and recommends fields for future research.

2 Background Info and Key Concepts

2.1 Introduction

This dissertation is presented in an interdisciplinary Master's program; it is addressed to people with a background in either 'law' or 'information technology'. Thus, we consider it appropriate to introduce in this Section key concepts that are a prerequisite for a reader of either field in order to have an adequate understanding of the thesis. In subsection 2.2 we will discuss (from the point of view of political science and institutional theory) the concepts of 'governance' and in particular 'judicial governance', presenting the evolution of the first term in the public administration and also relevant literature about the governance structure of the judiciary. In subsection 2.3 we will provide the relevant definitions for the concept of 'interoperability', and 'interoperability governance' (from the point of view of information technology) and we will also introduce EIF (2017). We will further cite relevant literature regarding 'interoperability governance' before EIF (2017) and we will examine this term in an interdisciplinary way drawing from other fields (economic theory and public management theory) as we did in subsection 2.2. In the literature review (Section 4) we introduce academic literature after EIF (2017) and in this way we believe that the reader will be able to follow the evolution of 'interoperability governance'. In subsection 2.4 we present recommendations of European organisations regarding the introduction of ICT in justice and in particular the concept of interoperability in the justice sector. In subsection 2.5 we will present a brief history of Administrative Justice in Greece along with the organization and its structure. Regarding the introduction of ICT at the Administrative Justice of Greece we consider more appropriate to present the relevant information in Section 5 and particularly in subsection 5.2.

2.2 Governance and Judicial governance

As Lambropoulou and Oikonomou (2018) display, public administration was affected by the Weberian model which has as its main principles "hierarchy, formal rules, uniformity, legitimacy, standardization of procedures, division of labour, impersonality,

meritocracy and technical qualifications" (*ibid,* p. 103 with further citation). The critique to this model of traditional bureaucracy shifted "the emphasis to the administrative performance in economic terms" (*ibid,* p. 104) leading to the theoretical model of 'New Public Management', that "backed the idea that public organizations should steer rather than row and favoured the transfer of entrepreneurial/managerial techniques from the market to public institutions, viewing citizens as customers" (*ibid,* p. 104 with further citation). As Klenk and Reiter (2019), p. 3 acknowledge New Public Management "was all about business-like changes in public sector organisations (e.g. corporatisation), including the replacement of hierarchical coordination by competition, the market mechanism as a possible modus operandi for improving the efficiency of public services, the introduction of a product culture intended to strengthen accountability and so on". The criticism to this model had as a result the introduction of the concept of 'governance', which had several meanings but in essence involved "the view of shifting government omnipotence in the decision-making process towards an inter-institutional cooperation that involves a variety of actors and management tools" (Lambropoulou and Oikonomou (2018), p. 105). Thus in recent years hybrid models for the organization of public administration have been introduced such as 'New Public Governance', 'New Public Service', 'New Weberian State' and 'Public Value'. In addition the term 'post New Public Management' is used to denote "reforms seeking to improve coordination vertically between government and other actors and horizontally in terms of inter-agency coordination" (Klenk and Reiter (2019), p. 4). Regarding the concept 'governance' we consider appropriate the meaning that Leclercq-Vandelannoitte and Bertin (2018) (p. 332, with further citation) provide; they state that governance "involves systematically determining, within a given scope, who makes each type of decision (decision rights), who provides input (input rights), and how people (or groups) will be held accountable for their role (accountability)".

If one views justice as the provision of a public service, courts aim is to solve disputes in a society enforcing the rules stipulated by law through judgements. As Ng (2011) noted, in the judiciary there are different terms to denote its governance structure, such as 'judicial governance, 'judicial administration', 'court management' and 'justice administration'. The introduction of these terms was due to the fact that currently "judges are being asked to become further involved in court and judicial organisation and management affairs" (*ibid,* p. 103), a trend that the author supports, since she considered

it “illogical to separate the judges from the administration, if there is to be ‘organisational rationality’”. The fact that there have been considerable delays and backlogs in the delivering of judgements, led to the introduction of theories discussed in the previous paragraph in the judiciary. As Piana (2017), p. 758 (with further citations), noted there has been a “move made by the European judicial systems towards the incorporation of New Public Management (NPM) tools of governance … [that are] rooted in a user oriented concept of justice administration [and] … influenced the transnational debate focused on the quality of justice”. As Ng 2011, p. 107 (with further citation) noticed, from the perspective of organizational theory courts have been classified as ‘professional bureaucracies’; though Giannidis 2016, p. 89 observed, regarding the Greek justice system, that courts correspond to a “hybrid technically unknown model of bureaucracy” (translation provided from us), pointing to the fact that, contrary to ‘traditional bureaucracies’, there is a hierarchy inside the judiciary. Accordingly, Pikramenos 2015 argued that one cannot apply institutional theory unchanged to justice systems, due to fundamental differences; namely juridical work is a complex mental assignment that cannot be quantified and the cornerstone of the status of a judge is his independence.

It is for this reason, and also to guarantee the judicial independence from the legislative (though it usually has the final word regarding the financing of the judiciary) and the executive branches of government that, although in many countries there is a Ministry of Justice, usually it is not (solely) responsible for the management of the judicial organization (Ng 2011, p. 114 with examples from France, the Netherlands and England & Wales). As Ng 2011, p. 114 argued “judicial governance is not only a matter of implementing new theories and techniques of management (which by itself is not easy). Judicial independence is the core value of the separation of powers, and judges must be seen to conduct the affairs of justice independently. Changes to managing the courts, even if they are to improve productivity and the results, will affect the way judges work”. The counter argument to complete ‘self-management’ from judges can be viewed in the observation of Piana (2017), p. 761 that “justice administration is a public sub-sector and should be held accountable from the point of view of the capacity of delivering a good service to users – citizens – and of the capacity of allocating money along with a strict instrumental rationality.”

2.3 Interoperability, Interoperability Governance and the European Interoperability Framework (EIF).

2.3.1 Interoperability and the European Interoperability Framework (EIF)

The advent of IS in the public sector was a significant evolution to the provision of public services. At the early years of introduction of IS in the public sector, it was the norm for each organization (and in some cases different departments of the same organization) to insert its own IS. When a noteworthy part of the public sector had IS, it became evident that in order to provide public services more efficiently an exchange of data between separated IS was necessary, i.e. the IS had to be made interoperable. The formation of isolated digital systems (silos) created electronic barriers that prevented IS connection.

EU noticed early the need for interoperable IS so as to deliver integrated public services to EU citizens. The first program, Interchange of Data between Administrations (IDA) was launched on 1995 followed by different programs as depicted in figure 1 leading to the currently running program the "interoperability solutions and common frameworks for European public administrations, businesses and citizens" (ISA^2 program). It was early understood that the means to foster integration of public services between public administrations of Member States was interoperability. Therefore, the Commission developed the European Interoperability Framework (EIF), in order to aid the public sector of member states in the provision of integrated public services. In 2004 the Commission of EU published the first version (henceforth, EIF 2004) of this framework, followed by the second version in 2010 (henceforth, EIF 2010) and the third in 2017 (henceforth, EIF 2017). The latter defines interoperability as "the ability of organizations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organizations, through the business processes they support, by means of the exchange of data between their ICT systems" (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework – Implementation Strategy, COM(2017) 134 final, Brussels, 23.3.2017, Annex 2 p. 4).

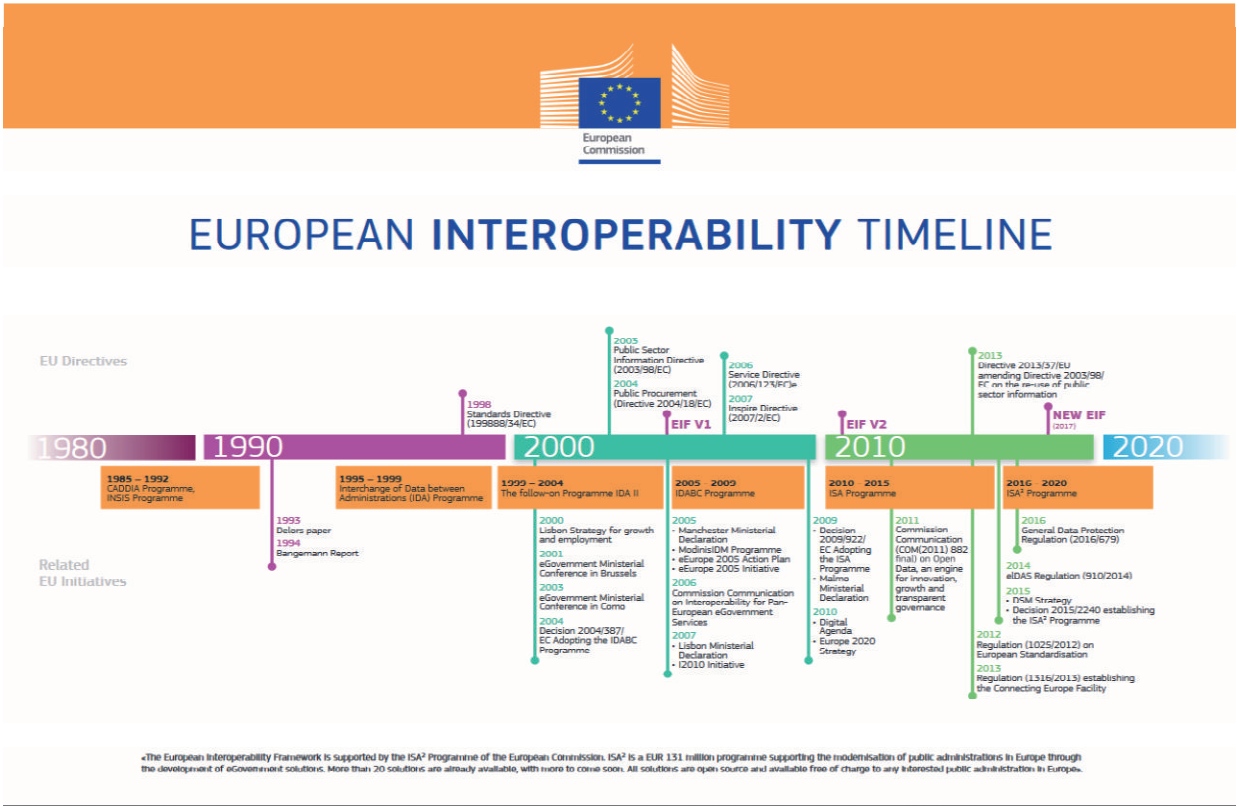

Figure 1 European Interoperability Timeline From https://ec.europa.eu/isa2/sites/isa/files/docs/publications/european_interoperability_timeline.pdf] (last accessed 02.09.2019)]

The EU regards interoperability "a key factor in making a digital transformation possible" since it "allows administrative entities to electronically exchange, amongst themselves and with citizens and businesses, meaningful information in ways that are understood by all parties" (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework – Implementation Strategy, COM(2017) 134 final, Brussels, 23.3.2017, p. 2). Also, interoperability could aid the EU's digital single market, since it is "a prerequisite for efficient connections across borders, between communities and between public services and authorities" (*ibid*, p. 3). The aim of those successive frameworks was to provide guidance to public administrations to foster interoperability so as to "achieve its ultimate objective of interoperable user-centric public services in the EU" (*ibid*, p. 9). Specifically, EIF (2017) "gives guidance, through a set of [forty seven] recommendations, to public

administrations on how to improve governance of their interoperability activities, establish cross-organisational relationships, streamline processes supporting end-to-end digital services, and ensure that existing and new legislation do not compromise interoperability efforts" (*ibid*, Annex 2, p. 4).

EIF (2017) is a generic framework which includes: twelve interoperability principles, a conceptual model for interoperable public services and a layered interoperability model.

The interoperability principles are "fundamental behavioral aspects to drive interoperability actions" (*ibid*, Annex 2, p. 8) and are grouped into four categories (as illustrated in figure 2): a) Principle setting the context for EU actions on interoperability (No 1: subsidiarity and proportionality), b) Core interoperability principles (Nos 2 to 5: openness, transparency, reusability and technological neutrality and data portability), c) Principles related to generic user needs and expectations (Nos 6 to 9: user-centricity, inclusion and accessibility, security and privacy and multilingualism) and d) Foundation principles for cooperation among public administrations (Nos 10 to 12: administrative simplification, preservation of information and assessment of effectiveness and efficiency).

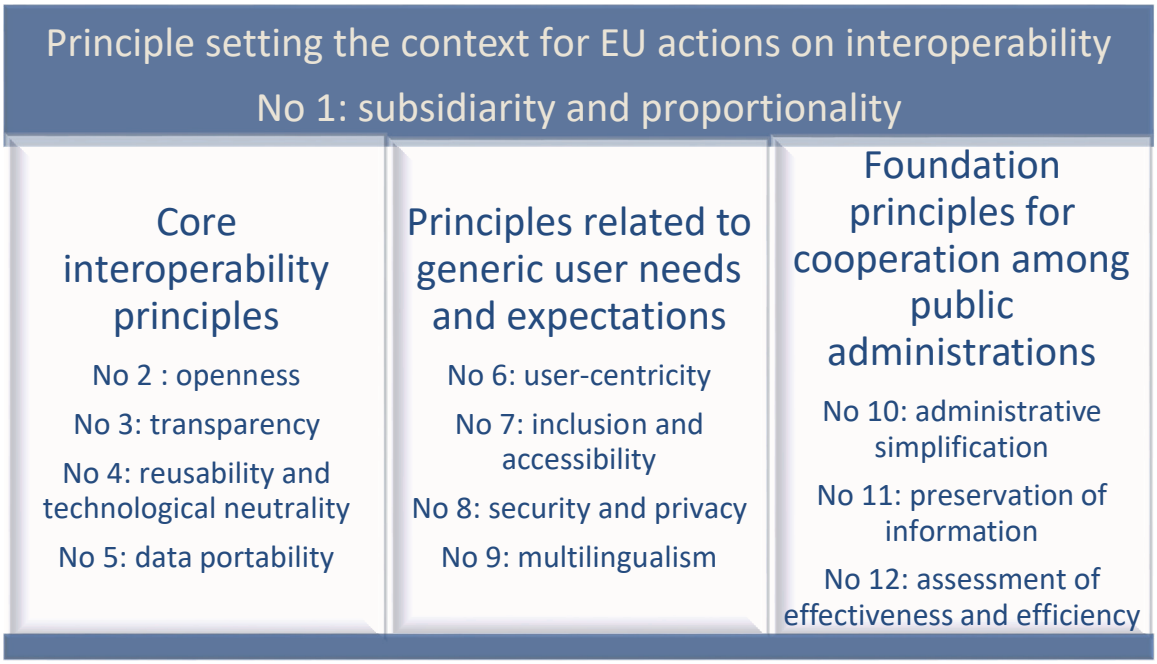

Figure 2 Interoperability Principles of EIF (2017)

The layered interoperability model, illustrated in figure 3 (*ibid*, Annex 2, p. 18), includes four layers of interoperability (legal, organizational, semantic and technical), a cross cutting component of the four layers (integrated public service governance) and a background layer (interoperability governance).

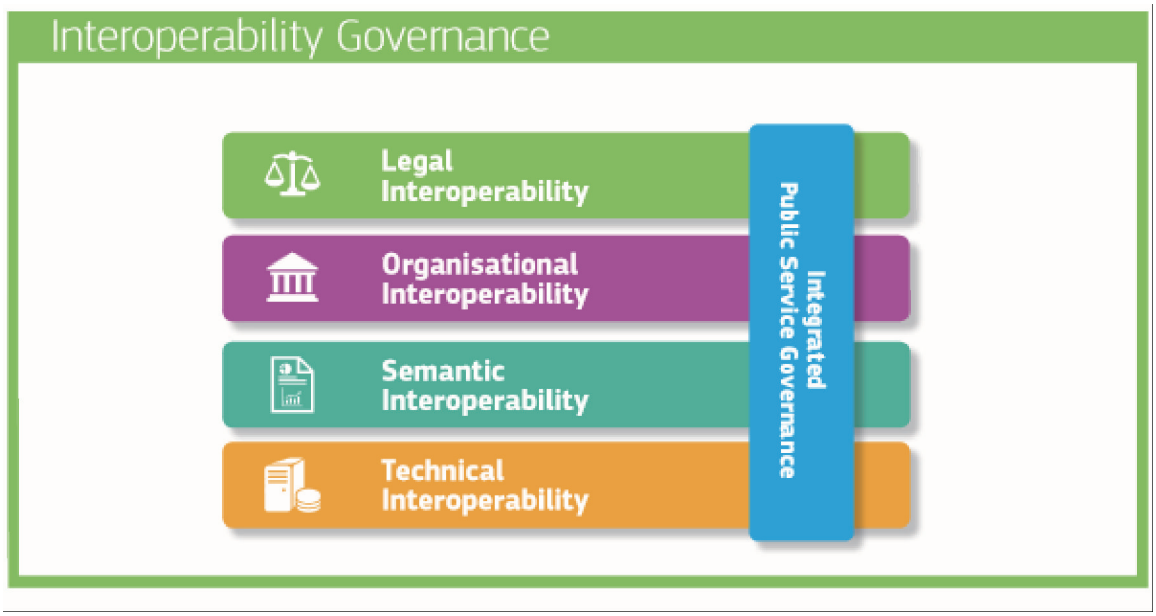

Figure 3 Interoperability Model in EIF (2017)

The legal layer ensures that "organizations operating under different legal frameworks, policies and strategies are able to work together" (*ibid*, Annex 2, p. 23), i.e. that there is a coherent legislation governing the interoperability of public services. The organizational layer "means documenting and integrating or aligning business processes and relevant information exchanged" in order "to achieve commonly agreed and mutually beneficial goals" (*ibid*, Annex 2, p. 24), i.e. coordination of workflows, a well-organized business process. The semantic layer "ensures that the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties" (*ibid*, Annex 2, p. 25), i.e. that there is among the systems of different public organizations mutual understanding of data transmitted. The technical layer "covers the applications and infrastructures linking systems and services" (*ibid*, Annex 2, p. 27), i.e. the compatibility of the systems.

