Connecting the 'IT dots' between judicial organisations in the European Union: The Case of e-CODEX

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MSc Thesis Public Administration

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Capstone: Digitalisation in the Public Sector

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January 2022

Abstract

The lack of adoption and use of the e-CODEX (e-Justice Communication via Online Data Exchange) system in the European justice domain mirrors the complexity of realising interoperability in Europe. Connecting the information systems of autonomous organisations with the means of technological innovation for improved efficiency can be a difficult task, and requires cooperation between all parties involved. But what drives or holds back organisations to adopt such technological innovations?

While much research has been conducted on the adoption of (technological) innovations in the public and private sector, theoretical and empirical research on innovation adoption in a cross-border and judicial context is still lacking. This qualitative explanatory study used a combination of Diffusion of Innovation (DOI) theory and Technology-Organisation-Environment (TOE) framework as foundation to examine the relationship between fourteen factors (relative advantage, compatibility, complexity, trialability, observability, top management support, slack resources, costs, championship, facilitative leadership, disposition to and readiness for collaboration, trust, external pressure of social networks and network externalities, and legislation and policy) and the adoption of interoperable electronic information sharing by judicial organisations.

By using e-CODEX as a case study, this thesis contributes to the literature on IT adoption by adding the cross-border, European, and judicial contexts. E-CODEX (e-Justice Communication via Online Data Exchange) is an example of a voluntary initiative that was developed with European Union (EU) financial support by a number of Member States in 2010. It is a tool based on the principle of interoperability that enables judicial authorities to exchange information and documents in a secure way. It is interoperable because it establishes a decentralised communication network between national IT systems in cross-border civil and criminal procedures.

Data was gathered from interviews with members of the e-CODEX project consortium, judicial organisations (previously) participating in e-CODEX pilots, and one organisation that is currently planning to adopt e-CODEX. The findings indicate that all proposed factors in this study seem to be relevant to at least some extent for the adoption of IEIS. However, the findings also show that some factors have greater relevance than others.

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1. | Introduction

Different fields within the public sector are experiencing a so called digital revolution: the transformation of analogue processes and services to digital processes and services. Information and Communication Technologies (ICT) and new technologies are impacting both how government bodies are working together, and how public services are provided to citizens and businesses. The use of ICT for these purposes is also called 'electronic government' (e-government). An important part of e-government is the digital information exchange between government bodies. In this, ICT and information-sharing systems are considered key in developing smart governance infrastructures that are able to deal with wicked or complex societal problems (Scholl & Scholl, 2014). As such, there has been a rise in e-government and information-sharing initiatives in many different policy domains aimed at enhancing internal effectiveness and efficiency.

Governments all over the world are prioritising the digitalisation of government or public administrations at a rapid pace by investing, promoting and fostering digital transformation within and outside of government. This is not, however, without consequence. A common phenomenon is that IT projects within the government(s) flop, leading to not realising the full potential of e-government and to a waste of tax money. The mismatch between the level of investment and the results realised so far in the field of e-government is also called the 'e-government paradox' (Savoldelli et al., 2014).

A complex aspect of e-government is what Scholl and Klischewski (2007) describe as the 'integration or interoperation of e-government information systems', meaning the ability of ICT systems and business processes to exchange data and enable information sharing (Laskaridis et al., 2007). According to Scholl and Klischewski, "the complex nature or the exact extent of the challenges and constraints regarding integration and interoperability are not well understood, neither in practice nor in theory" (Scholl & Klischewski, 2007, p. 890). The authors continue by stating that most interoperability projects result in a high risk of failure because they "do not reflect well the complex grid of interwoven legal, organizational, and technical issues and constraints involved" (Idem, p. 890).

The importance of e-government and interoperability is also recognised by the European Union (EU), which focuses more and more on interoperability as enabler for the implementation of the pan-European dimension of e-government (Laskaridis et al., 2007). The EU Commission has launched a strategy with several policies that intend to realise 'a Europe fit for the digital age'. This digital strategy includes topics such as artificial intelligence, a European Digital

Identity, interoperability and improved digital services. The COVID-19 pandemic has accelerated the pace of digitalisation, as well as exposed the vulnerabilities of the digital space (European Commission, 2021). European initiatives, such as the Digital Identity or the EU Digital COVID Certificate, require a high level of standardisation and cooperation to make it interoperable with other systems. Information systems are often bridged with frameworks such as Extensible Markup Language (XML) (Yang & Maxwell, 2011).

E-CODEX (e-Justice Communication via Online Data Exchange) is an example of a voluntary initiative that was developed with EU financial support by a number of Member States in 2010. It is a tool based on the principle of interoperability that enables judicial authorities to exchange information and documents in a secure way. It is interoperable because it establishes a decentralised communication network between national IT systems in cross-border civil and criminal procedures (European Commission, 2020a). Such a solution is crucial when IT systems are fragmented, and the necessary data is not exchangeable due to non-compatibility. This is exactly the case in the justice domain across the EU and its Member States (European Commission, 2020b).

While e-CODEX was built between 2010 and 2016 to bridge the national IT systems and overcome the incompatibility of cross-border judicial procedures in exchanging information, Member States have not yet made consistent use of this system. Since the realisation of e-CODEX, only a few cross-border procedures have been piloted by a limited number of Member States and organisations. As is stated in the inception impact assessment by the Commission accompanying the proposal for a regulation on e-CODEX:

> "This limited use of e-CODEX means that its potential to overcome the inefficiencies resulting from fragmented national IT systems is not fully exploited. One of the stakeholders responding to the inception impact assessment has pointed out the need to further extend the e-CODEX system to cover more Member States." (European Commission, 2020b, p. 7).

The case of e-CODEX highlights the issues regarding the e-government paradox and interoperability complexity, as the system has not been fully exploited while 24 million euros have already been invested in creating the technology. In the impact assessment on e-CODEX, the European Commission argues that the narrow use and low uptake of e-CODEX was due to uncertainty about structural financing and the absence of a clear governance framework (European Commission, 2020b). Hence, the Commission proposed a regulation on a

computerised system for communication in cross-border civil and criminal procedure (e-CODEX system). This provides e-CODEX a legal base and mandates the European Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA) for the operational management of e-CODEX as of 2023 (European Commission, 2020a).