With regard to justice, the EU focused on enhancing interoperability between the databases of member states, through certain initiatives such as (*see,* References): 1) the Visa Information System, 2) the Schengen Information System II, 3) the European dactyloscopy system and 4) the European e-Justice Portal, which in essence is a 'one-

stop shop' for information on European justice and access to judicial procedures of member states.

2.3.2. Interoperability Governance and related concepts

EIF (2017) recognizes 'interoperability governance' as a "the key to a holistic approach on interoperability, as it brings together all the instruments needed to apply it" (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework – Implementation Strategy, COM(2017) 134 final, Brussels, 23.3.2017, Annex 2 p. 20) and defines it as "decisions on interoperability frameworks, institutional arrangements, organisational structures, roles and responsibilities, policies, agreements and other aspects of ensuring and monitoring interoperability at national and EU levels" (*ibid,* p. 19). It further underlines the importance of political support and in-house skills to successfully implement interoperability policies and introduces a six-step-approach to manage standards and specifications (a related approach is presented from Kubicek, Cimander and Scholl (2011) in Chapter 10). In addition EIF (2017) introduces the term 'integrated public service governance' which is "a need for coordination and governance by the authorities with a mandate for planning, implementing and operating European public services" (*ibid,* p. 21). It further emphasizes that it should cover all four layers of interoperability and it should include as minimum: "the definition of organizational structures, roles & responsibilities, the decision-making process for the stakeholders involved, the imposition of certain requirements, a change management plan and a business continuity/disaster recovery plan" (*ibid,* p. 22). It finally accentuates the importance of formal arrangements through interoperability agreements, that usually include on the one hand change management processes and on the other hand standards and specifications for the technical, semantic and organizational level.

In contrast EIF (2010), though included four layers of interoperability, did not include an interoperability governance background layer, but a political context background layer, as depicted in figure 4 (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services' COM(2010) 744 final, Brussels, 16.12.2010, Annex 2, p. 21). EIF (2010) introduced the

concept ‘interoperability governance’ (*ibid,* p. 28), but did not incorporate that concept to the interoperability model. In EIF (2010) ‘interoperability governance’ was related to “a complex and changing environment”, to “components, which are the results of interoperability agreements” and to a holistic approach required to coordinate and monitor work of public administrations at different levels, i.e. local, regional, national and EU (*ibid,* p. 28). Thus, EIF (2010) implies that ‘interoperability governance’ is a cross-cutting issue.

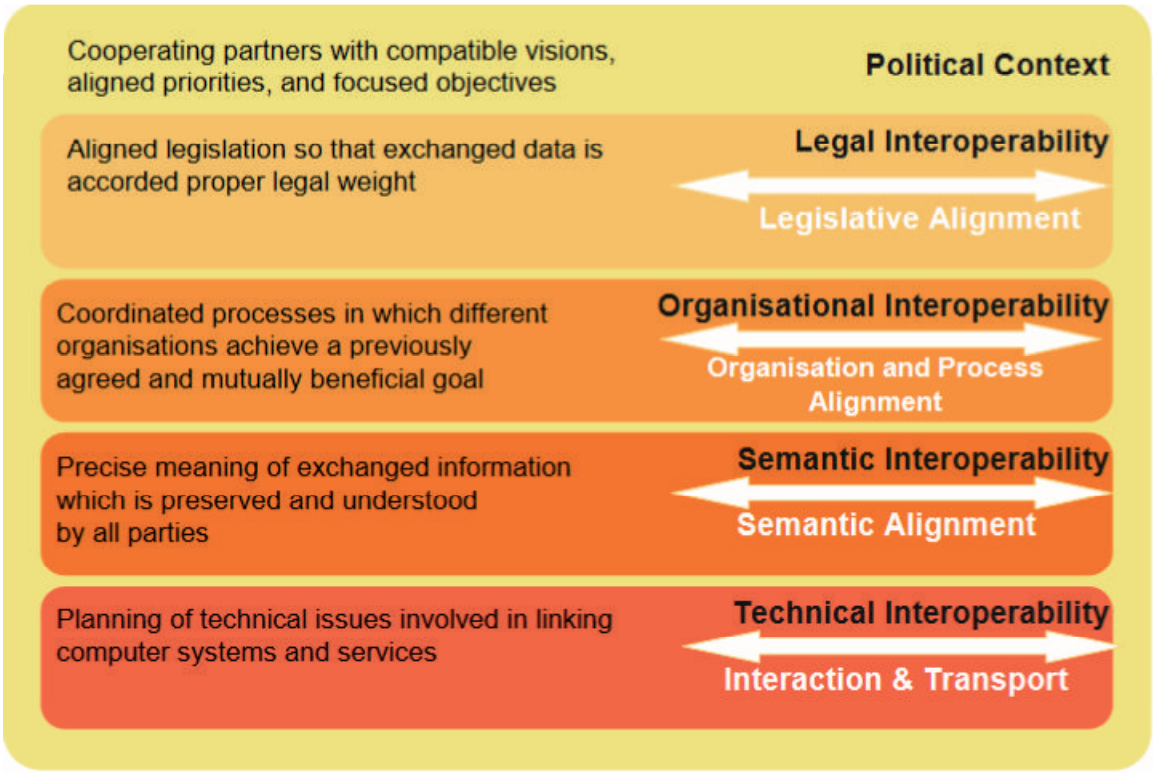

Figure 4 Interoperability Levels in EIF (2010)

The definition of ‘interoperability governance’ from EIF (2010) was criticized by Kubicek, Cimander and Scholl (2011) who observed that EIF (2010) “did not take into consideration that achieving interoperability required negotiations and collaboration between actual human actors from different sectors and levels of government, for which often no established structures and rules exist” (*ibid*, p. 12). The authors further noticed that in order to foster interoperability, apart from organizational change there is also “the challenge of repurposing existing organizations or creating new ones” (*ibid*, p. 12). They concluded that it is for these reasons that EIF 2010 introduced the concept ‘interoperability governance’, though the framework did not explain the meaning of this term and “how the governance challenge of interoperability in government could be met”

(*ibid*, p. 12). The authors in explaining the term governance in an interoperability concept for the public sector suggested that the term 'IT governance', though thoroughly addressed by literature, is not helpful and they defined governance as "the regimes which constrain, prescribe or enable government activities and distinguish between activities related to the cooperation with regard to public services and those activities concerning the cooperation in IT-deployment interoperability and online services" (*ibid,* p. 27). Kooper, Maes and Lindgreen (2011), also considered the term 'IT governance' inadequate to address the use of information within and outside an organization and they introduced the term 'information governance' which "involves establishing an environment and opportunities, rules and decision-making rights for the valuation, creation, collection, analysis, distribution, storage, use and control of information" (*ibid,* p. 195 – 196). Moreover, Pardo, Nam and Burke (2012) emphasized the importance of governance in interoperability explaining that as "governance moves from intraorganizational to interorganizational to an entire policy domain (e.g., public health, criminal justice, and education), the organizational issues and challenges begin to outweigh the technical ones in terms of complexity" (*ibid,* p. 10, with further citation). The authors identified seven e-government interoperability capabilities among which 'governance and leadership' mentioning that as "a dynamic and open sociotechnical system, governance represents the framework for decision rights and accountability to encourage desirable behavior in the use of resources and should provide well-defined principles, roles, responsibilities, stewardship, and compliance strategies" (*ibid,* p. 12, with further citations).

Kubicek, Cimander and Scholl (2011) further introduced three basic forms of governance, i.e. the structure of collaboration: a 'hierarchy', which refers to a central planning authority, a 'network' or 'federation', which refers to separate agencies that negotiate rules and a 'market', which refers to outsourcing of the operation of certain services. Similarly, Kooper, Maes and Lindgreen (2011) insisted that the interaction between different actors is important and drawing from Kooiman (2003) they propose three ways of governing: the 'hierarchical approach' which is based on steering [give directions] and control [monitor the implementation of directions] and is based on central direction, the 'co-governance approach' where the actors have something in common to pursue together [this approach corresponds to the aforementioned 'network'] and the 'self-governance approach', which refers to self-regulation. Weil and Ross (2004) on the

other hand proposed six forms of IT governance (Business Monarchy [centralized approach], IT Monarchy [centralized approach], Feudal [network approach], Federal [network approach], IT Duopoly [network approach] and Anarchy [decentralised approach]). They attribute those different forms of governance to the level of representation that has been adopted by an organization; a valuable insight since the three forms of governance discussed in this paragraph are rarely found in the 'ideal form'.

It is evident from this analysis that a governance model of 'hierarchy' will usually opt for centralization, which needs integration of different IS and has as a consequence a reorganization (in terms of authority and relations) of all the organizations involved. Whereas, a governance model of 'network' will usually opt for interoperability of the different IS, which needs standardization in technical, semantic, organizational and legal level. This is consistent with institutional economic theory that also describes three forms of governance: 1) 'markets' which are efficient if there is a significant number of entities, their rights are well defined and there is no asymmetry of information between them, 2) 'hierarchies' which are efficient if there are stable role and rules, the size of the organization is small and its complexity low and 3) 'networks' which are efficient if entities have common goals, are interdependent and there is trust between them (Estermann, Riedl and Neuroni (2009), p. 8). Furthermore, public management theory also uses the above mentioned distinction in analyzing what is the optimal model for public sector to perform a task. As Provan and Lemaire (2012), p. 639 affirm "the decision between market and hierarchy is the decision about whether to contract out for a service or provide the service directly […]. The other option is to use a network, which may involve a mix of contractual and more informal, trust-based ties". They further make an argument that "the classic hierarchy form, is appropriate for stable and routine tasks, but not for handling most non routine tasks" and for the latter "it is not clear when a network should be used and when a bureaucracy or alternative form of hierarchy would be best" (*ibid,* p. 640, with further citation) and that "prior to network involvement or formation, a strategy decision must be made regarding whether developing and implementing a network to address a problem is appropriate" (*ibid,* p. 641). The authors emphasize that the governance structure of the network model is important and pinpoint to the research of Provan and Kenis (2008) who introduced three forms of network governance for public sector organizations; shared/participative, lead organization, and network administrative organization. This description of the network form of governance

"draws directly from research and theory on social networks, which focuses on relationships between individuals" utilizing the concept of social capital which "is based on attributes of the relationship between individuals" (*ibid,* p. 639).

Weil and Ross (2004), p. 10, Kooper, Maes and Lindgreen (2011), p. 196 and Kubicek, Cimander and Scholl (2011), p. 13 – 14 agreed that the central questions to be answered regarding 'governance' in IS are: 'what' are the main decisions, 'who' has the mandate to make them and 'how' those decisions are implemented. The 'who' question also addresses the issue of whether an existing actor or a new –permanent or temporary- actor will deal with those issues.

2.4 Interoperability in justice and Governance models for the introduction of ICT in justice

As early as 2003 the Council of Europe (henceforth, CoE) recognized that interoperability of IS in the justice sector was necessary in order to improve the quality of court services to citizens. The Committee of Ministers of CoE issued Recommendation Rec(2003)14 "on the interoperability of information systems in the justice sector". It defined interoperability as the "efficient and secure data and information exchanges among the information systems of justice sector organisations" and explained that the latter "comprise the courts, prosecution and other public and private institutions, such as the police, penitentiary systems, public registers, civil status authorities, lawyers, notaries as well as other public and private stakeholders that exchange data and information in the process of the administration of justice" (*ibid,* I, 1). It recommended "measures at the level of government policy, appropriate changes in the working methods of justice sector organisations and upgrading of the technical infrastructure" (CM(2003)98-Add 1 Explanatory Memorandum to Rec(2003)14, §24). It further acknowledged that "applying new technologies within the old administrative mechanisms and schemes would not bring about the expected benefits […] because the modern information technology continues to be used in an old-fashioned way. As a result, most proceedings in the justice sector still remain paper-based" (*ibid,* §44) and it proposed to have "an open-minded approach to modernising laws and regulations where they constrain the use of opportunities made available by the new information

technologies and, in particular, interoperability" (Rec(2003)14, III, 7.2). However, it emphasized that "changes in the work processes of justice sector organisations introduced by the interoperability should in no way affect the constitutional guarantees of the independence of the judiciary in the process of the administration of justice" (*ibid,* preamble), i.e. "the different constitutional, legal and administrative arrangements and traditions" (CM(2003)98-Add 1 §3). Rec(2003)14 further stressed the need to take appropriate measures to provide information security and protection of the personal data and proposed to introduce "audit or control points" (*ibid,* 4.3) that "enable tracking of how particular information has been handled" (CM(2003)98-Add 1 §35).

CoE also established the Consultative Council of European Judges (henceforth, CCJE), an advisory body on issues relating to the independence, impartiality and competence of judges. In 2011, CCJE issued opinion No. (2011)14 on 'Justice and Information Technologies', in which there is a recommendation that, in order to ensure that IT enhances (and is not an obstacle to) co-operation of judges in different countries, states should "develop methods of mutual access to each national IT systems, as well as making such systems compatible with one another" (*ibid,* §13). Interestingly enough CCJE observed that "If justice is perceived by the users as purely technical, without its real and fundamental function, it risks being dehumanised" (*ibid,* §6). Regarding the governance structure of IT systems used in courts, CCJE observed that "over dependence on technology and on those who control it can pose a risk to justice" (*ibid,* §34) and thus technology has "to be adapted to the type and level of complexity of cases" (*ibid,* §34). It concluded that "IT governance should be within the competence of the Council for the judiciary or other equivalent independent body" (*ibid,* §36) recommending countries to involve judges in the relevant decisions. Following the modes of governance we presented in the previous subsection, CCJE advised a 'hierarchical' form of governance.

However, not all member states of CoE opted for this form of governance as it is evident from a study conducted form another advisory body to CoE, the European Commission for the Efficiency of Justice (henceforth, CEPEJ) which was set up to promote and support improvements in the efficiency and quality of justice. CEPEJ, in its thematic report entitled 'Use of information technology in European courts' (CEPEJ Studies No. 24) evaluated the use of information technology in the judicial systems of the Council of Europe's Member states during the time-frame 2014-2016. It noticed that "the good level of development of IT tools cannot be systematically linked to a good level

court performance" (*ibid,* p. 5), according to the indicators used from CEPEJ. Interestingly, the report calculated the "level of governance of technology in terms of IT" (*ibid,* section 1.2.2, p. 41 - 42) involving two levels: project management (which is defined as "assuming the fundamental responsibility of a project in all its dimensions", *ibid,* p. 41, with further citation) and strategic governance (which is defined as "a set of functions (management, monitoring) performed by a non-specialised structure in the information systems in charge of identifying the modernisation issues of the judicial system for the entire country or an entity, to set priorities with defined objectives and initiate reforms attached to these objectives, relying in particular on IT" (*ibid,* p. 41). The report thus considered essential to have a form of centralization, (through a hierarchical model) for successful IT development. The report found that 38 countries had a single body in charge of strategic governance and 7 countries did not. It further observed that from the 38 countries, 29 involve mixed teams (court, administrative, technical and scientific staff), whereas 7 countries did not involve court staff and 2 countries involved bodies responsible for the administration of the judiciary that consist of judges. Regarding the organizational models to develop and manage IT projects, the report found that a third of countries had an IT department with support from court staff, another third had a body consisting of court staff supported by an in-house IT department and/or a service provider and 6 countries had service providers only.

In late 2016 CEPEJ published 'Guidelines on how to drive change towards Cyberjustice' -a detailed review of European achievements in the field of cyberjustice based on CEPEJ's 2016 assessment cycle (data from 2014)- with the aim "to encourage debate on this issue and to provide those judicial systems that so wish with expertise extending beyond questions to do with the development and operation of software tools, so as to embrace all the current developments affecting the way in which justice is administered by harnessing the ICTs" (*ibid,* §2). The report acknowledged the importance of ICT in "improving the quality of the service rendered while at the same time controlling the operating costs of the justice system" (*ibid,* §14). It further recognized the importance of "underlying extensive electronic communications between the various institutions involved in handling litigants' cases [that could enable] an individual's case to be dealt with more quickly and, of course, more reliably" (*ibid,* §32). The report also identified that the introduction of IS in the judiciary re-organised the work flows of courts and it made a point that the development of IS in courts must

involve all users and not only programmers (*ibid,* §57). It observed that the introduction of IS in the judiciary had as an effect the improvement of court efficiency and of quality in the justice system and emphasized the need to "collectively cultivate among both developers and users of court information systems new practices that reflect the fundamental principles of justice and the objectives of high-quality service delivery in courts" (*ibid,* §65). The report further stressed that during the planning phase of a court IS consideration is necessary for communication with other IS both within and outside the judiciary and thus a minimum level of interoperability should be accomplished (*ibid,* §77). It maintained that "the main reason for employing digital technology is to encourage the flow of data between various operators in an information chain", where "the data in question can circulate easily […] and be used without reprocessing involving additional technical – or manual – procedures" (*ibid,* §89). Regarding issues of governance the report emphasized the assembly of multidisciplinary teams (technical and legal professionals) "that has real managerial and operational freedom" (*ibid,* §100), but also stressed the importance of having a legal professional as a leader who, if necessary, will re-orientate the technical solutions according to the needs of the courts and bearing in mind the legal challenges. Accordingly, the report proposed "the adoption of a single, simple, clearly defined system of governance that makes it possible to separate the management of the project from the rest of the administration" (*ibid,* §118) and advised the creation of 'temporary' governing with cross-sectoral personnel that operate the court IT system throughout its lifecycle. Regarding organizational changes the report stressed that the introduction of ICT to the judiciary is "an opportunity to overhaul the old methods of organisation and procedural rules in keeping with the fundamental principles of procedural law and judicial organization [that is] an opportunity to update if not simplify the rules governing judicial activity [ensuring that] information technology, through its processes, does not lead to a breach of the basic procedural principles recognised by national and European law, at the risk of creating legal uncertainty" (*ibid,* §82).

2.5 Administrative Justice in Greece

In this subsection we will introduce the structure of Administrative Justice in Greece along with the organization of the judiciary. We will briefly present administrative justice based on knowledge as a judge and also from the available material in English at the portal of Administrative Justice of Greece, namely Symeonidis (2016), Fountoulaki (2015), and the Council of State (2015) and the Ministry of Justice, Transparency and Human Rights (2014).

Administrative Justice, i.e. a court system that adjudicates on disputes between the citizen and the administration, was organized in Greece as early as 1829, though the Constitution of 1844 abolished both administrative courts (first instance and appellate courts) as well as the Council of State (the Supreme Administrative Court and also a consultative organ to the Executive branch of government and later to the King) and transferred all their cases to ordinary (civil) courts. Under the Constitutions of 1911 and 1927 administrative justice was re-introduced as a complete independent system of administrative courts under the Council of State. The latter had general jurisdiction to annul acts of administrative authorities and began to operate in 1929. The former had exclusive jurisdiction over administrative cases, though ordinary (civil) courts maintained the 'general jurisdiction' over administrative disputes. The Constitution of 1952 provided the optional foundation of 'ordinary administrative courts' that would have 'general and exclusive jurisdiction' over administrative disputes, which were still maintained by ordinary (civil) courts. In 1962 tax courts –whose establishment was stipulated in 1952- started operating. Simultaneously, the legislator provided for the creation of the General Commissioner for the Fiscal Justice, as an independent authority supervising tax courts along with the Council of the State.

The Constitution of 1975 (revised in 1986, 2001, 2008 and 2019) establishes three jurisdictions: civil, criminal and administrative, which are organised in three tiers: the courts of first instance (lower courts), the courts of appeal and the Supreme Courts. Under the current Constitution administrative justice was reorganized; the Council of the State (henceforth, CS) is the Supreme Administrative Court and is at the top of the hierarchy of administrative justice being responsible for the rational operation of Administrative Justice, then are the (nine) administrative courts of appeal and then are the (thirty) administrative courts of first instance. Administrative courts of first instance

and appeal (henceforth, ACFI&A) have jurisdiction over certain, i.e. specified by law, ever expanding administrative disputes and CS is competent to hear petitions for reversal of final judgments issued by ACFI&A and to annul enforceable (individual or normative) acts of administrative authorities, that are not adjudicated by administrative courts. CS is also competent to provide an opinion prior to the publication of presidential decrees of regulatory nature.

The supreme judicial council of administrative justice is competent to decide on everything in relation to the course of a judge of administrative justice career (promotion, transfer, detachment, disciplinary action etc.). It is composed of members of CS. However, when it decides on issues related to judges of administrative courts, also participate -without a right to vote- two judges from the administrative courts of appeal and the General Commissioner of State for Regular Administrative Courts (henceforth, General Commissioner). The Ministry of Justice, Transparency and Human Rights (henceforth, JT&HR Ministry) is entrusted, among other competences, with the management of justice in Greece. It supervises the administration of justice, dealing with organizational issues, the infrastructure and provides economic (through the budget of the State) and administrative support to the judiciary.

On 11th June 1985 the transfer of jurisdiction to ACFI&A from ordinary (civil) courts was completed. This transition also rendered necessary the re-establishment of the General Commission of the State for the Regular Administrative Courts, which is a separate branch of senior administrative judges, who monitors and oversights the operation of administrative courts and assist them without interfering with their judicial task. The General Commission of the State for the Regular Administrative Courts consists of the General Commissioner (who is selected among either members of the General Commission of the State for the Regular Administrative Courts or presidents of the administrative appellate courts), the Commissioner (who is selected among Vice Commissioners) and three Vice-Commissioners (who are selected among judges of the administrative appellate courts). It is assisted by a Secretariat that consists of ten posts of court officers. The General Commissioner, among other competences stipulated in Law 1756/1988, supervises the work flow of administrative courts, issues general instructions for the adoption of necessary measures to facilitate the proper functioning of administrative courts, collects and processes the statistical data of the administrative courts, makes proposals for the training of judges and court officers and each year

submits to the Minister of Justice, Transparency and Human Rights a report reviewing the operation of administrative courts, pointing out any deficiencies and suggesting measures for their proper functioning. The General Commissioner, is also the competent authority (at operational level) that serves as an intermediary between ACFI&A and CS who, pursuant to the Constitution, has the authority for the management of administrative justice.

After the re-establishment of ACFI&A in their current form (in 1985) and the transfer of cases from the CS to them, the number of cases that they adjudicate rose exponentially and as a result there were delays in delivering justice. Since 2008 the Greek legislator adopted several laws in order to speed up court proceedings in administrative justice. In addition, the introduction of ICT in administrative justice turned into a priority. For reasons of consistency to the form of this thesis further information about the introduction of ICT in the administrative justice of Greece as well as the reasons that it was deemed necessary to introduce an integrated case management system are presented in Section 5 (subsection 5.2).

2.6 Summary

In this Section we provided the context to the information talked about throughout this thesis; namely governance, interoperability, interoperability governance, governance in the judiciary, interoperability in the judiciary and the organizational structure of Administrative Justice in Greece. We include relevant literature and recommendations from European institutions on the concepts discussed. We also focus on literature, which is essential for the reader to understand the evolution of 'interoperability governance' up to EIF (2017), so as to better assess both the literature review that we present in Section 4 and the case study we display in Section 5. In describing these concepts we are also pointing to the need for this dissertation. That is the fact that on the one hand the concept 'interoperability governance' is still in its early formative stage and on the other hand, apart from recommendations, there is not –to the best of our knowledge- a comprehensive study on the interoperability governance of a court case management system for the judiciary in Europe. In the following Section we

will present the methodology we used in this dissertation explaining the reasons we consider appropriate the methods we used, i.e. a literature review and a case study.

3 Methodology

3.1 Introduction

The aim of this thesis is to examine the 'interoperability governance layer' of the Integrated Administrative Court Case Management System of Greece (IACCMS) in order to test the boundaries of EIF's (2017) conceptual model regarding the aforementioned concept. In order to achieve this goal, the dissertation is based on two methodologies: a literature review methodology and a case study methodology that are presented in the following subsections.

3.2 Literature Review Methodology

With the purpose to confront the emerging issue of interoperability governance we apply the literature review approach of Webster and Watson (2002) so as to identify the relevant literature and structure the review. Since in the previous Section (subsection 2.3) we have already presented the relevant literature before EIF (2017), we will focus in our methodology on literature after 2015, a time point when we consider EIF (2017) was under consideration and we expect issues of 'interoperability governance' to be the focus of academic research.

Webster and Watson (2002, p. xvi) "recommend a structured approach to determine the source material for the review". Firstly, the search of literature starts with the leading journals searching their database with appropriate keywords, though scanning the table of contents of journals is useful. The authors further propose to examine conference proceedings with a reputation of quality and also to search outside the Information Systems discipline since it is an interdisciplinary field. Secondly, the researcher ought to "go backward" (*ibid*, p. xvi), that is to review the citations of the articles identified in order to decide if there are any prior articles that should be included in the review. Finally, the researcher ought to "go forward" (*ibid*, p. xvi) using the database 'Web of Science' so as to identify articles citing the articles already selected in the previous steps. The literature review is sufficient if the researcher is not finding new concepts in the article set.

Webster and Watson (2002) suggest that the structure of a literature review is concept-centric and not author-centric. The latter approach, which presents a summary of the identified articles, does not synthesize the literature. Differently, the former approach requires the compilation of a concept matrix after reading each article so as to "synthesize the literature by discussing each identified concept" (*ibid*, p. xvii). To this end a concept matrix is pictured as a table that contains a column for every chosen article and rows for every concept that is identified in each article (the researcher should place a mark to every concept an article deals with). The authors further propose, where appropriate, to add a further dimension to the concept matrix in order to "isolate concepts by unit of analysis" (*ibid*, p. xvii). They also insist that tables and figures should be included only if they add value for the reader since a "review succeeds when it helps other scholars to make sense of the accumulated knowledge on a topic" (*ibid*, p. xviii). Additionally, the authors maintain that a literature review should avoid criticism of previous papers and inform the reader about: a) the patterns the researcher identifies in the articles he selected and b) the connection of the articles with previous findings. Moreover, the authors suggest that the researcher should use the present tense in his review, but use the past tense when credit a statement or idea to a person, who may no longer support it anymore.

In this subsection we presented the framework that Webster and Watson (2002) suggest in order to identify and structure a literature review in the Information Systems discipline. It is the framework applied for the literature review that is presented in Section 4, where we identify relevant articles that deal with the concept of 'interoperability governance' after 2015, because previous literature is discussed in subsection 2.3 We consider that this is the appropriate method to present to the reader the evolution of this concept.

3.3 Case Study Methodology

With the purpose to examine the 'interoperability governance layer' (a concept which is at its formative stage) of the Integrated Administrative Court Case Management System of Greece we use the qualitative technique of case research strategy in studies of information systems of Benbasat, Goldstein and Mead (1987). The authors suggest that

the relevant issues to be considered in this methodology are: the unit of analysis, single case vs multiple case designs, site selection and data collection methods.

The unit of analysis, which in this dissertation is IACCMS, meets the three criteria set by the authors for this method to be viable, namely the researcher can: a) study IACCMS in its natural setting, b) understand the nature and complexity of the processes taking place and c) examine an area (interoperability in Information Systems of the judiciary) in which few previous studies have been carried out. Moreover, for the chosen unit of analysis the case study research, which aims at the conduct of research, is a more appropriate method than application descriptions, which analyze a researchers' experience in enforcing a particular application, or action research, in which a researcher is both a participant in the actualization of a system and an evaluator of an intervention technique.

Additionally, Benbasat, Goldstein and Mead (1987) argue that the relevant factors for the researcher to choose a single-case research design are whether the case is revelatory, unique and epitomizes a critical case for testing a theory. On the other hand, the important criteria to choose a multiple-case research design are description, theory building or theory testing, in essence extension of theory. The authors observe that the same factors that point to a single-case research design are relevant for site selection. They further point that the researcher should approach the site with caution, contacting the competent individual who will help to fulfill the case research and making clear the benefits to the organization and that confidentiality is assured. Hence, the researcher will be provided with essential data.

Moreover, the authors claim that multiple data collection methods should be employed, in order to manage triangulation of data, which will support the researcher's findings. The authors refer to five sources of evidence, namely: documentation, archival records, interviews, direct observation and physical artifacts, so as to obtain a rich set of data for the research issue. They also encourage the collection of specific data that are relevant to the conducted research. However, they also point that out that the researcher should be cautious to limitations of the case study. Due to the amount of data that can be collected the researcher should be cautious in record-keeping, since "[t]he researcher's goal should be to collect data in such a way that another researcher could pick it up and immediately understand it and work with it" (*ibid*, p. 374). The researcher should present the data he collected before analyzing them and clearly state his reasoning in

establishing cause and effect. Hence, the readers will be able to follow his path and understand the conclusions he has reached.

In this subsection we presented the framework of Benbasat, Goldstein and Mead (1987) in order to conduct a case study in an information system. We selected this methodology because it is more appropriate than other methods to examine the data we collected within a specific context, particularly 'how' the 'interoperability governance' layer and the 'integrated public service governance' component of the IACCMS work in practice in order to test the boundaries of EIF's (2017) conceptual model regarding the aforementioned concepts, which are in their formative stages. The case study of this thesis, which is exploratory -i.e. it explores the unit of analysis in the collected data and can promote further examination of it- and descriptive -i.e. it describes the phenomena that occur within the data- is presented in Section 5.

3.4 Summary

In this Section we presented the two methodologies on which the thesis is based, the literature review methodology and the case study review methodology. The latter is the 'core' of the thesis, however the former is a prerequisite, along with the background info presented in Section 2 for the researcher (and the reader of this dissertation) to identify the theory on which the case study is based and be able to critically assess it. This is the reason that in the following Section we will present the results of the literature review based on the methodology of subsection 3.1. In the subsequent Section the case study will be presented based on the methodology of subsection 3.2.

4 Literature Review

4.1 Introduction

The literature review adheres to the methodology of Webster and Watson (2002) that was described in subsection 3.1. We decided to search for relevant articles in the databases of 'Scopus' (one of the largest abstract and citation databases that is constantly updated) and 'Web of Science' (an interdisciplinary database that provides access to high quality literature), as these are considered by the academic community the two leading databases for research. The next step was to decide the relevant keywords related to the core concept of the dissertation which is the 'interoperability governance' layer of EIF (2017), as described in subsection 2.3. We consider that this concept includes the concept of 'integrated public service governance'. Our view is that the latter concept emerged in order to distinguish between the central questions of governance in IS that were presented in subsection 2.3 ('what' are the main decisions, 'who' has the mandate to make them and 'how' those decisions are implemented). The methodology is tailored to the concept of 'interoperability governance' and our aim is to identify how the academic community understands this concept and if there are any particular case studies on this field. The further goal is to better assess the results of our case study and reach fruitful conclusions that might build on theory. We made our research in two different time points and for this reason we consider appropriate to present the results in this manner, in two different subsections. In the interim time, i.e. between the two researches of the literature, we began the collection of data for the case study that is presented in the following Section. In order to select the appropriate keywords we firstly thoroughly read the book of Kubicek, Cimander and Scholl (2011) and having identified relevant keywords we made a search on April 2019, which is presented in the following subsection. Having the experience of this search and gaining a better understanding of the core concept through the collection of data for the case study, we later (July 2019) decided to make a further research on the abovementioned databases focusing on keywords identified on EIF (2017). This research is presented in subsection 4.3.

4.2 Literature Research on Time Point 1 (April 2019)

We read the book of Kubicek, Cimander and Scholl (2011), which mainly deals with the issue of organizational interoperability, deriving conclusions after examining seventy seven cases in EU. The authors discuss many issues of interoperability and use the layer distinction of EIF (2010). The authors also tackle the issue of governance drawing our attention to the fact that there are different meanings of the word 'governance' and 'IT governance' (*ibid*, p. 25 - 27). They argue that there is a need for re-conceptualization (*ibid*, p. 58 – 63) and they dedicate two chapters discussing governance regimes for interoperability e-services (chapter 9) and the strategic choices that have to be made when a government wants to set up an interoperable e-service (chapter 10). We choose as relevant to our research the following keywords: "network government", "Strategic network", "interorganisational information systems", "COBIT" and "governance of interoperability".

We made a search on the databases of 'Scopus' and 'Web of Science' from 07.04.2019 to 10.04.2019. For the selection of the relevant articles the following criteria were implemented: The time period of search was from 2015 to 2019. We did not consider it appropriate to search for articles before 2015 because from 2017 onwards there was EIF (2017) that firstly introduced the concept of 'interoperability governance' and because the relevant articles before 2015 have already been presented in subsection 2.3. The articles had to be written in English language and were published either in scientific journals or books or conference proceedings. Using the concept-centric literature review approach we identified articles that dealt directly or indirectly with the concept of 'interoperability governance'. The research produced 499 results at the 'Scopus' database and 153 results at the 'Web of Science' database. After reading the titles and abstracts of the articles we excluded those that were not affiliated with the concept of 'interoperability governance' and we narrowed them to 4 relevant articles.