However, The Regulatory Scrutiny Board's opinion on the impact assessment notes that "the report does not fully explain why the uptake of e-CODEX is low" and that "the problem section should further substantiate the extent to which the low uptake of the system is due to its uncertain long-term sustainability or to the prohibition of digital tools in national legislation or other factors not reflected in the report, such as lack of trust and unclear governance (…) The problem definition should include more evidence of the success or lack of success of the e-CODEX pilots" (European Commission, 2020d, p. 2). So far, a comprehensive study on the factors that influences e-CODEX adoption, and therefore its uptake, does not exist.

Moreover, there is still a lack of theoretical and empirical research on the adoption of technological innovation in the justice domain or the European, cross-border context. While most studies on the adoption of e-government or e-justice are about the national or local context, this thesis will focus on the European judicial context of the (lack of) adoption of cross-border interoperable electronic information sharing systems by judicial organisations in Europe. While the EU is aiming to be more digitalised and connected, it is dealing with a complex field of actors spread across 27 Member States, with each its own IT structures, resources, and interests. The key mechanisms that drive e-government or e-justice adoption by public administrations have not been fully understood in extant literature. At the same time, there is a widely recognised problem of both the development and implementation failures of innovation or interoperable IT projects in the public sector (in a more technical perspective), and the lack of diffusion and adoption of IT initiatives (Zheng et al., 2013; Savoldelli et al., 2014). Therefore, this thesis will use e-CODEX as case study for further exploration of these issues in the European and judicial context. It offers new insights in the challenges regarding e-justice and interoperability at the international level, which would be relevant for the growing digitalisation of European society.

This study aims to identify the main drivers and barriers behind e-justice adoption in a European dimension by reflecting on the case of e-CODEX implementation among European organisations involved in judicial cooperation in civil and criminal matters. It also seeks to explain from both the users' and the project management's perspective why the use of e-CODEX in judicial cooperation is narrow. Therefore, the following question will be central in

this study: *What are the key factors influencing the adoption of cross-border interoperable electronic information sharing in European judicial organisations?*

This explanatory thesis will continue as follows. First, the theoretical framework chapter will start with a substantial literature review on the adoption of e-government and e-justice, interoperability, and cross-border inter-organisational collaboration. Subsequently, the chapter will present the theoretical framework, the Technology-Organisation-Environment (TOE) framework, which explains technology adoption in organisations and describes how the adoption is influenced by the technological, organisational, and environmental contexts. This framework is used to formulate 14 hypotheses. Chapter three will elaborate on the methodology that elaborates on how these hypotheses are operationalised, the case selection, the data collection, and the analysis method applied. Subsequently, the findings of the conducted research will be presented, followed by the discussion and conclusion.

2. | Theoretical framework

The theoretical framework in this thesis largely stems from the literature on (electronic) information sharing, the adoption of innovation or information systems, and interoperability in the public and private sector. This thesis will explain which factors influence the adoption of interoperable electronic information sharing (IEIS) in the judicial and European context. The results will be relevant for other and future digitalisation projects which aim to connect the IT environments of administrations across Member States in the EU, such as in public health (see for example the EU e-Health Action Plan or the European Blockchain Services Infrastructure).

This thesis uses the Technology-Organisation-Environment (TOE) framework by Tornatzky and Fleischer (1990), and the Diffusion of Innovations (DOI) theory by Rogers (2003) to identify factors influencing the adoption of interoperable electronic information sharing among judicial organisations in a cross-border context. First, by means of a literature review, various concepts will be elaborated on. Subsequently, the TOE framework and the DOI theory will be used to present the factors influencing the adoption of innovations as identified by extant literature, including the hypotheses. Finally, a synthesized model with all integrated factors influencing the adoption of interoperable electronic information sharing will be presented.

2.1. | From New Public Management to Digital Era Governance

In the past decades, public sectors in large parts of the world have seen many transformations as an effect of different developments and paradigms. Probably the most well-known and researched global and neo-liberal trend that shaped public management systems over the last 40 years, is ‘new public management’ (NPM). This set of public management and governance ideas focused mainly on efficiency and effectiveness, and was meant to introduce concepts and models from the private sector into public organisations and services. NPM is characterised by a shift towards privatisation, decentralisation, standards and measures of performance, an emphasis on output controls, and greater competition in the public sector (Hood, 1991).

However, NPM has been criticised for methodological shortcomings and negative consequences for the public sector. Diefennach (2009) points out the divergence from community-oriented public and ethical values to a cost-, market-, stakeholder- and customer-oriented approach with priority for quantification and monetarization. Public organisations implementing NPM have focused mainly on performance-based systems and have been criticised for losing connection with citizens and public ethics by using market-like language

of producer and consumer, or buyer and seller. Furthermore, NPM has led to a greater workload, stress and tighter regimes of management, control, and supervision in many public organisations. Finally, NPM has been criticised for inconsistencies such as increases in bureaucratisation and centralisation in the attempts of decentralisation and improving organisational structures.

According to Dunleavy et al. (2006) the public governance paradigm of NPM has been replaced by a new governance paradigm during the beginning of the 21st century, called 'digital era governance' (DEG). It emphasises the role of information and communication technologies (ICT) in public sector change and explores how digitalisation affects the way the public sector works and how public organisations relate to citizens and to each other.

2.2. | E-government, e-justice, and the e-government paradox

In the literature, ICT that has been used for improving the processes of public administrations and the efficiency and effectiveness of service delivery to citizens and businesses, is often defined as 'Electronic Government' (e-government). E-government efforts can be generally categorised into three broad categories: Government-to-Government (G2G), Government-to-Citizens (G2C) and Government-to-Business (G2B). G2G is characterised by its means of communication, coordination and standardization of information and services between public administration organisations. G2C is characterised by its means of communication, transparency, accountability and efficiency in services of government to citizens. G2B is characterised by its means of communication, collaboration and commerce between government and businesses (Yildiz, 2007). It is evident that so far the literature has mainly focused on G2C or G2B projects and to a lesser extent G2G projects at a national level. The existing studies on G2G have focused mainly on structural and technical issues of projects (Pandey & Gupta, 2017; Henning, 2018). According to Zheng et al. (2013), this gap in the literature could be due to the invisibility of G2G to the public and to researchers. G2G adoption is difficult to observe because G2G relates to communications within the government system, where lack of transparency is often an issue. However, this thesis author's experience as an intern and employee in the e-CODEX project team at the Ministry of Justice and Security in the Netherlands, makes it easier to get hands-on insight into the development of the project and to get easier access to documents and relevant actors involved.