Yu-Che Chen, et al. (2019) developed a conceptual framework examining studies in the fields of e-government, collaborative public management, and information system success. The authors seek to understand the determinants of the performance of cross-boundary e-government systems. Through their literature review they identified–among others- 'institutional and inter-organisational factors' that affect trust. Thus, they did not specifically dealt with issues of 'interoperability governance' but they indirectly tackled

them examining ‘management and organizational factors’, i.e. the organizational layer of EIF (2017). We further proceeded in a sequential investigation of the references in this article and we did not find any research paper that deals with ‘interoperability governance’ as an individual concept. This result supports the scope of this thesis.

Wimmer, Boneva and di Giacomo (2018) developed a definition of interoperability governance from a literature review and further developed a model template for interoperability governance and tested it examining case studies in EU member states. The authors conducted a literature review on the context of governance at corporate and IT levels and defined interoperability governance “as a governance, which provides the enabling framework, processes, managerial and steering functions such as reference architecture and support instruments for decision making” (*ibid*, p. 2). The authors advanced a model template where they identified four levels at which an actor may perform governance functions:

- the political level for high-level governance functions, such as overall long term decisions (a level the authors introduced in order to tackle the unique nature of public organisations, *see* last paragraph of this subsection),
- the strategic level for the transfer of political decisions into practice,
- the tactical level, for implementation-oriented planning activities such as developing standards and
- the operational level for the provision of public services or interoperability building blocks.

They further tested this model reviewing selected case studies at different member states of EU and found commonalities in interoperability governance models, providing an overview of the different governance structures. The definition of governance is similar to the one provided by Pardo, Nam and Burke (2012) and the model template of Wimmer, Boneva and di Giacomo (2018) corresponds to the seven e-government interoperability capabilities identified by Pardo, Nam and Burke (2012).

However, the abovementioned levels do not correspond to EIF (2017) conceptual framework, but they are similar to the Control OBjectives for Information and related Technology (COBIT) framework from the Information Systems Audit and Control Association (ISACA). COBIT is a framework for the governance and management of enterprise IT. Its aim is to help professionals to design an approach to govern and

manage information technology in organizations. As Steuperaert (2019) argues COBIT (2019) "is built around the concept that a good governance system requires a set of different governance components (processes, structures, skills, behaviors, etc.) cooperating in a holistic manner" (*ibid*, p. 16). The same author in an article describing the previous version of COBIT indicates that "the term IT Governance is defined as the balance between three aspects: benefits realisation, risk optimisation and resource optimization" (Steuperaert (2017), p. 67). As it is evident from the official COBIT (2019) framework (p.20), in this framework governance and management is interlinked in five domains:

- the Evaluate, Direct and Monitor (EDM) domain, which refers to the functions of the governing body of the organization,
- Align, Plan and Organize (APO) which deals with the strategy,
- Build, Acquire and Implement (BAI) which deals with the implementation of the strategy,
- Deliver, Service and Support (DSS) which deals with the operational delivery and
- Monitor, Evaluate and Assess (MEA) which deals with the assessment

These domains could be applied in a governance structure of private organizations, but not to public organizations due to legal mandates and administrative rules that apply to the latter. In the public sector there are many stakeholders involved who work across various levels and according to different regulations. These provisions are imposed to public organisations and affect their governance structure. That is, they affect the governance bodies that have been set up and they further affect the relationship between different public organisations that want to make their information systems interoperable, since they might have different goals and work processes. Our view is that the COBIT (2019) framework and the framework proposed by Wimmer, Boneva and di Giacomo (2018) excel at mapping an existing governance structure, but do not sufficiently tackle the central questions of interoperability governance: namely 'what' are the main decisions, 'who' has the mandate to make them and 'how' are those decisions implemented, that is the issues that we thoroughly discussed in subsection 2.3. The sequential investigation of the references in the article of Wimmer, Boneva and di Giacomo (2018) directed us to the articles that we refer to also in Section 2.

4.3 Literature Research on Time Point 2 (July 2019)

After the literature research on time point 1 we began the gathering of data for the case study. While gathering the data we acknowledged that we had a better command of the concept 'interoperability governance' and we decided to make a new search (in essence, 'going backwards', as was described in subsection 3.2). We chose to identify relevant keywords from EIF (2017), especially the part that deals with the interoperability governance layer. We choose as relevant to our research the following keywords: "interoperability governance", "organisational interoperability solutions", "governance interoperability enabler", "interoperability governance model", "integrated public service governance", "interoperability agreements", "IT governance model" and "e-governance". The last keyword was too vague, since it returned too many articles that mainly dealt with the evolution of the term "e-government" to "e-governance" and so we decided to abandon it.

We made a search on the databases of 'Scopus' and 'Web of Science' from 23.07.2019 to 25.07.2019. For the selection of the relevant articles the following criteria were implemented: The time period of search was from 2015 to 2019, as we did in the previous search. The articles had to be written in English language and were published either in scientific journals or books or conference proceedings. The research produced 12,675 results at the 'Scopus' database and 8,630 results at the 'Web of Science' database. We further limited the results to articles that came from the field of "computer sciences" and the research produced 1,114 results at the 'Scopus' database and 362 results at the 'Web of Science' database. After reading the titles and abstracts of the articles we excluded those that were not affiliated with the concept of 'interoperability governance' and we narrowed them to five relevant articles. One of them was that of Wimmer, Boneva and di Giacomo (2018), which we have already discussed in the previous subsection. Therefore, four relevant articles were identified in this literature research. All the articles, as regards the concept we are searching, dealt with the issue of the models of governance, that we presented in subsection 2.3, making an argument in favor of a 'hierarchy', or 'network' or a mixed type of them.

Sundberg (2018) introduced the concept of 'democratic interoperability', as he looked for interoperability enablers that interfere as little as possible with the constitution of a country via a case study of a Swedish portal for business registration and

management. In assessing the case study the author identified four enablers that minimally interfere with the constitution of a country. One of the enablers is 'a dedicated e-government agency' which is responsible for a nation-wide project that requires interoperability of different public sector organisations. Therefore, the author as regards the 'interoperability governance' concept dealt only with the issue of the competent governing body making an argument in favor of a 'hierarchy' though in his concluding remarks he stated that "in some cases, decentralization strengthens the integrity of the individual and autonomous actors, while in other cases it weakens actors by creating lock-in effects due to inflexible structures" (*ibid*, p. 6 -7).

Scholl and Alawadhi (2016) analyzed the case of the City of Munich overhaul of its ICT structures, focusing on the dimension of governance. They defined the concept of 'smart governance' as "the capacity of employing intelligent and adaptive acts and activities of looking after and making decisions about something" (*ibid*, p. 22). They further presented in detail the various governance bodies (the program office, the steering circle, the extended program group, the informal senate, and the 3+1 advisory board) the City of Munich introduced in order to achieve its goal pinpointing the crucial processes that resulted in a change of the governance structure, during the execution of the program. Furthermore, the authors emphasized that the stakeholders proposed a new ICT governance model (the 'Three Houses – One ICT' model), which focused on each stakeholder's core competencies, and the municipal council accepted it, though an external report proposed a different structure. Therefore, the authors as regards the 'interoperability governance' concept dealt only with the issue of the competent governing body making an argument in favor of a 'network'. They concluded that "a number of elements can be identified that appear to jointly promote successful change program/project outcomes including a widely shared perception of the urgency and necessity for change, an unfolding shared vision of the final outcome of change, agreed guidelines and principles, the capacity to work through disagreements, a process orientation for the organization of the business, a sense of the strategic importance of the subject matter, social and professional skillfulness in program/project execution, leaders' committed program/project sponsorship, balanced and negotiated outcomes, and, finally, mutual respect and trust among stakeholders" (*ibid*, p. 40).

Nielsen (2019) presented the Danish approach to governance structures as regards the digital transformation of the public sector. In essence the Danish model consists of

two agencies, the Danish Agency for Digitization (DIGST), which is responsible for the strategy and action plans and the Portfolio Steering Committee (PSC), which is responsible for the executing of the digital strategy. Additionally, for each action plan initiative, a project steering committee is established by PSC to ensure the successful implementation of the adopted program. The author considered a successful factor the inclusion in the PSC of key stakeholders in the projects, namely the management committees of Danish Regions and Local Government of Denmark. Therefore, the author as regards the 'interoperability governance' concept, dealt only with the issue of the competent governing body making an argument in favor of a 'network'.

Boudreau and Bernier (2017), introduced the concepts of vertical governance, i.e. "a management method that is hierarchically organised and structured according to formal rules laid down by the center" (*ibid*, p. 604, with further citation) and horizontal governance, i.e. "a method of administration based on trust and collaboration among a network of organisations with no or little authority between them, with the aim of offering joint solutions to often complex problems" (*ibid*, p. 605, with further citations). They proposed a governance model to coordinate interorganisational relationships that uses both vertical governance (hierarchy) and horizontal governance (network). They studied five cases of integrated electronic service delivery in Quebec, which had established horizontal governance structures to solve interoperability issues. The authors concluded that there are limits to horizontal governance structures and in order to overcome them they proposed the addition of vertical governance mechanisms, such as a central coordinating authority, that would be responsible for setting interoperability standards, modernizing administrative processes and providing a clear digital strategy. Therefore, the authors as regards the 'interoperability governance' concept, dealt only with the issue of the competent governing body making an argument in favor of a mixed governance structure.

4.4 Conclusions

From the literature review we conducted in time points 1 and 2 we did not identify any case study on the governance structures that the judiciary established in order to promote interoperability, which is the issue we examine in this dissertation. The

literature is fragmented and is not using a common framework. Usually the authors either introduce a new framework or base their examination in frameworks of other fields. This could lead to inconsistency and is difficult for the reader to thoroughly follow the results of each research. We hold that it is imperative to have a consistent framework to examine interoperability of information systems and we presume that, at least in Europe, EIF (2017) is a good starting point. Regarding the model of governance, although there is not any particular model that is dominant, all authors agree that for interoperability purposes the inclusion of as many stakeholders as possible is important. In the next Section we will present the case study on IACCMS and we will analyze its governance structure on issues of interoperability in a twofold manner; that is we will both investigate if the IACCMS followed the recommendations of EIF (2017) and also assess EIF (2017) pursuant to the practical solutions that IACCMS provided.

5 Case Study

5.1 Introduction

In this Section we will present the case study of the Integrated Administrative Court Case Management System of Greece (IACCMS). As was conferred in subsection 3.3, the unit of analysis is IACCMS. We use a single-case research because it is a critical case to test EIF (2017) and, essentially, towards building theory in interoperability governance which is still in its developmental stages. The research questions are presented in subsection 5.3. We collected data from many sources so as to triangulate the information we derived from them. The data were collected between May 2019 and July 2019 from: a) archival records (in Greek): the public procurement and the contract notice of IACCMS, as well as the contract of 2005 regarding the computerization of eleven administrative courts of first instance (previous IT project in administrative justice), b) documentation (in Greek): the guidelines, via emails, that the Central Organisational Committee (henceforth, COC) issued during the transition and operational phases of IACCMS, the documents (deliverables) that the contractor issued regarding the interoperability of IACCMS and relevant legislation, c) a physical artifact: the Interoperability Quick Assessment Toolkit (IQAT), that was developed from the ISA² Program of the European Commission and d) direct observation: due to the fact that the author is a judge at the administrative court of first instance at the city of Serres, we were able to observe the day-to-day operation of the system, discussing relevant issues with court officers from the registrar of the court as well as with the president of COC and with a court officer of the ICT Division of the registrar of the Council of State; those discussions were not unstructured (or open-ended) interviews, though we tried to be 'active listeners' and after each discussion we took notes (in Greek) of relevant issues that were clarified; the data from this category represent our own interpretation of what has been observed. Before presenting and analyzing the data we collected, we will, briefly, display the introduction of ICT in the Administrative Justice of Greece. After that we will introduce the research questions and then we will present the data we collected along with our findings.

5.2 Establishment of ICT in Administrative Justice of Greece

In this subsection a brief overview of the introduction of ICT in Administrative Justice of Greece is presented -as described both in the public procurement of IACCMS and the 2014 e-justice action plan of JT&HR Ministry- along with the reasons that supported the initial formal structure of IACCMS.

From 2000 onwards CS started the computerization of its registrar for the workflow of judicial proceedings before the court (case management) and also the integration of existing applications; it also created a database with all its judgements. In order to facilitate this transition it established an Information Technology (henceforth, IT) Committee consisted of judges and an ICT Division within the registrar of the court consisted of court officers with IT background. In 2006 the integrated case management system of CS was operational; it contained the court's jurisprudence, the workflows of the registrar (computerization of proceedings), a management information system (MIS) and a web site. The computerization of ACFI&A was fragmented, since each court was perceived (from an IT point of view) as an autonomous entity; that is each court was responsible both for the administration of its data and for the communication with external users (including other administrative courts) and there was a lack of IT personnel. An attempt from the JT&HR Ministry introduced, through public procurement in 2005, computerization to a limited number of administrative courts (11 administrative courts of first instance). As a result only some courts (two administrative courts of appeal and twelve administrative courts of first instance) had computerization of part of their work flows, but there was no uniformity and it was impossible for the different IS to communicate (even those that had been introduced with the same public procurement of 2005 and thus used the same software) and to interoperate with IS outside of the judiciary (e.g. lawyers, public administration, citizens), thus hindering the efficiency of justice. Due to local configuration of systems there was local implementation of work flows and therefore it was impossible to produce uniform statistics via electronic means; the latter was further hindered by a lack of an integrated electronic case management system. There were few digital archives and court decisions were available only to the court that issued them (silos), with the exception of judgements of CS. In addition, there were obstacles to on-line access of administrative justice, since the courts that had introduced IS had their own web page. Furthermore, the lack of funds due to the drastic

reduction in budgetary resources made untenable the maintenance cost of infrastructure. In essence, the proper management of ICT in ACFI&A was impossible.

As was mentioned in subsection 2.5, JT&HR Ministry provides the means necessary to meet the organizational and operational needs of the courts. Beware of the issues described in the previous paragraph JT&HR Ministry in its 'Action Plan for e-justice and administrative improvement' (2014, 9th edition) concluded that "currently there has not been implemented a consolidated strategy for the introduction of ICT in justice and therefore there is little utilization of ICT in justice" (*ibid,* p. 22 translation provided from author) a finding that is consistent with the observation of Lambropoulou and Oikonomou (2018), p. 115 that "the 'default style' of governance in Greece is largely 'path dependent'". Therefore, the JT&HR Ministry decided, among other issues regarding e-justice, that it was optimal to have two separate IT systems, an integrated court case management system for administrative justice and a separate one for civil and penal justice, since administrative justice in operational and organizational level is distinct for civil and penal justice. The JT&HR Ministry further decided that the IS will be under the 'direct supervision' of the CS, which would be the contracting authority for the public procurement of the new IS and also the competent authority for the operation and maintenance of the IS. In our view, JT&HR Ministry reached this decision -in essence a central governance structure for the planning, procurement, operation and maintenance of the new IS- due to four factors: i) the previous success of the introduction of ICT from CS, which had an integrated case management system that was also the most advanced, related to the ones introduced by ACFI&A, ii) drawbacks in the introduction of ICT in 11 administrative courts of first instance with a public procurement of 11 different IS, iii) the acknowledgment of the fact that the introduction of ICT in administrative justice is a tool that can affect the independence of judges who are competent to review acts of the Administration and iv) the observation that both judges and members of the registrar of ACFI&A had displayed a unique voluntary spirit (both as regards initiatives and implementation) in introducing, without central coordination ICT in ACFI&A.

5.3 Research Questions

As was thoroughly addressed in subsection 2.3 (especially 2.3.2) there are three basic forms of governance regarding interoperability in IT projects: a 'hierarchy', a 'network' or 'federation' and a 'market'. It is evident from the reports presented in subsection 2.3.3, that in order to secure judicial independence (a constitutional requirement to all member states of CoE) the recommended form of governance for an IT project of the judiciary is a hierarchy; i.e. centralization, with the active involvement of judges in the relevant decisions, though mixed (multidisciplinary) teams of judges and technical experts (either court officers or not) are a factor of success. The aim of this thesis is to test the boundaries of EIF (2017) in studying the 'interoperability governance layer' and the 'integrated public service governance' component of IACCMS, since it is unlikely that a single form of governance will practically address all the issues regarding an IS for the judiciary. Therefore, the relevant questions are the 'what', 'who' and 'how' questions of IACCMS; that is 'what' were the main decisions, 'who' had the mandate to make them and 'how' those decisions were implemented. If we redirect those questions to EIF's (2017) interoperability model, the 'who' and 'how' questions deal with the provision of resources and structures that are interoperable and also address the issue of whether an existing actor or a new –permanent or temporary- actor will deal with those decisions. The 'what' question refers to the management of the four interoperability layers and in essence covers: the decisions on standards for the technical and semantic levels, the decisions on business processes for the organizational level and the decisions for changes in the law for the legal level. We also considered appropriate to examine the above mentioned three questions from two different views: a) the integration of legacy systems in IACCMS and b) the interoperability of IACCMS with external IS.

5.4 Data Presentation

In order to analyze the research questions (see previous subsection) we will explore the governance structure of IACCMS (i.e. main stakeholders, structure of governance, decision making process) throughout the cycle of the project, emphasizing on interoperability issues. We consider it appropriate to follow, in a linear way, the

phases of the project; that is before the initiation of IACCMS and during the implementation of IACCMS.

5.4.1 Before the initiation of IACCMS (planning phase)

As stated in subsection 5.2, as early as 2006 CS had developed an integrated case management system for its operations, while some ACFI&A were introducing their own unique IS (silos). The computerization of ACFI&A was fragmented and there was no uniformity. There were few –isolated- digital archives, but the different IS did not communicate between them, thus hindering the efficiency of justice. Thus, the JT&HR Ministry decided that the CS would lead the initiative to implement an integrated case management system, which would be based on the IS that CS already had as it was the most sophisticated of the existing IS in administrative justice. The new IS, among other things, would: i) coordinate, through digitization, the work flows of all ACFI&A (court case management system), ii) create one uniform digital archive of all court decisions, iii) include a management information system with a business intelligence system, in order to have uniform statistics and assess future strategies and iv) introduce a 'one-stop-shop' portal for external users. To achieve objective 'iv', interoperability with external IS had to be addressed. To achieve objectives 'i', 'ii' and 'iii', integration of legacy systems into IACCMS had to be made available. The architecture of the main infrastructure of IACCMS is depicted in the following figure (5) taken from page 54 of the contract notice.

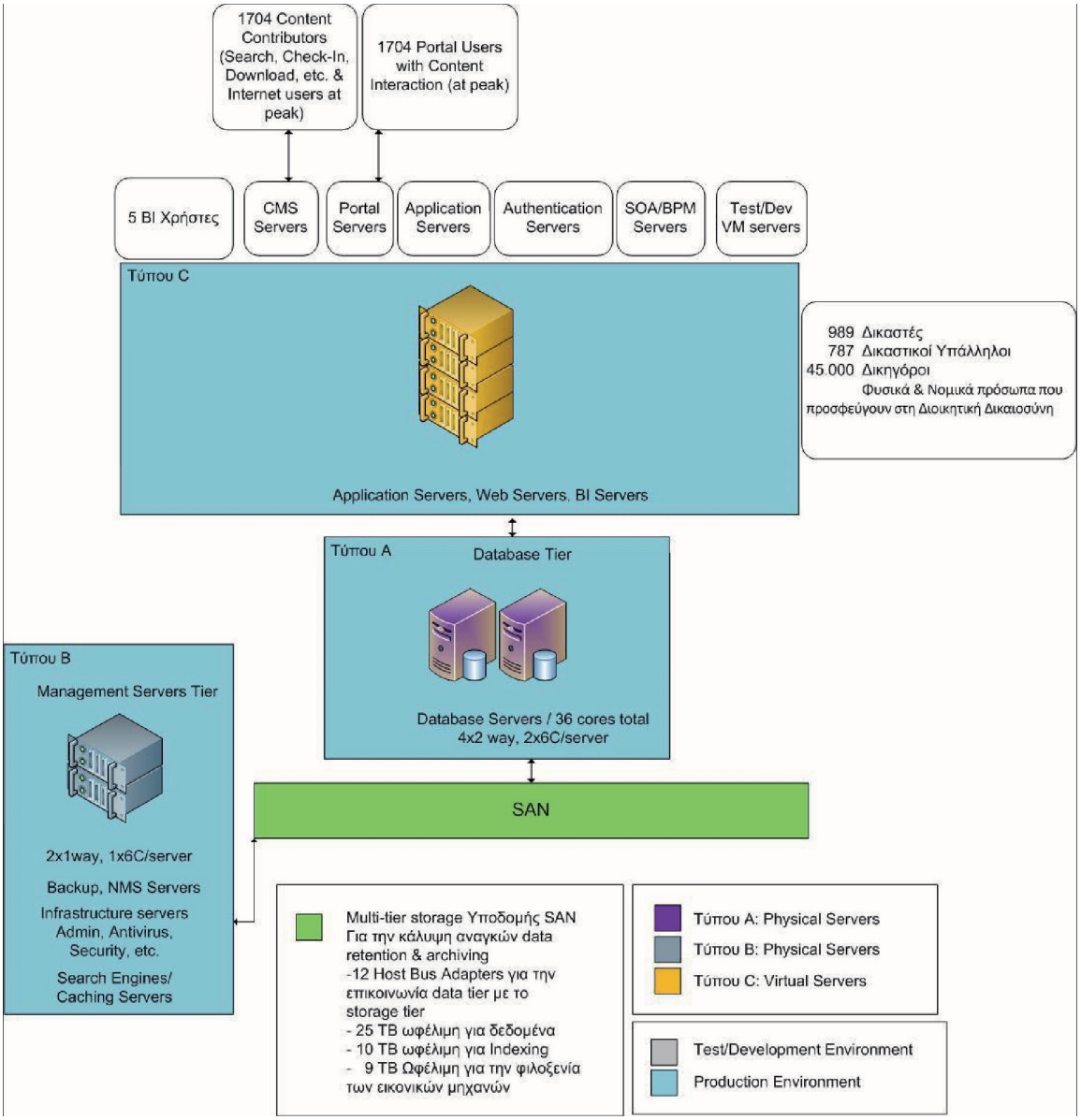

Figure 5 Architecture of main infrastructure of IACCMS.

To achieve the above-mentioned objectives the JT&HR Ministry, which is responsible for the infrastructure of courts in Greece, decided to finance a new IS through public procurement with the CS as the contracting authority and also as the authority responsible for the operation and maintenance of the new system. The JT&HR Ministry pinpointed (through its 2014 e-justice Action Plan) that there would be integration of formerly separated workflows (business processes) and digital archives into a new centralized system. As stated in subsection 2.5, CS is responsible for the rational operation of Administrative Justice and thus had the authority to introduce a new IS. From a governance point of view, the JT&HR Ministry option was to use an existing

body –the CS- that, pursuant to its experience, would set the standards of the new IS. Thus, the contract notice was delivered from the CS in late 2013 and the project was financed from JT&HR Ministry. Time constraints to the funding of the project had as a result the contract notice to be delivered before the publication of the 2014 e-justice Action Plan and thus we understand that there was informal communication on this issue between CS and JT&HR Ministry. The option to introduce an integrated case management system for administrative justice -according to the data we collected- was not resisted either from the CS or other administrative courts.

The above described interactions are depicted in the following figure (6).

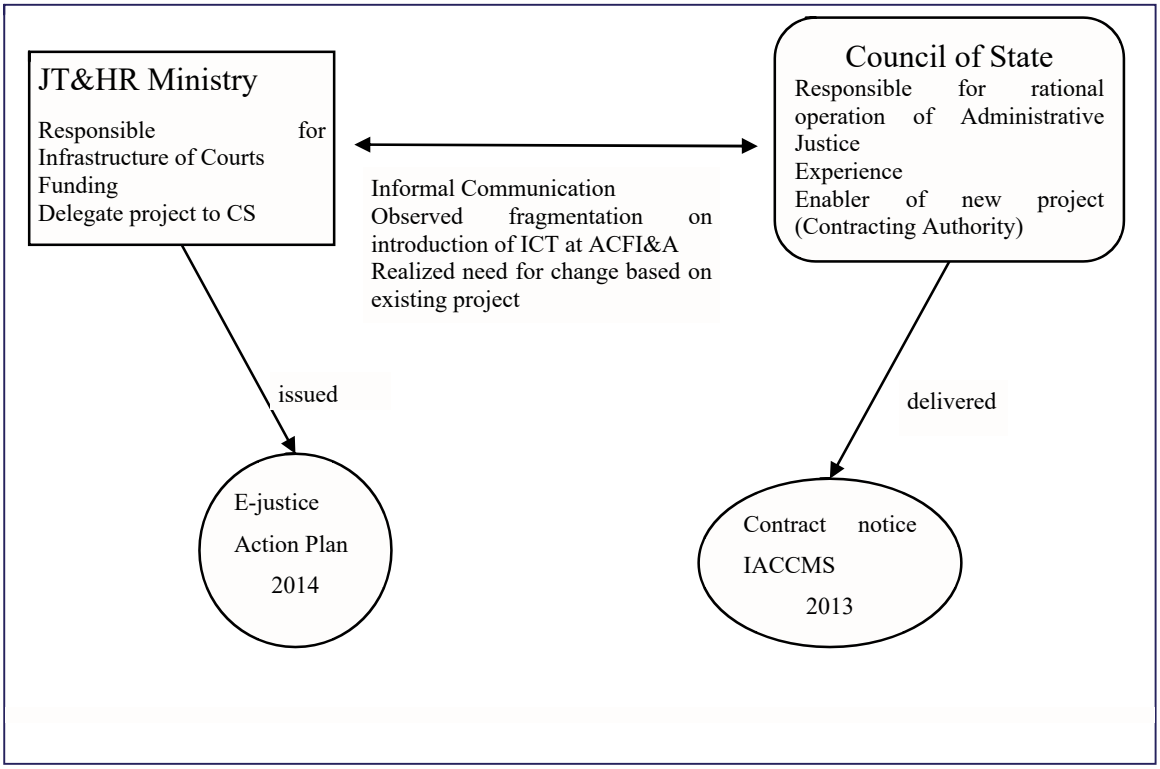

Figure 6: Interaction between JT&HR Ministry and CS for IACCMS

Regarding the relevant legislation (legal layer of interoperability) laws that influenced interoperability issues of IACCMS were enacted even before the planning of the new system.

Firstly, Law 3979/2011 provided that a Greek Interoperability Framework should be established in Public Administration. It was followed by Ministerial Decision ΥΑΠ/Φ.40.4/1/1989/10.04.2012 from the Ministry of Administrative Reform and E-Governance, that established the Greek Interoperability Framework, which was based on

EIF (2010) and provided the technical and semantic standards that all IS of the public sector had to meet in order to be interoperable. It has been ruled, with CS Opinion 38/2013 on the Presidential Degree for the e-filing of cases in Administrative Justice, that this legal framework does not directly apply to courts, public prosecutors offices and their registrars, though it is useful to be considered on issues of e-justice because it regulates similar issues. Thus, CS made all the relevant decisions regarding the standards (i.e. technical and semantic layers of EIF [2017]) of IACCMS during the planning phase of the new IS. CS required, through the public procurement of the project [p. 64 of contract notice], that IACCMS would be compatible with the Greek Interoperability Framework, using open standards and -regarding semantic interoperability- using a 'hybrid approach for the creation of ontologies' (Annex II of the above mentioned Ministerial Decision). The contract notice further acknowledged two dimensions of interoperability (p. 62 – 63): i) a technical one, dealing with the exchange of information between IACCMS and other IS and ii) an operational one, dealing with APIs in order to facilitate the support of external users. Thus, regarding interoperability the contract notice (section C 3.3.8) specified that IACCMS should have a Service Oriented Architecture (SOA-based) pursuant to standard 'OASIS SCA' and more specifically that the system should be able to support the following standards [*ibid*, §121.8]: SOAP 1.1/1.2, WSDL 1.1, WS-Security 1.0/1.1, WS-Security Policy, WS-Policy, SAML, REST, MTOM, XSLT 1.0, XQuery, XPath 2.0, HTTP 1.0/1.1 and TLS/SSL. Also, regarding web services, there should be support of [*ibid,* §121.19]: XML, SMTP, HTTP, HTTPS, FTP, FTPS, MIME, SMIME. Finally, the types of SOA that the new IS had to support were [*ibid* §121.48]: Service Bus Services, BPEL-based workflows and business processes, WSDL-based services (such as service endpoints), XML-based files (such as xsd, xslt etc.), Code of composites/applications and Request/Response Ports. As the contractor mentioned (deliverable P1.7 'Interoperability'), the exchange of data between IACCMS and third IS will be held through web services; the communication for the exchange of data will occur through 'Hypertext Transfer Protocol Secure' (HTTPS) and web services will use 'Simple Object Access Protocol' (SOAP), which is based on XML and has three components: Discover Agency, Service Provider and Service Requestor. It was decided that the 'National Public Administration Network' (named syzefxis: a stable and fast computer network based on the IP Protocol that is offering voice, video and data

services to public sector) would be used for the communication and exchange of data inside IACCMS (between courts) and also between IACCMS and external IS.

Secondly, in 2012, after consultations between CS and JT&HR Ministry, articles 42 (regarding CS) and 49 (regarding ACFI&A) of Law 4055/2012 provided for the e-filing of cases in administrative justice and the e-notification of documents from court's officers to the parties, thus interoperability between courts IS and external IS was necessary. Regarding the e-filing of cases (application to initiate proceedings), the following year, Presidential Decree 40/2013 specified the details of the procedure both for CS and ACFI&A; however, the e-filing of cases was introduced, on a voluntary basis, only for the CS and not ACFI&A, since not all of them had IS. In the following figure (7) the influence of the above described legislation to the Contract Notice of IACCMS is presented.

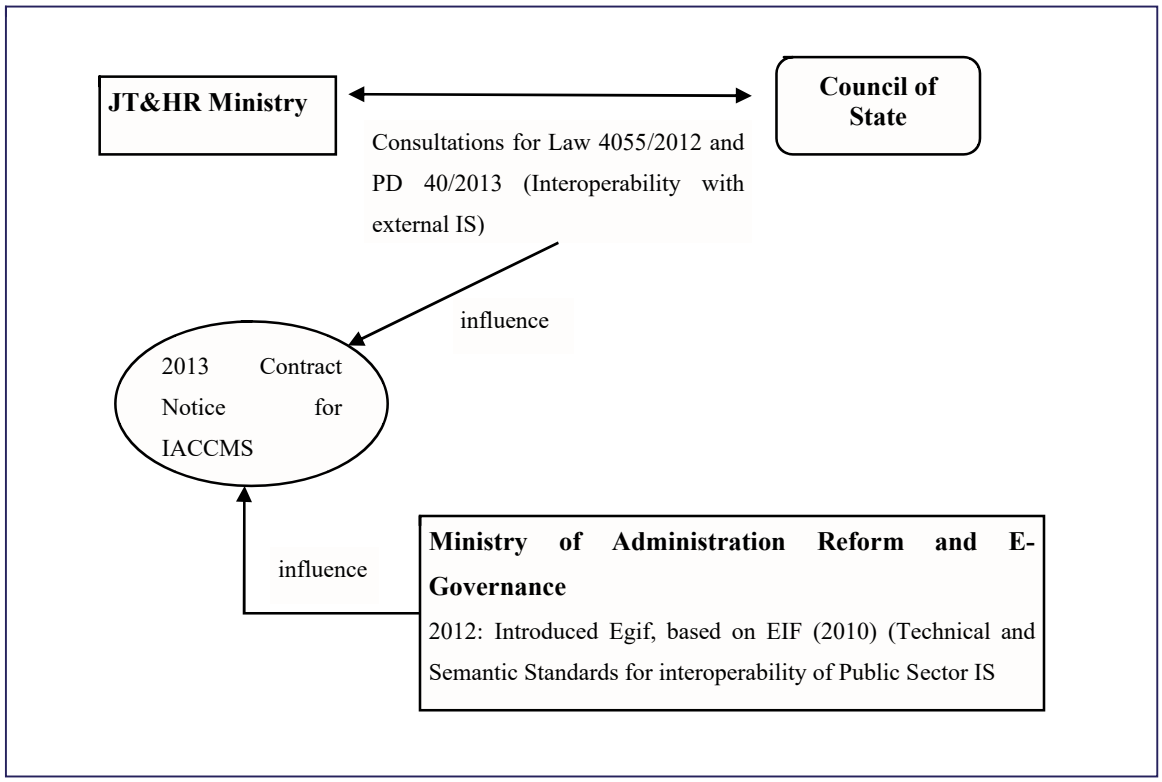

Figure 7 Legislation that affected interoperability in IACCMS.

Regarding the governance structure of IACCMS, CS, in addition to the IT Committee and the ICT Division of the Registrar, also established a Tender Committee to supervise the execution of the contract (see p. 13 of the contract notice). On 30.03.2015 the President of CS sent a written communication to all the Presiding judges of ACFI&A in order to inform them about the public procurement of IACCMS and its benefits to administrative justice, to ask for their collaboration and also the collaboration of judges and court officers they supervise and to support the contractor in two ways facilitate the contractor's access to the infrastructure of courts and provide the essential information that the contractor requires from each court. Moreover, the General Commissioner aided CS in being the authority that facilitated the communication between the Tender Committee, the contractor and ACFI&A throughout the duration of the contract; for example the General Commissioner: i) with document 163/28.01.2015 informed ACFI&A about the delivery times of the hardware to each court and to the preparations that had to be made and ii) with document 238/03.02.2015 informed ACFI&A about the necessary adjustments needed for: a) the connection of some courts to the 'National Public Administration Network' (named syzefxis), that is the computer network for the public sector organizations and b) the upgrade of the infrastructure of courts that were already connected to syzefxis. It is noteworthy that CS anticipated the need for flexibility and provided in the contract notice (p. 49, at A2.4, with the heading 'success factors of the project') that mixed working groups would have to be established where members of CS and the contracting authority will participate. The following figure (8) displays the governance structure from the planning up to the piloting phase of the project.