E-government can be seen as a general umbrella term that contains the more specific field of electronic justice (e-justice). E-justice refers to the use of ICT aimed at increasing cooperation between legal authorities, improving access to justice, and improving the overall

efficiency and effectiveness within the administration of law. On both national and international level, public organisations and institutions have acted in order to digitalise services and administrations in the justice domain (Velicogna, 2017; Chatfield & Reddick, 2020).

At the EU level, e-justice mainly refers to the ICT that enables cross-border cooperation between, for example, judges, public prosecutors, and lawyers from different Member States. The quest for introducing ICT to digitalise various European procedural instruments and more began two decades ago with the eEurope action plan (2000-2005), followed by the i2010 initiative (2005-2010), the Digital Agenda for Europe (2010-2020), and the Digital Strategy (2020-2025). Regarding e-justice, the European Commission has introduced action plans for e-justice since 2008, followed by strategies for 2009-2013, 2014-2018, and 2019-2023. On December 2nd 2020, a Communication was published by the European Commission about the digitalisation of justice in the European Union (EU), presenting a toolbox consisting of financial support, legislative initiatives, IT tools, and promotion of national coordination and monitoring instruments. This is all needed because the European legal procedures that have been introduced in the past in order to facilitate judicial cooperation in civil and criminal matters are still often dominated by the use of paper files and paper-based communication, slowing down cooperation between Member States authorities (European Commission, 2020c). While the EU has put effort into harmonizing and facilitating judicial cooperation in civil and criminal matters, so far introduced technological innovations have yet to reap the benefits (Velicogna et al. 2018).

Despite the recognised benefits and potential of e-government and e-justice for public administrations and justice systems, Savoldelli et al. (2014) point out that the potential has not been fully translated into practice, and that despite policy efforts and public investments in IT projects, the adoption of e-government is still low. They name this the 'e-government paradox', referring to the low usage of digital innovations by public sector employees and online services by citizens and businesses. Therefore, there seems to be a gap between the supply side of e-government or innovation, and their usage. The authors claim that this is due to excessive focus on technological and operational issues, disregarding aspects that might favour adoption (such as institutional and political issues).

2.3. | Interoperable electronic information sharing (IEIS)

Within the literature on Digital Era Governance, e-government, or more generally IT in the public sector, a large part is about the diffusion and adoption of innovation. Diffusion can be defined as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p. 5). Furthermore, adoption of

innovation is “the process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to the formation of an attitude toward the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to confirmation of this decision” (Rogers, 2003, p. 20). Finally, innovation can be defined as “an idea, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 2003, p. 12).

In this thesis, the innovation that is central to this research is conceptualised as interoperable electronic information sharing (IEIS). Dawes (1996) defines information sharing as a means of exchanging or otherwise giving others access to information and mentions the benefits of information sharing, such as increased productivity, improved policymaking, and integrated public services. Electronic information sharing helps to reduce paperwork and improve cooperation and decision-making (Mohammed et al., 2015). Information sharing across organisations has been facilitated or supported by information and communication technologies (ICT) the moment it emerged. Ever since, governments have been trying to realise e-government initiatives in order to enable information sharing, process integration, or interoperability. Not only within national borders, but also across borders. Cross-border information sharing, for example, in public health and law enforcement, has increased in the past two decades. (Navarette, Gil-Garcia et al., 2010).

Information can be defined as “useful data whose form and content are relevant and appropriate for a particular use” (Alter, 2002, p. 714). Information shared between judicial organisations can vary from investigation orders issued by public prosecutors to unpaid financial penalties (such as traffic fines). Furthermore, information can be shared physically (through paper documents and post services) or electronically. Akbulut (2003) defines electronic information sharing as “sharing information through the use of ICT such as email, EDI, Internet, intranets/extranets, networks, shared databases, etc.” (Akbulut, 2003, p. 6). This thesis refers to interoperable electronic information sharing as the use of ICT to exchange data between judicial organisations across national borders by connecting the different information systems of the judicial organisations involved.

Interoperability is a concept that can be defined as “the ability of a system or process to use information and/or functionality of another system or process through the adherence to common standards (…) In other words, it is the ability of two or more systems of interacting and exchanging data according to a defined method, in order to obtain the expected results” (dos Santos & Reinhard, 2012, p. 72). In the EU, where a complex network of organisations, languages, information systems, digital infrastructures and rules exist, it has become one of the EU’s main priorities to realise the integration of heterogeneous information systems in specific

policy domains (Laskaridis et al., 2007; Kouroubali & Katehakis, 2019). Therefore, the EU developed the new European Interoperability Framework (new EIF) to give guidelines regarding interoperability within the context of European public service delivery. It defines four layers where interoperability should be ensured: Legal interoperability, which is about aligning legal frameworks; organizational interoperability, which is about aligning business processes; semantic interoperability, which refers to the meaning of data; and technical interoperability, which refers to the applications and infrastructures linking systems and services (Kouroubali & Katehakis, 2019).

The case study of this thesis, e-CODEX, is developed as the means to realise interoperability in the justice domain in Europe and to therefore enable electronic information sharing between judicial organisations via a secure digital infrastructure. It differs from typical electronic information sharing tools, such as email or information systems (IS) (i.e., Electronic Data Interchange (EDI)), which are often less-open inter-organisational systems (IOS) shared by different organisations (Zhu et a., 2006). e-CODEX, on the other hand, aims to connect separate, heterogeneous back-end systems of judicial organisations, therefore focusing on interoperability. While most research is focused on the adoption of less-open IS systems, this thesis focuses on an innovation, defined as IEIS, that fits the EU and e-justice context. e-CODEX will be further discussed in the methodology part.

2.4. | Cross-border inter-organisational collaboration

An important topic in this thesis is the cross-border collaboration context of e-justice, meaning the collaboration between two or more organisations that are situated in different countries. Pardo et al. (2012) suggest that one key component of a successful e-government or e-justice initiative is the ability to share information and data across traditional organisational boundaries among diverse government organisations. This cross-boundary information sharing can be realised by interoperability across organisations. As already mentioned, the EU is seeking ways to realise interoperability in different policy domains in order to provide improved services to constituents and to improve government operations. To realise interoperability between judicial organisations, inter-organisational collaboration is necessary.