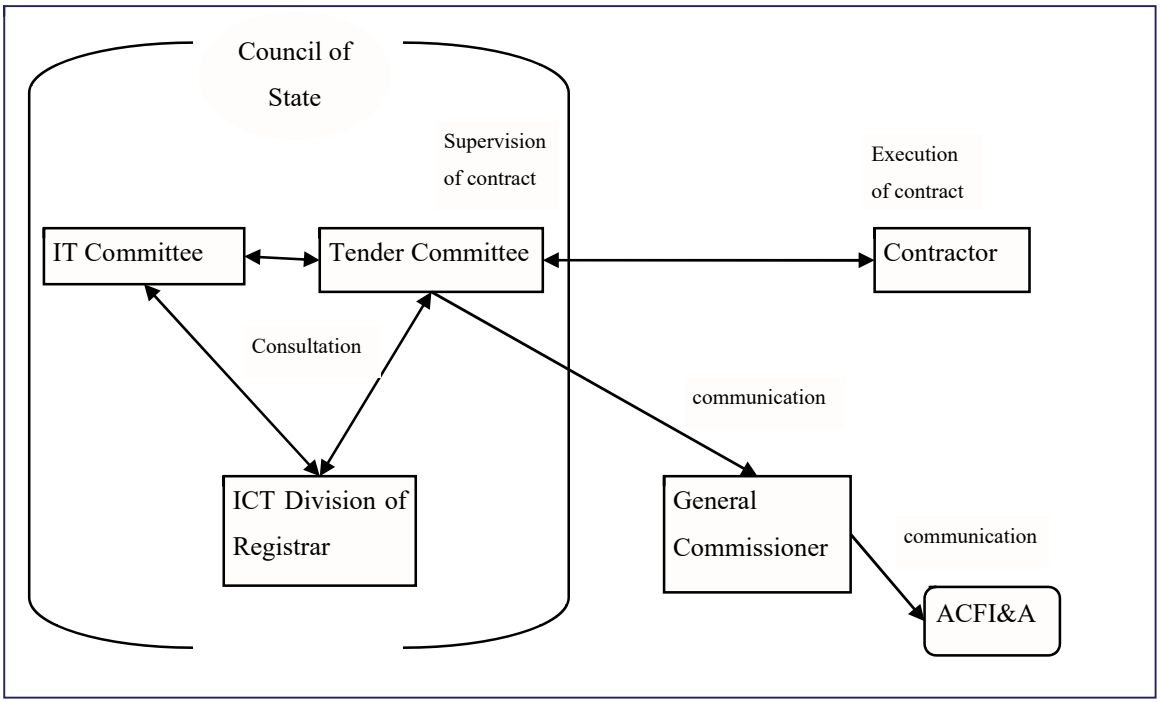

Figure 8 Governance Structure of IACCMS from planning up to piloting phase.

5.4.2 During the implementation of IACCMS (Piloting and Operational Phases)

The governance structure changed during the life cycle of the project. The contract was signed on 04.07.2014, the piloting phase of IACCMS started on September 2015 and the IS was delivered to CS on 30.11.2015. During the piloting phase of the new system it was observed that there were problems regarding the integration of ACFI&A and therefore there was a delay of the rolling out of the new IS to ACFI&A (COC email of 02.10.2015) up until June 2016, though all courts were incorporated on September 2016. Nonetheless, ACFI&A had to confirm to the Tender Committee (document οικ.596/18.11.2015) by 20.11.2015 that they were 'operational ready', i.e. that the configuration on local devices was ready to support the operation of IACCMS or else explain –in detail- the dysfunctions that arose. Due to the amount of feedback, a dedicated web service was developed using the open source issue tracker named "Mantis Bug Tracker", in order to speed the communication between ACFI&A and the contractor (COC email of 21.12.2015); this way of communication was compulsory from 12.09.2016 onwards (COC mail of 08.09.2016). In order to further support the transition from the piloting phase to the operational phase of ACFI&A the General Commissioner asked each of the presiding judges of the nine administrative courts of appeal to establish

a committee that would be competent to monitor the functionality of the new IS in each administrative court of appeal and in the administrative courts of first instance that are in its region. Accordingly, the General Commissioner established the Central Organisational Committee (COC) for the IACCMS; an informal body that consisted of both judges and court officers and its aim was (and still is) to monitor and assist (support) the General Commissioner and ACFI&A during the operation of the new IS (informative note 102/10.02.2017 of COC addressed to the Minister of JT&HR regarding the introduction of IACCMS to ACFI&A). The data migration was easier for the courts that already had an IS, with the notable exception of the Administrative Court of First Instance of Athens (the biggest court in Greece as regards volume of cases and personnel) because of the simplified data entry method that it used. COC issued guidelines addressed to ACFI&A in order to facilitate the transition to the new IS and to guide the registrar of courts regarding the new business process rules.

The General Commissioner also established two ad hoc Committees, one for the adjustment of the content of court records of the registrar to the new IS and one for the coherence of necessary arrangements in order to facilitate the transition of existing databases and webpages of courts to the new IS. In particular, the two ad hoc Committees worked for three months in relation to the documentation (books of registrar) of ACFI&A, since it was observed that there was not uniformity among all ACFI&A. There was local configuration of each IS regarding business processes of the registrar; practically, there was local configuration according to the view that each court had for the optimum organization of its operations. The two ad hoc Committees received feedback from court officers and they reached conclusions, which were submitted to the contractor, who made the necessary configurations to IACCMS, so that there could be a uniform workflow for all ACFI&A. The two ad hoc committees distributed their work to ACFI&A via COC. For instance COC delivered (COC mail of 13.01.2016) a table of the data entry: i) of the operative part of the judgment and ii) of the representation of parties from lawyers; there were observations and finally a new table of the data entry of the operative part of the judgment was sent (COC mail of 24.05.2016). In the following figure (9) the decision making process is depicted for the uniform workflow, that is a key aspect for the integration of legacy IS to IACCMS and in essence a feature of the organizational interoperability layer.

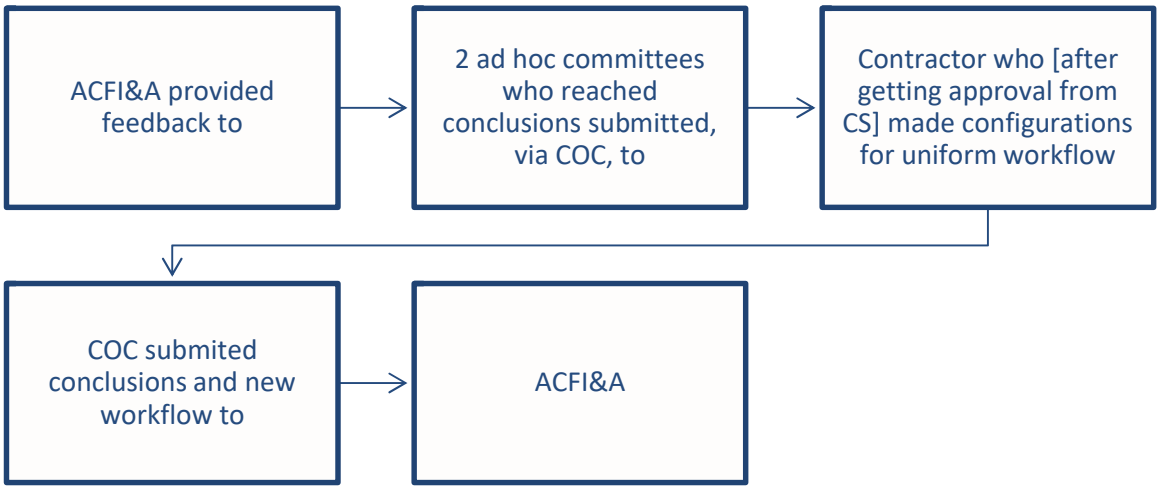

Figure 9 Decision making process for uniform workflow.

Furthermore, the contractor –duly obliged from the contract- provided training to judges and court officers regarding the operation of the new system. The Tender Committee together with the contractor devised the timetable of the training sessions, which was distributed to ACFI&A from COC (COC document 921/30.04.2015) and to CS from the Tender Committee. However, since not all judges and court officers were available to the delivered timetable, there were changes, according to the demands of certain courts (COC email of 14.05.2015). During the period of data migration, it was evident that members of the registrar needed further support, so a group of ten experienced members of the registrar was established, that made in sight visits at the courts that were in need of further guidance; in essence this group acted as a change support mechanism. This unofficial network worked up until the operation of IACCMS to all ACFI&A on September 2016.

COC established direct communication with each court and the CS, acting as an intermediary regarding the problems that ACFI&A had to anticipate, for example COC collaborated with ACFI&A in order to identify (and clean) duplications in the mail accounts of all personnel (COC mail of 13.03.2015). COC also notified ACFI&A on crucial steps when there was a need for cooperation, e.g. at the 'management meeting' of 24.04.2015 among the IT committee of CS, the tender committee, COC and the contractor there was a decision on the redistribution of local switches among CS and

ACFI&A; COC disclosed the decision, along with a redistribution list to ACFI&A via email on 29.04.2015. The governance structure during the piloting and early operational phase of IACCMS is depicted in the following figure (10).

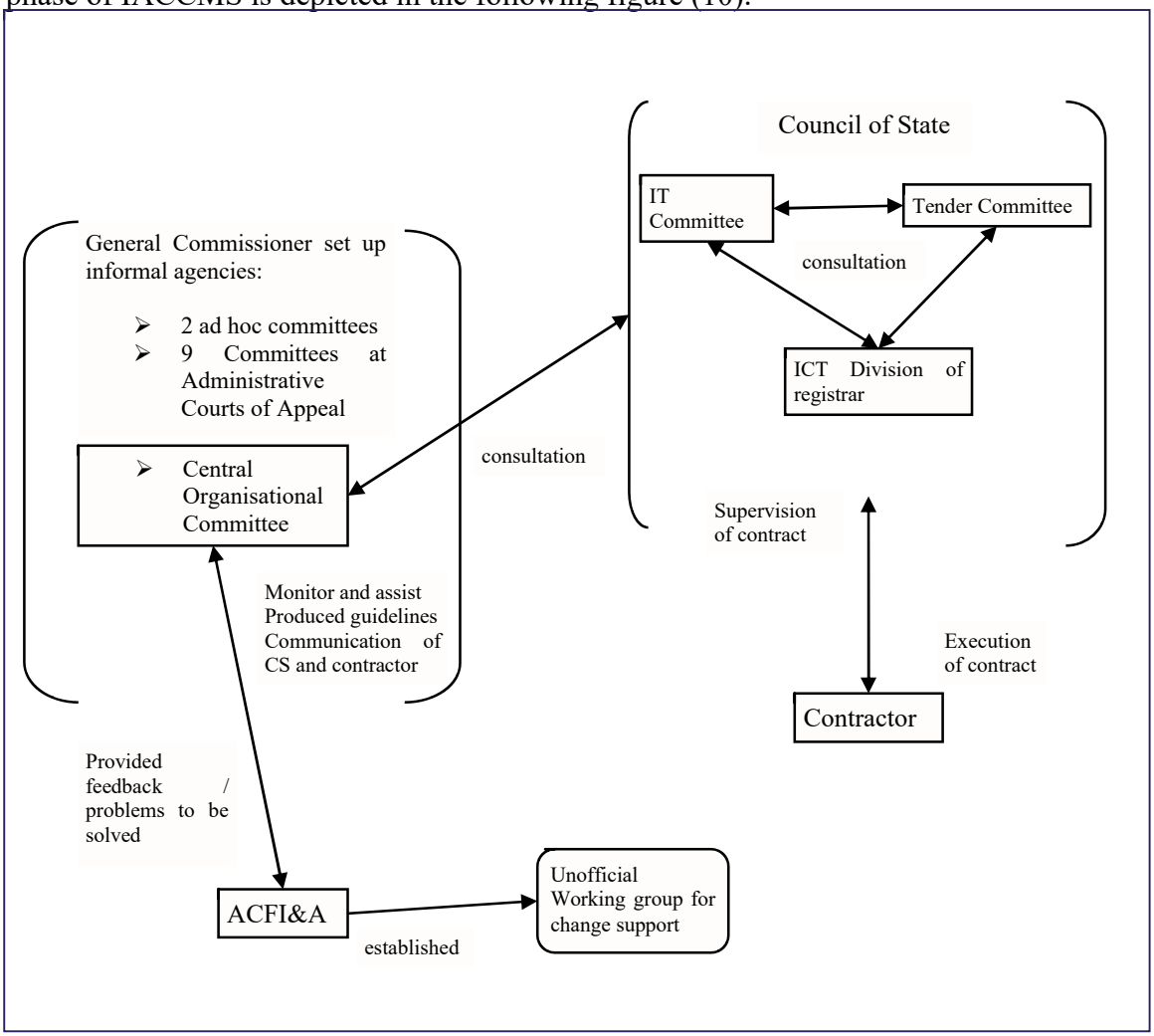

Figure 10 Governance Structure during piloting phase and early operational phase.

Since 2017 only COC remained operational and is consulting with the permanent IT committee of CS; COC was restructured, it is consisted only of court officers and it remains an informal body that is supervised by the General Commissioner. The governance structure was maintained as a hierarchy, since CS was (and still is) solely responsible to decide on all issues relevant to IACCMS. However, CS does not act unilaterally, it consults COC –which has an active role- in order to address the needs of ACFI&A (stakeholders). In essence, COC represents ACFI&A in the governance structure of IACCMS, during meetings whenever there are issues to be addressed; nevertheless CS has 'the final say'. Regarding current management issues, COC has

concurrent authority with CS. For example, the contract required the provision of laptops to judges; the laptops were distributed according to the organization chart of ACFI&A, remarks of the General Commissioner, a project survey of the contractor and the approval of the Tender Committee. However, during the allocation of laptops, issues arose regarding their ownership, since it was not clear whether a judge that is transferred from one court to another should keep the laptop that was already given to him or if he should return it to the court and obtain a new one to the court that he is going. In document O.310/10.06.2015 the Tender Committee expressed the view that the laptops are granted to judges only for usage during their tenure; it further acknowledged that the decision making on this issue of infrastructure (a day-to-day management issue) resides in the General Commissioner and the presiding judges of ACFI&A and the former has the competence to take all the relevant decisions in contact with the latter (COC sent preliminary guidelines via an email of 21.12.2015). Hence, all subsequent decisions on issues of infrastructure were made from COC (eg. COC email of 29.01.2016 regarding the compatibility of existing court printers with IACCMS). The following figure (11) depicts the governance structure of IACCMS at the operational phase.

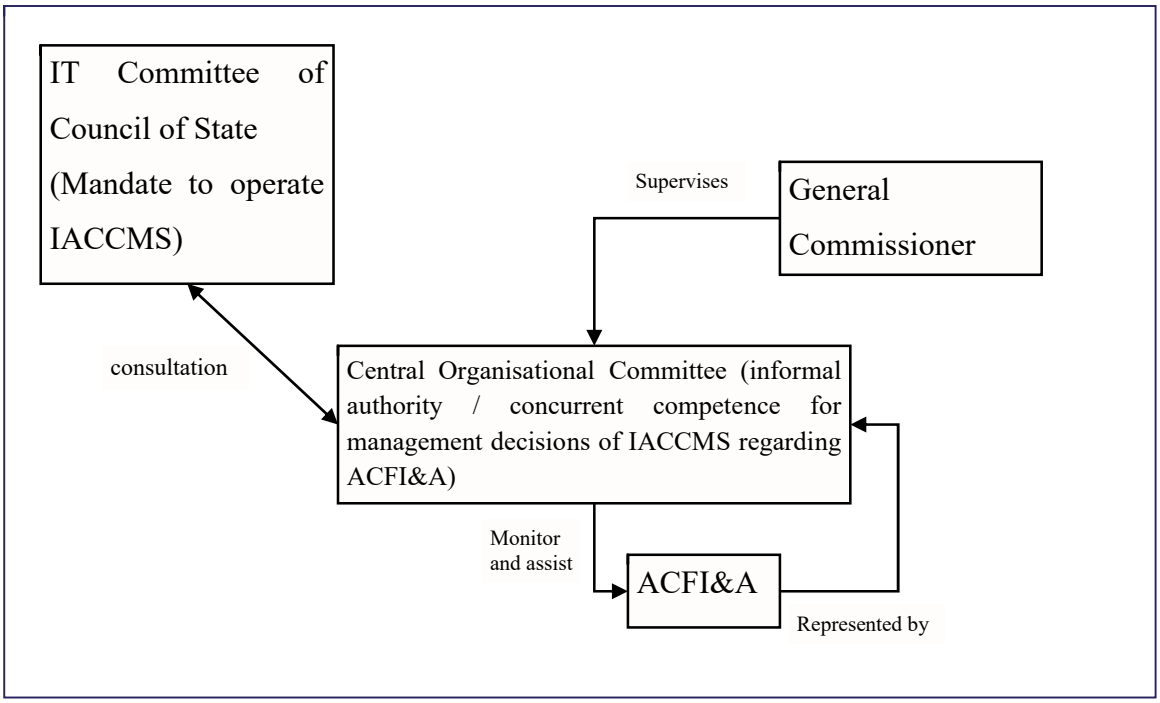

Figure 11 Governance structure of IACCMS at operational phase.

5.4.3 The Interoperability of IACCMS with Lawyers' IS

As it is clearly stated in page 58 of the contract notice, the integrated case management system of CS will evolve so as to encompass the new IS. Therefore, decisions on standardization where also based on the IS that CS already had. This is evident in interoperability with lawyers IS. Before the adoption of IACCMS only the IS of CS was interoperable with the National Lawyers IS (henceforth, Olomeleia) for the electronic filing of a case, though the service was not efficient due to problems regarding the implementation of lawyer's e-signatures. This was the only case in administrative justice that the coordination of workflows between two IS had to be established for a common goal, i.e. direct exchange of data between Olomeleia and IACCMS, which would allow the former IS to directly file a case to the latter IS. There was no need for business process alignment between the two IS, since each one of them was built as a single point of contact for its users; simply Olomeleia makes available its data to IACCMS via a web service and thus each organization could (and still is) able to design separately the interface that users will access in each IS. Furthermore, the data that had to be exchanged were specified by law (the two codes of procedure, one for CS and one for ACFI&A), therefore the data entry fields were the same for the two systems and there was no need for a specific agreement on semantic interoperability.

The contract notice of IACCMS indicated that the new IS had to be interoperable-ready with external IS, mentioning as examples [p. 64] Olomeleia, the IS of the Legal Council of the State, the tax administration's IS, the government portal for the issuance of certificates and the integrated case management system of civil and penal courts. Currently, there is interoperability with Olomeleia for the electronic filing of a case. Also, there is interoperability with the IS of the Legal Council of the State for the electronic delivery of court decisions and for clearance of legal costs.

We will briefly present the main flow for the electronic filing of a case from a lawyer (see also figure 12). We derived the following information from Deliverable 3.2 v. 2 of the contractor, the instructions manual of the contractor, the guidelines of the Bar Association of Greece to its members and discussions with court officers from ICT Division of CS and from the administrative court of first instance of Serres.

There are two IS that have to cooperate, Olomeleia and IACCMS. The steps are as follows:

1) The lawyer drafts the document and a summary, converts them in pdf format and digitally signs them. He also digitizes the administrative act that wants to annul.

2) The lawyer has to log in the tax administration IS to pay the relevant deposit through an e-payment.

3) The layer logs-in the portal Olomeleia, where he provides his credentials for authentication.

4) As soon as he has logged in he selects the option “filing of an application initiating court proceedings”.

5) Then, the system opens the window for the filing of the document. The lawyer selects ‘Create application initiating court proceedings’, fills-in the obligatory fields and pays the amount due to the bar association via an e-payment application of the system.

6) After that, Olomeleia sends the data to IACCMS, which opens a new window, where the obligatory fields that the lawyer filled-in in the previous step are already in the form. The lawyer then uploads the document, its summary and the e-payment invoice, he fills-in the optional fields and finally he saves the changes and files the application.

7) Then, the lawyer views a message that the e-filling was successful; the message also shows the filling number. After that IACCMS sends to the lawyer an email that confirms the filing of the document and an attached zipped file which has the document digitally signed from IACCMS, a receipt for the filling of the document and the number of copies of the document that the layer asked so as to serve them to the other party of the trial. IACCMS also notifies Olomeleia for the successful e-filing of a case and the latter IS updates the ‘layer’s page’ in the system.

8) IACCMS also sends the file to the corresponding court, which issues its court filling number and the courts receipt of the certain document.

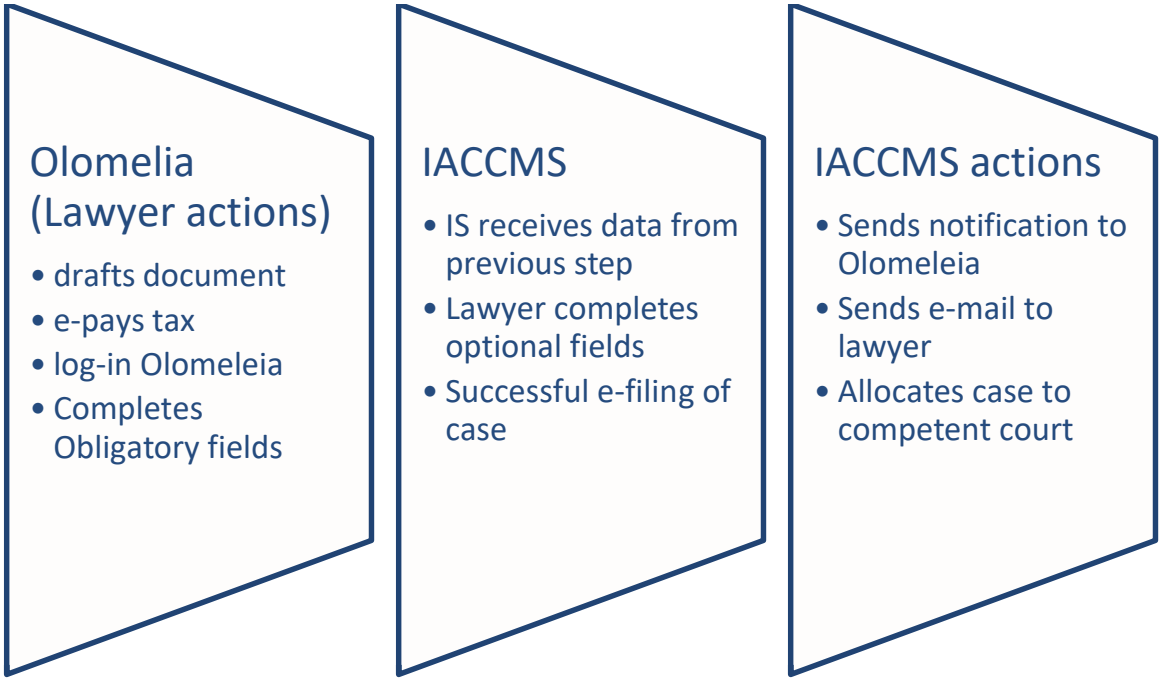

Figure 12 Workflow of e-filing an application initiating court proceedings in IACCMS.

As soon as the competent court receives the e-filed document, then the registrar processes it pursuant to the workflow that was decided during both the planning phase of the project and also the rolling out phase, when COC and the two ad hoc Committees were established. We derived the following information from the diagram at page 52 of the contract of 2005 for the computerization of eleven administrative courts of first instance, Deliverable 3.2 v. 2 of the contractor, the instructions manual of the contractor, guidelines of COC and the two ad hoc committees that were established during the migration of data from previous IS to IACCMS and discussions with court officers from Administrative Court of First Instance of Serres. The workflow is as follows (see also figure 13) after the filing of the application initiating court proceedings:

1) Data Entry: In the case of e-filing data entry is done by the lawyer, else data entry is done manually by a member of the registrar.
2) Creation of case (entity): After that step any document that is relevant to the case is enrolled in this entity.
3) Forward to competent Chamber of the Court.
4) Define date of hearing.
5) Notify parties.
6) Correlate other documents that parties submit physically to the court and are affiliated with the case.

7) Prepare list of cases for the day of the hearing.
8) Hearing of the case.
9) Make an entry whether the case was heard or was a deferment (continuance).
10) Deliberation and drafting of judgment.
11) Delivery of judgment.
12) Notification of judgment to parties.
13) If a party files an appeal case is submitted to higher court (and steps 1 – 12 are repeated in that court) or else case is archived.

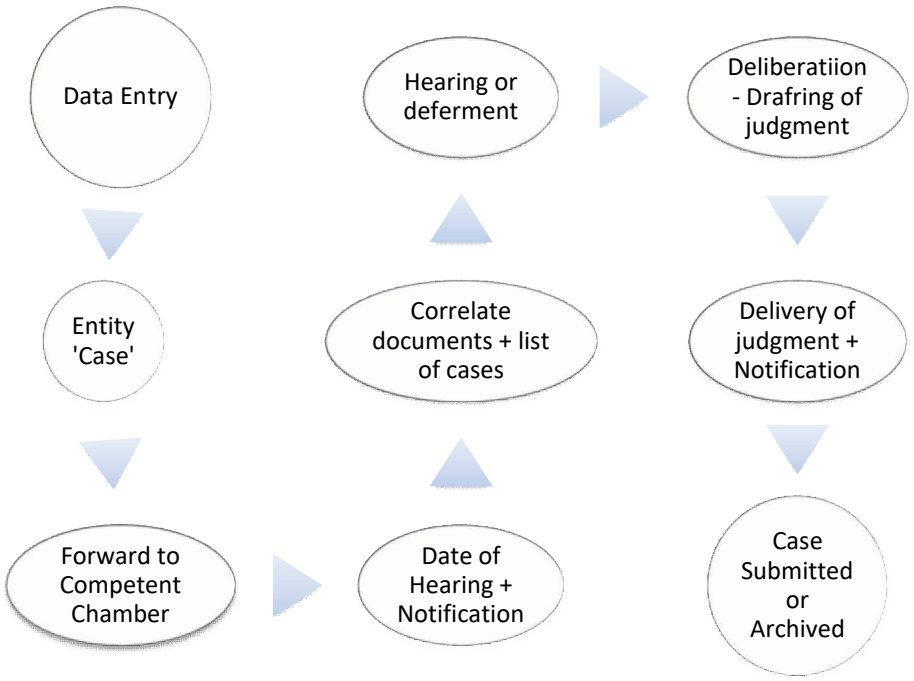

Figure 13 Workflow from filing of a case to archiving it in an administrative court.

The e-filing of cases at ACFI&A began, on a voluntary basis, on 29th May 2018 (decision 1649/25.05.2018 of the General Commissioner). In anticipation of that, on January 2018 COC fulfilled an assessment of the operation of IACCMS and sent a detailed questionnaire to each court in order to receive feedback. Then COC issued a report with guidelines and further investigated whether ACFI&A complied with the directions. COC, in order to facilitate communication between ACFI&A and itself, asked each court to determine a certain person to be 'administrator of the court' regarding IACCMS. In early May, COC asked each registrar of ACFI&A to appoint the court officers, who will be responsible for the handling of e-filling. Later COC sent guidelines

to ACFI&A (document 1642/24.05.2018) regarding: a) the new workflow and b) some examples of e-filing cases available at the piloting version of IACCMS so that there could be comments for improvements.

5.5 Assessment of IACCMS through the Interoperability Quick Assessment Toolkit (IQAT)

The European Commission, through its ISA² Program, supports the development of interoperable IT solutions across EU. One tool developed is the Interoperability Quick Assessment Toolkit (IQAT). It is an interactive questionnaire (in excel format) that, upon answering a number of closed questions, calculates the potential interoperability score of a software solution at four interoperability areas: Interoperability Governance, Software Architecture, Machine-to-Machine interfaces and Human-to-Machine interfaces. Regarding interoperability governance, the tool "assesses the overall governance of Interoperability. It assesses factors relevant to actions that took place before the actual development of the system. It also includes factors relevant to the existence of policies and processes to safeguard interoperability." (*See,* Iqat guidelines, Doc. Version 1.0, release date 21.09.2016, p. 3). The aim of the tool is to spot areas of improving interoperability in a software solution, and thus support portfolio management decisions (*Ibid,* p. 5). To that end, it is recommended (*ibid,* p. 6) that after checking the interoperability score, "the solution owner can activate technical improvements aimed to increase the potential IOP of the solution" and then fill-in again the questionnaire.

We were interesting in using IQAT only to assess the interoperability governance layer of IACCMS, however, we had to complete the whole questionnaire in order for the tool to calculate the potential interoperability score. After gathering the relevant information from the ICT division of the registrar of CS, we answered the questions of IQAT on 18/07/2019. The answers to the relevant questions (interoperability governance) are depicted in figure 14

IOP GOVERNANCE

G1 Interoperability by Design

For each statement, please indicate whether the statement was considered during the design or procurement phase of your solution.

Several answers possible.

		Considered and applied	Considered and partially applied	Not considered	Considered and found to be not relevant
1	When designing the solution, preference was given to open interoperability specifications	✓			
2	When designing the solution, the effectiveness and efficiency of different solutions as well as different technological options considering user-needs, proportionality and balance between costs and benefits were evaluated	✓			
3	When designing the solution, coherence with the relevant legislation has been evaluated	✓			
4	When designing the solution, mechanisms for co-creating and involving the users were put in place			✓	
5	When procuring or designing the solution, a structured, transparent, objective and common approach in assessing and selecting standards and specifications was used. EU recommendations, in this respect, were taken into account and coherence for these approaches across borders was achieved			✓	

G2 Interoperability Strategies and Plans

Please, indicate whether the following IOP strategies and plans have been considered and applied during the operation of your solution.

Several answers possible.

		Considered and applied	Considered and partially applied	Not considered	Considered and found to be not relevant
1	Interoperability strategy	✓			
2	Long-term preservation policy for information (especially for information that is exchanged across borders)	✓			
3	Data quality assurance plans for base registries and related master data			✓	
4	Security and privacy strategies (or recommendations, guidelines, etc.) to ensure secure data exchange	✓			
5	Interoperability agreements (Interoperability Service Agreements, Interoperability Collaboration Agreements or Interoperability Provider Agreements)			✓	
6	Information management strategy			✓	
7	Other IOP-related strategy/plan (please name below):			✓	

G3 Interoperability Processes

Please indicate whether the following IOP processes were considered and applied to support the operation of your solution.

Several answers possible.

		Considered and applied	Considered and partially applied	Not considered	Considered and found to be not relevant
1	Procedures to constantly simplify processes and use digital channels whenever appropriate for the delivery of your solution, to respond timely and with high quality to users' requests and reduce the administrative burden imposed on administrations, businesses and citizens			✓	
2	Processes for appropriately generating/collecting, managing, sharing, protecting and preserving data and information (which are perceived as a public asset)	✓			
3	Processes to integrate the opening of data in common business processes and working routines, and also when developing new information systems			✓	
4	Change management processes to ensure continuous service delivery			✓	
5	Processes to select relevant standards and specifications, evaluate them, monitor their implementation, check compliance and test their interoperability	✓			
6	Processes to enable co-creation and involvement of users in the assessment and evolution of the solution			✓	
7	Processes to document your business processes using commonly accepted modelling techniques and agree on how these processes will interact to deliver the solution			✓	

Figure 14 IQAT Questionnaire regarding interoperability Governance of IACCMS.

The potential governance interoperability of IACCMS was calculated at 42.3% and its maturity level was deemed "poor" and "having substantial room for improvement".

5.6 Data Analysis - Findings

In this subsection we discuss the results from data presented in the previous subsections and in doing so answering the research questions posed in subsection 5.3. We will first discuss our findings related to EIF's (2017) 'interoperability governance layer' and then the 'integrated public service governance' component of IACCMS. In doing so we will examine whether IACCMS adheres to EIF's (2017) 12 underlying principles; we will explore whether our findings are supported by preview research that we identified in Sections 2 and 4 and we will further assess EIF's (2017) conceptual model. We consider it appropriate –as in subsection 5.4- to follow, in a linear way, the phases of the project. In the beginning of each subsection there is a bullet list with the main findings so as to be easier for the reader to follow our findings, which are presented in the following figure (15)

Stakeholders	Decision Making Process	Legal interoperability	Organisational interoperability	Semantic interoperability	Technical interoperability
Before Initiation of the Project					
Political Actor	Hierarchy, grant authority, do not interfere	Establish legal framework in which standards are set for all layers / time frame			
			There is no need for interoperability agreements		
Competent Centralised Authority	Informal collaboration with political actor (goal alignment)				
Planning Phase					
Competent Centralised Authority	hierarchy	Use standards set by law / evaluate previous experience and build on existing infrastructure			
			Get users feedback in advance		
Piloting Phase and Operational Phase					
Competent Centralised Authority	Set up new bodies if needed and collaborate		Goal alignment between organisations and respect independence of organisations		
	Retain hierarchy				

Figure 15 Matrix of findings

5.6.1 Before the initiation of IACCMS (planning phase)

Main Findings

- *Enact relevant legislation before the planning phase of an IS, make it compulsory, set technical and semantic standards and ensure that there is time to introduce the necessary adjustments (i.e. issuing new standards or maintaining existing ones).*
- *There is a correlation between setting interoperability standards by law and the need for interoperability agreements between organisations.*
- *Assess (and learn) from previous ICT ventures.*
- *Goal alignment of political actors and stakeholders is an advantage.*
- *Political actors should grant mandate to an established experienced body of the judiciary and do not interfere.*
- *Build on existing infrastructure.*
- *To ensure organizational interoperability get users feedback in advance by providing them enough time.*

Analysis

JT&HR Ministry assessed previous ICT projects in administrative justice and opted for a central governance structure for the planning, procurement, operation and maintenance of IACCMS, without further intervening in the project. That political decision had a positive effect in establishing an efficient governance structure for the project and further enabling interoperability. Thus, it is valuable to assess (and learn) from previous ventures before pursuing a new one. Furthermore, JT&HR Ministry enshrined the constitutional guarantee for an independent judiciary and the recommendations from international judiciary organisations that emphasized the importance of having judges actively involved in an ICT project concerning them (see subsection 2.4). In our view one of the factors of success of IACCMS was the alignment between the aim of the judiciary and a political priority; that is the introduction of a case management system for administrative justice. This finding corresponds to EIF's (2017) view (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework – Implementation Strategy, COM(2017) 134 final,

Brussels, 23.3.2017, Annex 2, at 3.1, p. 19) that political support is needed for a successful cross-sectoral interoperability project; in our research this is the case of interoperability between IACCMS and Olomeleia.