Inter-organisational collaboration can be defined as ‘a mutually beneficial process by which stakeholders or organizations work together towards a common goal’ (Aunger et al., 2021, p. 2). According to Aunger et al. (2021), inter-organisational collaborations can take different shapes and forms, of which improving coordination of effort (i.e., improved information sharing) is an example. In their study on inter-organisational collaborations in

healthcare, they argue that trust is important to the sustainability of collaboration, depending on cultural differences, prior experiences of partnership, governance and accountability arrangements and the geographical proximity of the collaborative organisations.

Micsinai and Németh (2015) researched factors and conditions which may be driving the formation of cross-border collaborations, using the tri-border area of Hungary, Ukraine and Slovakia as case study. They found that different, non-exclusive, motivating factors may be in play in inter-organisational collaboration, such as legitimacy and prestige or external obligation.

Finally, Knoben and Oerlemans (2006) argue that three dimensions of proximity are relevant in inter-organisational collaboration, of which geographical proximity is most relevant for the cross-border context of inter-organisational collaboration. The relevance of geographical proximity lies in the fact that small geographical distances foster collaboration because of face-to-face interactions. Larger geographical distances between organisations would complicate the transfer of tacit knowledge, despite modern developments in communication technologies.

In sum, a complex set of factors can be attributed to the success or failure of inter-organisational collaboration. However, these studies are largely focused on interpersonal or organisational factors. The technological context is missing, despite technology being a major aspect of interoperability, e-justice, and electronic information sharing. This thesis aims to synthesize the relevant factors in the e-justice and European context. E-CODEX aims to realise cross-border interoperability by connecting the different IT systems implemented in national settings. For organisations to adopt and use IEIS, inter-organisational collaboration between judicial organisations in Europe is required.

2.5. | The dependent variable: adoption of IEIS

Adoption of innovation is "the process through which an individual (or another decision-making unit) passes from first knowledge of an innovation, to the formation of an attitude toward the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to confirmation of this decision" (Rogers, 2003, p. 20). Previous research on IT innovation adoption has made a distinction between the following dependent variables, among others: 'adoption', measured as a binary variable representing an organisation as an adopter or a non-adopter of IT innovation; the 'decision to adopt', meaning an organisation's decision to adopt IT innovation; the 'intention to adopt', meaning an organisation's intention to use or adopt IT innovation in the future; and the 'perceived or actual system use', meaning the amount of use of IT innovation by an organisation, either as self-reported by an organisation (perceived) or as an objective measure (actual) (Jeyaraj et al., 2006). In this thesis, adoption means the

decision or intension of an organisation to participate in IEIS, either by fully implementing it or by (the intension to) participating in a pilot. A pilot of an innovation is done as a test before fully introducing it (Cambridge Dictionary, June 9th 2021). Adoption thus refers here to either the decision to adopt innovation by an organisation or the intention to adopt, as both variants are relevant to answering the research question, and because the case study, e-CODEX, is not (yet) a broadly implemented system as stated earlier. Therefore, the actual use is hard to measure. Purely using adoption as binary variable would eliminate any nuanced options, such as initial adopters planning to reject an innovation, or non-adopters intending to adopt an innovation.

The acceptance and adoption of innovation in the public sector has often been described in the literature as a complex process. Both the factors underlying the acceptance of and the resistance to an innovation are highlighted in the literature on the adoption of innovation. This has led to the development and use of different theories, such as the technology acceptance model (TAM) by Davis et al. (1989), the Unified acceptance model and use of technology (UTAUT) by Venkatesh et al. (2003), or related theories such as the theory of reasoned action (TRA) and the theory of planned behaviour (TPB) (de Vries et al., 2018). Two other prominent theories that have been developed are the technology, organisation, and environment (TOE) framework and the diffusion of innovations (DOI) theory. These two theories will be further discussed in the next subsection.

2.6. | The independent variables: Factors influencing the adoption of IEIS

According to Landsbergen and Wolken (2001), "interoperability among federal, state, and local information systems is more than 'plumbing' -that is, making sure the information pipes fit together through compatible hardware and software" (Landsbergen & Wolken, 2001, p. 212). They emphasize that interoperability is essentially about information sharing and all the information-management issues that come with it. Others have also taken a more socio-technological perspective on the adoption of technological innovation, acknowledging that organisational and other challenges also come to play in addition to the technological context (Pardo, et al., 2012; dos Santos & Reinhard, 2012; Scholl & Klischewski, 2007; Bigdeli et al., 2011; Akbulut et al., 2009).

So far, however, these socio-technological factors influencing electronic information sharing adoption have only been researched in the contexts of inter-agency information sharing within states (Fan et al., 2014), between state and local levels (Akbulut et al., 2009), or between local government agencies (Bigdeli et al., 2013). With the increasing importance of electronic

information sharing on a European level, together with the prioritization of e-government and e-justice in the EU, it is important to also understand the factors influencing the adoption of interoperable electronic information sharing in a cross-border inter-organisational context. Hence, this thesis will use innovation and socio-technological theoretical lenses to explore these factors. For this, the DOI theory and TOE framework are chosen to analyse the technological, organisational, and environmental factors that influence the adoption of IEIS in the European justice domain.

The DOI theory has often been used to explain the adoption and diffusion of information technologies. Rogers (2003) proposes five factors that influence the adoption of innovations. First, he defines relative advantage as the degree to which innovation has clear advantage over an existing process. Secondly, he defines compatibility as the degree of consistency between the innovation and the existing values, past experiences, and needs of potential adopters. The higher the compatibility, the higher the probability of adoption. Thirdly, complexity is defined as the degree of the perceived difficulty of the innovation. Fourthly, the trialability, or possibility of testing, is considered as a factor influencing the adoption: The likelihood of adoption is higher if the possibility of testing beforehand exists. Finally, the level of observability of the advantages and benefits of the innovation is expected to influence the probability for the adoption of innovation.