Furthermore, CS had valuable institutional knowledge, since: i) it successfully introduced a case management system for its operations as early as 2006, and ii) it is, pursuant to the Greek Constitution, entitled to oversee the rational operation of Administrative Justice. Thus, a valuable lesson is to use an established body with prior experience and the authority (mandate) to lead the project. The knowledge derived from the experience of previous projects was also evident in the decision to build on existing infrastructure and expand it; that is IACCMS is in essence an evolution of the integrated case management system of CS. This particular decision was consistent with underlying principle 4 of EIF (2017) 'reusability'. CS was a key enabler in the new project mainly due to the fact that previous ICT projects in ACFI&A were introduced, without central coordination and cooperation between courts. The problems that those projects created had a positive effect regarding the governance structure of IACCMS. The involved stakeholders (judges and court officers of ACFI&A) generally recognized that a coordinating authority was needed to issue directives and to guide them especially during transition from piloting to operational phase; nearly all stakeholders understood that they would benefit of an integrated public service delivery that IACCMS would provide to Administrative Justice. However, the 30.03.2015 written communication of the President of CS indicates that not all stakeholders shared the same enthusiasm for IACCMS.

Regarding the 'integrated public service governance' layer, a valuable lesson is to solve as many issues as possible at the legal level, before implementing a project either for introducing a new IS or further developing an existing one. Since a ministerial decision had introduced the Greek Interoperability Framework, all the technical and semantic requirements of the system could be designed in order to be compliant with that particular framework and so there was not a need for drafting interoperability agreements. Nonetheless, from our case study derives that an interoperability enabler regarding the technical and semantic layers of interoperability of IACCMS was the legislation that was already enacted with clear boundaries regarding standards, so there was no need for interoperability agreements. Thus, there seems to be a correlation between the setting of standards by law and the need for interoperability agreements. It is also useful to enact the relevant legislation that makes an ICT solution mandatory within

a specific time frame. Thus, the competent authorities will have a mandate to introduce the new IS within specific boundaries and will also have sufficient time to configure it, test it in a piloting phase, assess the feedback and roll it out. Such an approach will also resolve interoperability problems related to a lack of willingness to collaborate, that some stakeholders may have. Therefore, it is helpful if all users are heard before the relevant legislation is enacted. This was not the case in the introduction of e-filing a case to ACFI&A since the time frame that court officers had to respond for improvements was limited to only a few days; therefore a lesson is to provide adequate time for feedback from users of a new interoperability service within an existing IS so as to improve ease of use during the operational phase of the project. In the legal framework both the vision and the needs of the project have to be addressed. This seems to be the choice for the next stage of evolution of IACCMS, since Law 4635/2019 (articles 75 – 80) framed the legal boundaries for the complete e-communication (be electronic exchange of documents) both with internal and external users of IACCMS. Also, Law 4623/2019 provided for a New Greek Interoperability Framework that the Ministry of Digital Governance will (centrally) impose to the public sector, though, pursuant to CS Opinion 38/2013 on the Presidential Degree for the e-filing of cases in Administrative Justice, this framework will not be binding for the judiciary.

5.6.2 During the implementation of IACCMS (Piloting and Operational Phases)

Main Findings

- *Set up new informal governance bodies if existing ones do not correspond to issues identified during the piloting phase of the project (dynamic governance).*
- *For the judiciary a hierarchy governance model with the active involvement of judges and court officers should be maintained. An experienced body should provide strategic direction, whereas all stakeholders should participate in the decision making process in order to have interoperability with external IS*
- *Organizational interoperability is more easily achieved if there is goal alignment between the organisations that want to interoperate.*
- *It is an advantage to respect the independence of different organisations' IS.*

Analysis

Although CS was a key enabler in the new project, it acknowledged that it could not sufficiently address all the issues that ACFI&A had to deal with in order to incorporate IACCMS, a problem that became evident during the piloting phase of the project. There were problems during the transition of existing IS of ACFI&A to IACCMS and also during the introduction of IACCMS to courts that did not support an IS. Accordingly, COC was established, that is a new informal permanent body, which addressed the above described issue. Also, two informal ad hoc Committees, nine informal Committees at the administrative court of appeals and further an informal working group were set up to deal with specific topics that arose for a specified period. The lesson is that the governance model should be able to change due to unforeseen issues, that are observed during the piloting phase of an IS or the transition from an older version of an IS to a new one. We therefore understand that 'interoperability governance' is successful when it is 'dynamic' not 'static'. It is a key factor of success to include all stakeholders (in this case ACFI&A through a proxy, COC) in the process of introducing a new IT system, though a leading stakeholder (in this case CS) is needed so as to drive the project forward. In essence, CS provides strategic direction, whereas CS consults COC in issues regarding ACFI&A so as to coordinate the activities of IACCMS. Our view is that the governance structure of IACCMS is not a duopoly, though it has many aspects of a network, especially when addressing change management and day-to-day management issues of ACFI&A; the network aspects of the governance structure were developed because of the issues that had to be addressed during the rolling out of IACCMS to ACFI&A. We argue that it is a hybrid structure, since it is flexible enough to establish new temporary or permanent bodies to address issues of greater importance or to realign the management responsibilities between CS and COC. Although the governance structure shifted during the different phases of the project from a decision making perspective it remained a hierarchy. It was the collaboration between COC and CS that established clear and direct communication channels (including regular meetings) during transition from piloting to operational phase of IACCMS. The data we collected point to COC having concurrent competence to take initiatives regarding the implementation of changes to IACCMS at ACFI&A within the goals that CS sets. Our finding of a hybrid or mixted governance structure of IACCMS corresponds with Boudreau and Bernier (2017), who proposed a governance model to coordinate

interorganisational relationships that uses both vertical governance (hierarchy) and horizontal governance (network). Furthermore, this finding correlates with Kubicek, Cimander and Scholl (2011), who mentioned (p. 144) that "interoperability in government needs a resilient and flexible model of IT governance, which helps advance the political, institutional and functional opportunities over time".

Hence, a closed questionnaire, such as IQAT, cannot address the above described changes in the governance structure of IACCMS. The questions in this tool mainly address issues that arise during the planning phase of a project, particularly during authorization of standards. Certainly, the tool aims to spot areas of improving interoperability, however we comprehend that it is not designed to address a 'dynamic' interoperability governance structure, such as that of IACCMS that we described in the previous subsections. We therefore conclude that there is a limitation in the interoperability governance questionnaire of IQAT; its use is helpful during the planning phase of an IT project, because it could facilitate change of practices that will foster interoperability but it does not address issues that might arise at the piloting and operational phases of a project. Our view is that the 'poor' rating that IACCMS gathered (42.3%) corresponds only to the 'interoperability governance' layer at the planning phase of the project and not during the operation and maintenance phases of the project and thus the 'poor' score does not necessarily designate the IS under study as 'un-interoperable'.

Additionally, at the organizational level, interoperability between two IS, is more easily achieved if the incentives of the two organizations are aligned to a mutual goal. In our case study lawyers, judges and court officers were willing to establish a service for the electronic filing of a case. In essence the e-filing of a case is an example of the re-use of an existing service in the new IS, which provided one national portal for Administrative Justice. Both IS respected the independence of each other and therefore Olomeleia was built as a single point of access for the lawyers, who upload their files once and the two systems only exchange relevant data. The separate design of the systems renders easier to standardize the relevant processes and also addresses separately maintenance issues. Therefore, tasks are easier attributed when the boundaries of IS are clear. Since parties, after the e-filing of a case, can also submit documents physically to the court, IACCMS provides a multichannel service delivery; it integrates both offline and online channels. The above described way of introducing interoperability between

the two IS was consistent with underlying principles 3 (transparency) and 6 (user-centricity) of EIF (2017).

Concerning EIF's (2017) interoperability model, its layered approach is useful to examine the interoperability of a given IS and answer the research questions we mentioned in subsection 5.3. Our findings confirm EIF's (2017) Recommendations 20 that states "Ensure holistic governance of interoperability activities across administrative levels and sectors" and 25 that states "Ensure interoperability and coordination over time when operating and delivering integrated public services by putting in place the necessary governance structure". However, attention should be drawn to the fact that certain sectors, such as justice, our bound by constitutional requirements and other legal restraints that have to be considered in a governance structure. Our findings suggest that the independence of justice is a principle that imposes limitations on the governance structure regarding the interoperability of an IS for justice. As CEPEJ clearly states (Guidelines on how to drive change towards Cyberjustice, §80): "Changes in the field of cyberjustice should be court-driven, not technology-driven. This implies that organisations must be able to set modernisation objectives free from any concerns related to the information technology itself. This is an essential condition for the success of any project, without which there is a risk that it will fail to serve the interests either of those who use the courts or of those who work in them and will, if anything, ultimately undermine confidence in the judiciary as an institution". In our view, a domain specific portal that shares interoperability solutions that have been introduced in particular sectors at European level, provided those sectors have introduced solutions that stray from the 'general' interoperability solutions, would be helpful. Our findings also confirm recommendations 21 – 24 of EIF (2017) since the setting of standards is crucial so as to enable interoperability.

5.7 Summary

In this Section we presented the case study of the Integrated Administrative Court Case Management System of Greece. We firstly presented some background information regarding the introduction of ICT in Administrative Justice of Greece. Then we formed our research questions that corresponded to interoperability issues that we wanted to

explore in the unit of analysis; those were the ‘interoperability governance layer’ and the ‘integrated public service governance’ component of IACCMS; that is ‘what’ were the main decisions, ‘who’ had the mandate to make them and ‘how’ those decisions were implemented. After that, we presented the data we collected, we assessed the ‘interoperability governance layer’ of IACCMS using IQAT and we analyzed the data we collected. Our findings were consistent, in most parts, with EIF’s (2017) conceptual model and recommendations regarding the specific unit of analysis. However, we also showed that in justice the constitutional requirement of independence of the judiciary imposes certain limits that have to be respected in an interoperability governance structure. We further showed that a ‘dynamic’ governance structure is more consistent with real world challenges that arise; the governance structure should support some flexibility in order to be able to introduce ad hoc solutions for specific problems that arise and were not foreseen during the planning phase of a project. Although centralization is a success factor and a hierarchy governance structure is a prerequisite for the judiciary, elements of a network are necessary, so as all stakeholders of the IS are heard and their needs are addressed.

6 Conclusions

6.1 Thesis Synopsis

This dissertation attempted to explore the interoperability of the IS that was introduced in the Administrative Justice of Greece in 2015, the Integrated Administrative Court Case Management System of Greece. Notably, the case study examined the governance structure that was developed for the project and how this influenced decisions on the interoperability of the IS.

We provided basic information about the key concepts of this dissertation; noticeably 'governance' (from the point of view of political science and institutional theory) and 'interoperability' (from the point of view of information technology). We further examined how these concepts interlink with the judiciary. We also presented the attempts at EU level to introduce an interoperability framework that will provide to public administrations of member states solutions to foster interoperability.

Our scope was to test the boundaries of EIF (2017) conceptual model regarding the concept of 'interoperability governance' in a case study of an IS that was designed for the judiciary. In doing so we firstly conducted a literature review, from which we concluded that there was not any previous case study regarding the way the governance structure of an IS for the judiciary affects interoperability. Also we understood that there was not a consensus among scholars about a model of governance (hierarchy, network, market or mixed type) that facilitates interoperability, though they all seemed to agree that the inclusion of as many stakeholders as possible in the decision making process is important.

Then, we conducted a case study on IACCMS researching the governance structure(s) that were set up from before the planning phase up to the operational phase. Our main research questions were: 'what' were the main decisions, 'who' had the mandate to make them and 'how' those decisions were implemented. Redirecting those questions to EIF's (2017) interoperability model, we noticed that the 'who' and 'how' questions deal with the provision of resources and structures that are interoperable and also address the issue of whether an existing actor or a new –permanent or temporary- actor will deal with those decisions. We also recognized that the 'what' question refers to the management of the four interoperability layers and in essence covers: the decisions

on standards for the technical and semantic levels, the decisions on business processes for the organizational level and the decisions for changes in the law for the legal level.

Pursuant to the data we collected our findings were that before the initiation of an IS project and during the planning phase it is good practice to enact legislation regarding interoperability and make compulsory the technical and semantic standards. Accordingly, there is a correlation between setting interoperability standards by law and interoperability agreements between organisations that want to interoperate. It is also beneficial for the interoperability of an IS for the judiciary if the political actors respect the autonomy of the judiciary and grant mandate to an established body. The latter could use the knowledge gained from previous ICT experiences and build on existing infrastructure.

During the piloting and operational phases of an IS it is useful to set up new informal governance bodies to deal with issues that were not predicted during the planning phase of the project and were identified during the piloting phase. Our data analysis confirmed the view that for the judiciary a hierarchy governance model with the active involvement of judges and court officers should be maintained, ensuring that all stakeholders are involved on a regular basis so as to better implement governance decisions regarding interoperability with external IS (hybrid governance model) or else there is a risk that the IS will fail to deliver interoperability with an external IS. In the latter case, goal alignment between the organisations and respect of their independence is a factor of success.

Our findings suggest that it is decisive that the competent authority in the governance structure has some flexibility in the running of the project, so that, it opts for ad hoc solutions that fulfil the organization's requirements for interoperability. However, from the data we collected it derives that, a centralised governance structure (hierarchy) improves the coordination and efficiency of the network. In our case study collaboration and integration happened because all stakeholders shared many common goals, among which to facilitate the interoperability of the Integrated Administrative Court Case Management System of Greece.

6.2 Limitations of thesis

This thesis has several limitations:

i. Firstly, we were able to observe the day-to-day operation of IACCMS, discussing relevant issues with court officers from the registrar of the administrative court of first instance at Serres, as well as with the president of COC and with a court officer of the ICT Division of the Registrar of CS; those discussions were not unstructured (or open-ended) interviews, though we tried to be 'active listeners' and after each discussion we took notes (in Greek) of relevant issues that were clarified; the data from this category represent our own interpretation of what has been observed. Hence, one of the limitations of this thesis is that we did not perform any interviews either with users of IACCMS or with participants (from the bodies that were involved or the contractor) during the different phases of the project. Their understandings of the way certain decisions were reached could add to the findings of the discussed topics.

ii. Secondly, we did not collect any data from the contractor of the project, apart from the documents (deliverables) that he filed according to the terms of the contract notice.

iii. Thirdly, we collected data from the planning up until the operational phase of IACCMS and not during the maintenance phase of IACCMS.

iv. Finally, the data we gathered derive from only one IS of the judiciary of one particular country and so our findings do not necessary allow generalisations of the results to any court information system in any country.

6.3 Recommendations for future research

The limitations of the thesis, described in the previous subsection, also point to future research. Firstly, our findings could be evaluated against data that we did not collect, for example interviews with stakeholders that were involved in the project and data from the contractor. In the latter case one could examine the impact of the contractor in the decision making process and whether there were elements of a 'market' model of

governance in the IACCMS governance structure. Secondly, our findings could be cross-examined with the case study of a different court IS either outside or inside Greece, e.g. the Integrated Civil and Penal Court Case Management System of Greece and the Integrated Court Case Management System for the Court of Auditors of Greece. Thirdly, new research could examine contemporary developments such as: i) the effect that the New Greek Interoperability Framework, stipulated in Law 4623/2019 will have on IACCMS and ii) the way that interoperability between IACCMS and external IS will be achieved so as to manage complete e-communication pursuant to the requirements of Law 4635/2019.

Furthermore, since interoperability governance is a relatively new concept, future research could also focus on specific issues that we discussed here such as:

- Limitations that the political and / or institutional context of a country place on the governance structure of an IS regarding interoperability;
- The effects that the introduction of legislation that sets standards has on the technical, semantic and organizational layers of interoperability;
- Whether the change of the governance structure during the different phases of a project and particularly a 'dynamic' governance structure is a factor of success or not;
- Whether apart from a hierarchy and the active involvement of judges other governance models could successfully be implemented in the introduction of an ICT project in the judiciary, fostering interoperability and without hindering the independence of justice.

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