The Technology-Organisation-Environment (TOE) framework is developed by Tornatzky and Fleischer (1990) and, while originally applied to a private sector context, it has been used as the theoretical framework for multiple studies on the adoption of technological innovation in public organisations in national or local contexts. With the consistent empirical support, it has proven its solid theoretical basis. However, the specific factors identified within the three contexts of the TOE framework vary across the different studies. This resulted in many different factors within every context of the TOE framework (Oliveira & Martins, 2011). Therefore, a selection of relevant factors proposed by different studies that fit the context of this research is presented in the next subsection.

According to Oliveira and Martins (2011), the TOE framework is consistent with the DOI theory. The factors deriving from the DOI theory fit the technology and organisational contexts of the TOE framework. Therefore, DOI factors are important to consider in these two contexts. Moreover, the TOE framework includes another component that is important for the context of this thesis, namely the environmental context. As the European context comprehends inter-organisational collaboration that involves different actors operating in different countries, it is important to include the environmental influences on the adoption process within an

organisation. By including the environmental context, the factors related to cross-border inter-organisational collaboration are considered.

Overall, most studies see organisational and environmental factors as most challenging to innovation adoption. However, the degree of impact that each factor of the TOE framework has on innovation adoption differs (Savoldelli et al., 2014; Yang & Maxwell, 2011). Glyptis et al. (2020), for example, suggest that the technological factors appear to be more significant for e-government adoption in Cyprus than studies on other countries have concluded. It will be relevant to ascertain what factors have more significant weight on IEIS adoption than others, especially for practitioners.

2.7. | The TOE framework

2.7.1. | Technological context

The first factor in the technological context is the *relative advantage* of the innovation. Organisations will adopt an innovation more easily when an innovation is perceived as better than the idea it supersedes. Other authors refer here to perceived benefits. According to Landsbergen and Wolken (2001), interoperability streamlines work processes and enriches the formulation, implementation, and evaluation of policy. Electronic information sharing reduces paperwork for organisations and citizens, improves cooperation, enhances collaborations among organisations, and it also decreases costs (Mohammed et al., 2015). The benefits of e-CODEX are described on its website as increased security and reliability, as well as time and cost-saving (e-CODEX, 2021c). This leads to the first hypothesis:

(H1): Higher perceived benefits of IEIS will lead to greater intent to adopt IEIS.

The second factor in the technological context is *compatibility* with existing structures, processes, and needs within organisations (Roger, 2003). This includes standards for hardware and software, data quality and connectivity among organisations. This is considered a huge challenge for electronic information sharing due to the heterogeneity of organisations' information systems and variable data quality. At the same time, including appropriate standards contributes to greater interoperability (Pardo et al., 2012). The study of Dawes (1996) shows that incompatibility, or in other words, the inability of hardware and software tools to 'talk to each other', is an important barrier to participation in electric information sharing. Existing frameworks, such as XML, are used to bridge heterogeneous information systems and

inconsistent data structures and definitions (Yang & Maxwell, 2011). Moreover, regarding the existing needs of the participating organisation as an aspect of compatibility, it is important that information sharing is perceived to be in the organisations' own self-interest (Landsbergen & Wolken, 2001). An organisation would be unlikely to adopt an innovation if there was no real internal need (Kamal, 2006). In this thesis, compatibility is conceptualised as the degree of which the hardware, software, data standards and schemas, and the organisational needs of an organisation are compatible with e-CODEX and the participating organisations between which information is shared. This leads to the second hypothesis:

(H2): IEIS compatibility has a positive effect on IEIS adoption.

Complexity usually refers to the degree to which an innovation is perceived as difficult to use and understand (Rogers, 2003). It therefore refers to the ease of use of the new technology or innovation. However, Akbulut (2003) conceptualises complexity as the degree to which participation in electronic information sharing is perceived as a relatively difficult process. This is also the conceptualisation used here. Unlike most information systems, e-CODEX is not a separate application with its own interface. Instead, e-CODEX is integrated with the information system of an organisation. Still, the participation in electronic information sharing, as well as the practical use of e-CODEX within the organisation's own information system, could be considered difficult by these organisations. This leads to the third hypothesis:

(H3): Perceived complexity of the technology and/or the participation in electronic information sharing has a negative effect on IEIS adoption.

Trialability is the degree to which an innovation may be experimented with on a limited basis. Rogers (2003) explains that the trialability of innovations is generally a great incentive for the adoption of an innovation, as it represents less uncertainty to the organisation that is considering it for adoption. However, the study of Saviak (2007) showed that the opportunity for individuals to experiment with an innovation before the agency was required to adopt the innovation, had a negative influence on the decision to fully adopt it. Nonetheless, a solid reason was not provided. So far, piloting is a common phase in the adoption of e-CODEX and is therefore seen as a potential factor that affects the adoption decision of e-CODEX in an organisation. This leads to the fourth hypothesis:

(H4): Trialability of IEIS has a positive effect on IEIS adoption.

Observability is the degree to which the results of an innovation are visible to others. Rogers (2003) claims that individuals are more likely to adopt an innovation when it is easier for them to see the results of an innovation. When the benefits of an innovation are easily demonstrable, it removes any uncertainty of organisations considering the adoption of the innovation (Savoury, 2019). Judicial organisations could therefore have greater intent to adopt e-CODEX after they have observed other pilots and seen the beneficial results of the implementation and use of e-CODEX. This leads to the fifth hypothesis:

(H5): Observability of positive results of IEIS has a positive effect on IEIS adoption.

2.7.2. | Organisational context

The first factor in the organisational context is *top management support*. Akbulut et al. (2009) considered top management support as an important contributor to local agency electronic information sharing. They claim that support of the top management is clearly needed to ensure resources for electronic information sharing initiatives. In a study by Bigdeli et al. (2013), they argue that top management is one of the key drivers for an agency to participate in electronic information sharing. Because adoption and implementation of e-CODEX are currently voluntary and not mandatory by EU or national law, it is expected that top management support within the organisations is indeed a crucial factor influencing the adoption of e-CODEX. Hence, it is hypothesized that:

(H6): Top management support has a positive effect on IEIS adoption.

Slack resources refer to the available financial, personnel (expertise), and IT resources that are needed to implement and realise an innovation such as IEIS. This is considered to be a major factor influencing the adoption of technological innovation in organisations (de Vries et al., 2018). In the case study by Akbulut et al. (2009), which focused on electronic information sharing between local agencies, the lack of financial resources was one of the most frequently cited barriers. Therefore, it is hypothesized that:

(H7): Organisational slack resources have a positive effect on IEIS adoption.

Costs refer to the perceived potential costs of the development, set-up and maintenance of IEIS (Fan et al., 2014). It is related to organisational slack resources, as higher financial resources could cover these costs more easily. According to Landsbergen and Wolken (2001), benefits and costs must be very clear in order to convince organisations to participate in interoperable electronic information sharing. They also identified that agencies are more likely to participate in electronic information sharing when this is funded by centralized money, rather than their own budgets. Hence, the following is hypothesized:

(H8): Perceived costs of IEIS have a negative effect on IEIS adoption.

Championship refers to a single person (for example a manager) within the organisation who is committed to introducing the innovative IT initiative to the organisation. They actively promote their vision for innovation and are actively lobbying for the project (Akbulut, 2003). According to Garfield (2000), internal champions in each participating organisation are important in the context of inter-organisational information systems, as one system-wide sponsor is not always sufficient. This is relevant for the e-CODEX case study, as interoperable electronic information sharing requires inter-organisational collaboration between organisations. Hence,

(H9): Championship within the organisation has a positive effect on IEIS adoption.

2.7.3. | Environmental context

The environmental context focuses on the external factors influencing IEIS adoption, mainly in relation to the interdependence of participating organisations adopting IEIS. The first factor discussed in this context is *facilitative leadership*. Ansell and Gash (2007) argue that "facilitative leadership is important for bringing stakeholders together and getting them to engage each other in a collaborative spirit." In a study on the participation of electronic information sharing among local government authorities, Bigdeli et al. (2013) argue that the central government has a key role to encourage and persuade local authorities to participate in electronic information sharing. These external entities can act as facilitative leaders that aim at engaging entities into participation in an innovative initiative. It can also set rules and standards for information sharing, such as data definitions or standards (Fan et al., 2014). Facilitative leaders could be crucial for building trust, facilitating dialogue and to ensure direct collaboration (Ansell & Gash, 2007). It is therefore hypothesized that:

(H10): Facilitative leadership has a positive effect on IEIS adoption.

Disposition to and readiness for collaboration refers to the extent of aligned goals and objectives of organisations in the collaboration in an innovative initiative. Collaboration between two or more organisations can be difficult when the organisations have different interests, expectations or goals. This can develop conflicts or confusion, resulting in a decision not to fully adopt an innovation or stop the collaboration (Bigdeli et al. 2011). According to Scholl and Klischewski (2007), interoperation of e-government might become successful if leadership styles are compatible and past experiences are positive. Hence, the following is hypothesized:

(H11): The more distinct the disposition and collaboration readiness among collaborative organisations, the less likely an organisation will adopt IEIS.

According to the literature, *trust* is an important factor that could influence the decision whether to adopt an innovation such as IEIS (Ansell & Gash, 2007; Bigdeli et al., 2013; Dawes, 1996; Landsbergen & Wolken, 2001). Trust refers to the belief in another organisation that performed actions will result in positive outcomes (Akbulut, 2009). It is identified by some as a precondition to information sharing (Dawes, 1996; Landsbergen and Wolken, 2001). Trust can be considered a behavioural characteristic that enables information sharing and collaboration between organisations and among employees (Mohammed et al., 2015). Lack of trust can arise during collaboration, but trust can also be lacking before starting collaboration. Landsbergen and Wolken (2001) point out that concerns may arise in an organisation about, for example, the validity and accuracy of data or information by other organisations. Autonomy loss and information misuse could also potentially decrease inter-organisational trust and frustrate the collaboration in an IEIS initiative (Yang & Maxwell, 2011). In the case of electronic information sharing, trust requires trust in the quality of the shared data from another organisation and the sharing process, and trust that participating organisations recognize and protect the rights and interests of the other engaging organisations (Fan et al., 2014). All in all, it is expected that trust positively influences the adoption of IEIS in judicial organisations. Hence:

(H12): Inter-organisational trust has a positive effect on IEIS adoption.

Another factor that could influence the adoption of IEIS is the *external pressure of social networks and network externalities*. Social networks can be defined as established informal relations within organisations and across organisations (Yang & Maxwell, 2011). Social networks comprise long-term benefits, trust, loyalty, commitment and reciprocity. A good relationship can convince an organisation to collaborate or cooperate in an innovative initiative (Mohammed et al., 2015). Furthermore, external pressure of network externalities could also affect an organisation's decision to adopt an innovative technology. A rise in users could put pressure on organisations that have not yet adopted the innovation, as the benefits of electronic information sharing would be more evident when the total number of participants increases. A lack of network externalities could demotivate an organisation to adopt an innovation (Bigdeli et al., 2013). Greenhalgh (2004) argues that organisations are influenced in their decision to adopt an innovation by organisations that are comparable and are planning to adopt, or already have adopted the innovation. Therefore, it is hypothesized that:

> (H13): External pressure of social networks and network externalities have a positive effect on the adoption of IEIS.

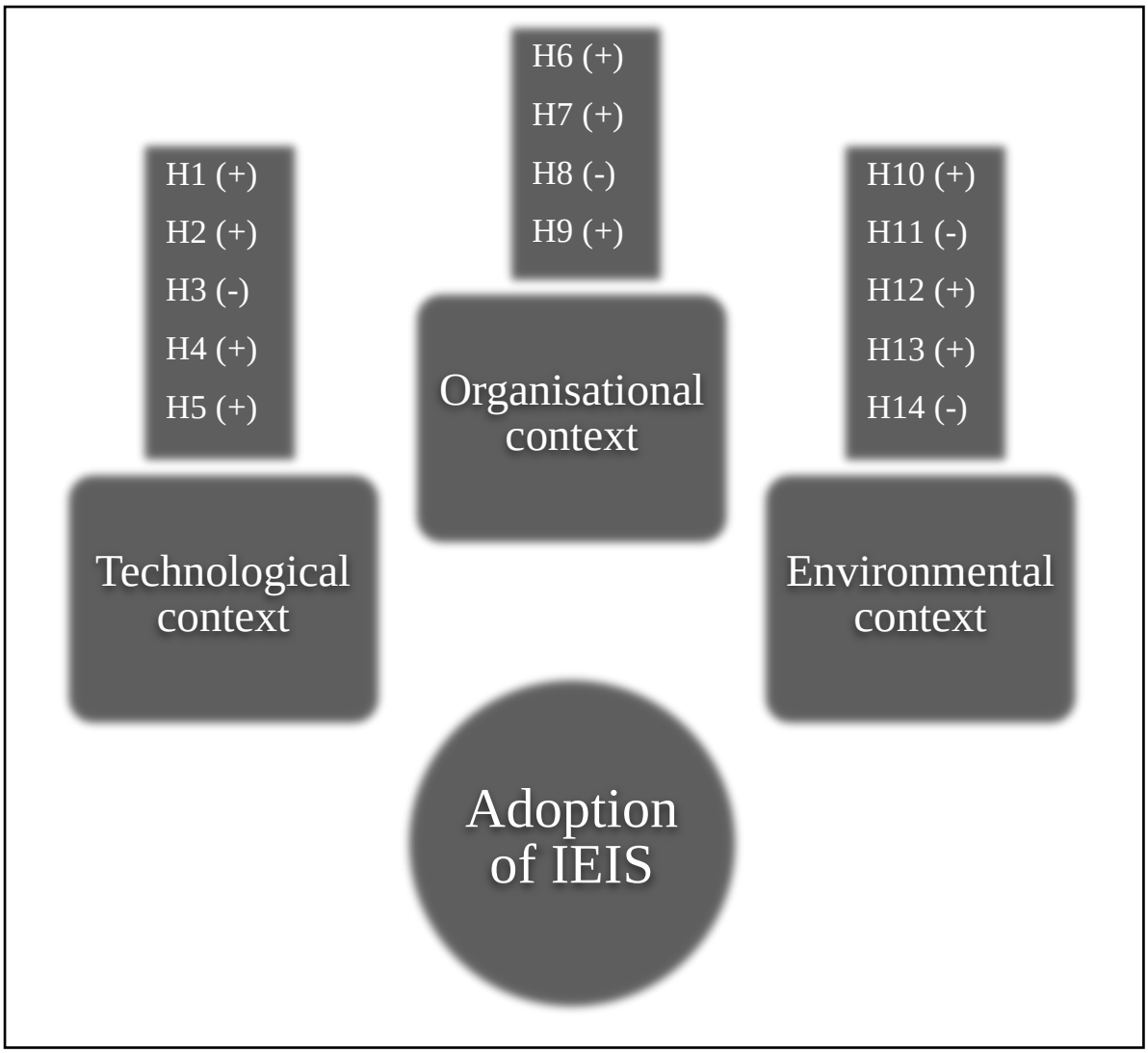
The final factor that is often mentioned in the literature of innovation adoption is *legislation and policy*. In the case study of Akbulut et al. (2009) about electronic information sharing between local and state agencies, there seemed a need for clear technical standards for information sharing and effective legal mandates and binding contracts to facilitate the initiative. A lack of legislation resulted in the non-compulsory use of the information sharing system. Furthermore, there were no requirements regarding how exactly to share information. As a result, local agencies were not committed or motivated to comply with the electronic information sharing initiative (Akbulut et al., 2009; Fan et al., 2014). Clearly defined and regulated legislation and policy could improve the relationship and trust among participating organisations, as it helps remove concerns about uncertainty (Yang & Wu, 2014). In the case of e-CODEX, the European Commission stated that "the e-CODEX system cannot be referenced in EU legislation as long as it has not been given a proper legal basis" (European Commission, 2020b, p. 8). The lack of a proper legal basis could lead to uncertainty among organisations about future management and funding of the system, resulting in a low uptake of e-CODEX among Member States (idem). Although a proposal for a regulation of e-CODEX

has been published by the Commission and negotiations about the proposal have started, there is yet no legal basis at the moment of writing. Hence,

(H14): The lack of legislation and policy has a negative effect on IEIS adoption.

All the discussed factors that could influence the IEIS adoption can be summarized in the following synthesized model:

Figure 1: Synthesized model.



3. | Methodology

This thesis comprises explanatory qualitative research using a multiple-case study as research method to identify the factors influencing the adoption of IEIS in a European and judicial context. The research is carried out in three phases. First, the research design was developed. Subsequently, the data was collected. Finally, the data was analysed. The purpose of this qualitative study is to better understand the adoption of innovative technology in the judicial domain of which the focus is cross-boundary (across organisations), but also cross-border (across national borders). It aims to test the factors that derive from the theory and identify potential other factors in a context that has not yet been explored, namely G2G adoption in a European and e-justice context. The case study in this thesis is e-CODEX, a system that has been developed by a project consortium of Member States to realise interoperability between judicial organisations in Europe. More specifically, the thesis will zoom in on three cases. The first case is the European Public Prosecutor's Office (EPPO), a judicial organisation planning to adopt e-CODEX in the near future. The other two cases are about two pilots where e-CODEX has been adopted as IEIS system for the following legal procedures: Financial Penalties and Mutual Legal Assistance in Criminal Matters / the European Investigation Order (MLA/EIO). The case description will briefly explain the technology itself, its history, and the cases where e-CODEX is piloted. Then, the unit of analysis will be discussed. Subsequently, the methodology will explain how the data is collected and analysed. The methodology will conclude with some words on the reliability and validity.

3.1. | Case description

e-CODEX is an EU co-funded Large-Scale Project that has developed the technical infrastructure for the interoperability between national e-justice systems and between legal authorities in Europe. e-CODEX has two aims: (1) It aims at improving cross-border access of citizens and businesses to legal means in Europe; (2) it aims at improving the interoperability between legal authorities of different EU Member States by digitalising the already existing European legal procedures (such as the European Investigation Order) or those that will be developed in the future. In June 2007, it was decided by the Justice Home Affairs Council of Ministers that ICT should be used at a European level in the field of justice. This led to the first European e-Justice Action Plan in 2008 (Carboni & Velicogna, 2012; e-CODEX, 2021a). The first e-CODEX project ran from December 2010 to May 2016 and concerned 25 partners that consisted of the Ministries of Justice or their representatives, representatives of EU legal

professions, and research representatives (Velicogna & Lupo, 2019). The e-CODEX project was followed up by the Maintenance of e-CODEX (Me-CODEX) project and Me-CODEX II, which ended in 2021 and will be succeeded by Me-CODEX III. While the first project was mainly about building the technical building blocks of e-CODEX, the latter projects are about maintaining the e-CODEX system and seeking for long-term sustainability of e-CODEX. Recently, the Council has approved the mandate for negotiations on the e-CODEX system, which brings a handover from the project consortium to eu-LISA, as mentioned in the literature review, a step closer (Council of the EU, 2021).

From a more technical perspective, e-CODEX has been defined as a "multilateral, content agnostic transportation infrastructure built to connect national and EU information systems" (Velicogna & Lupo, 2019, p. 29). It provides an interoperability layer that connects heterogeneous information systems through which data or documents can be sent or received by legal authorities. The e-CODEX components are content agnostic, meaning that the (legal) content of the message is hidden for the components of e-CODEX. The common standards for the documents, agreed by the partners, makes e-CODEX multilateral. This way, the information coming from one national information system, can be read by another national information system, despite the use of different formats (Velicogna & Lupo, 2019). Furthermore, the data and documents that are exchanged, is not stored by the e-CODEX system. It solely transports a message and deletes the message once the transmission is successful (Carboni & Velicogna, 2012).

e-CODEX has three building blocks that comprise the technical components of the system: the Gateway, the Connector and the e-CODEX data schemas. Member States need to have a Gateway to ensure that messages can be exchanged with the Gateway of another Member State. The Connector must be installed by the organisations using e-CODEX in order to connect their back-end systems with the national Gateway. This way, judicial organisations can communicate with counterparts in other Member States through an application in their own back-end system, via the Connector and Gateway (e-CODEX, 2021d). The e-CODEX data schemas consist of standardised data structures to ensure the interoperability of the exchanged data. That way, the data of organisations can be 'read' by other organisations without having to adapt the data or formats. These schemas are currently developed and maintained by the Me-CODEX II project consortium (e-CODEX, 2021e).

For a judicial organisation to share information electronically with cross-border counterparts through e-CODEX, organisations must adopt, and comply with, the technical building blocks as described above. It must install the Connector, Gateway (if it is not already

implemented nationally) and a business application (built in the back-end system) to create and process (received) e-CODEX messages. For organisations that do not have such a business application, e-CODEX has created a 'Standalone Client' which stores received messages into an existing file system and send messages from it. Nevertheless, for professional use, the e-CODEX consortium recommends integrating the components in the organisation's own back-end system (e-CODEX, 2021b). As already mentioned, the use of e-CODEX is completely voluntary, and will stay voluntary because the new regulation on e-CODEX does not contain rules on the mandatory use of the e-CODEX system (European Commission, 2020a).

While e-CODEX is considered a success in terms of its technical development, there is still an issue of limited user volumes, both by stakeholders in the justice domain, as citizen-use of e-justice services (Schmidt, 2018). This has also been recognised by the European Commission through an impact assessment on e-CODEX (European Commission, 2020b). Since the start of the project, the e-CODEX system has been used in a few European procedures, such as the European Payment Order (EPO) and the European Small Claims Procedure (ESCP) in civil matters, and the European Investigation Order (EIO) and Financial Penalties in criminal matters. However, participation varies between Member States. The Netherlands, for example, currently only participates in two European procedures on criminal matters: an EIO pilot with North Rhine-Westphalia; and a Financial Penalties pilot with France and Germany (e-CODEX, 2021b). To compare, the European Commission mentions there are 23 legal procedures in the area of judicial cooperation in civil matters, and 20 legal procedures in the area of judicial cooperation in criminal matters where e-CODEX could potentially be used for cross-border electronic data exchange between authorities in different Member States (European Commission, 2020a).

The first e-CODEX pilots that went live were the European Payment Order (EPO) use-case, based on Council Regulation 1896/2006, and the European Small Claims (ESC) use-case, based on Council Regulation 861/2007. These use-cases were followed by the Mutual Recognition of Financial Penalties (FP) use-case, based on Framework Decision 2005/214/JHA, and the Mutual Legal Assistance in Criminal Matters/European Investigation Order (MLA/EIO) use-case, based on the European Convention on Mutual Assistance in Criminal Matters and Directive 2014/41/EU (e-CODEX, 2021f). The EPO and ESC use-cases are G2C examples, which is not the focus of this thesis. The latter two use-cases are G2G examples, because in these cases e-CODEX is used to realise the interoperability between the legal authorities (also called 'central authorities') responsible for these two cross-border legal

procedures in the Netherlands, Germany and France. Hence, the focus will be on the FP and MLA/EIO use-cases.

The FP use-case is a pilot between the Netherlands and France that started in 2016. As of 2020, the Netherlands also exchanges financial penalties with Germany. The FP use-case refers to the Framework Decision 2005/214/JHA of 24 February 2005 on the application of the principle of mutual recognition to financial penalties. This Framework Decision enables the execution of financial penalties in cross-border cases and enables a competent judicial authority to transmit a financial penalty to an authority in another EU Member State. That financial penalty is then recognised and executed (e-Justice Portal, 2021a; Häussermann & Johnson, 2019). However, when an EU citizen does not pay the fine as received from another EU Member State, there was not much that could be done by the requesting authority. e-CODEX, however, enables the process of enforcing the payments of unpaid fines (Agence Nationale Traitement Automatisé des infractions, 2019; Häussermann & Johnson, 2019).

The MLA/EIO use-case is a pilot between the Netherlands and North Rhine-Westphalia. It refers to the European Convention on Mutual Assistance in Criminal Matters and the Directive 2014/41/EU of the European Parliament and of the Council of 3 April 2014 regarding the European Investigation Order in criminal matters. This Directive allows for investigative measures to gather evidence in criminal matters carried out in another EU Member State (e-Justice Portal, 2021b). e-CODEX enables the electronic exchange of investigation orders and related electronic evidence between participating judicial organisations. Apart from the e-CODEX pilot, the EIO forms are usually written orders sent by post to the central authority in another Member State that is requested to execute the order (Geelhoed & Ouwerkerk, 2017; e-CODEX, 2021g). It is only since the respondents who were involved in the pilot have been interviewed, that it has become known that the MLA/EIO pilot has now stopped

These specific pilots are chosen as case studies because they are clear examples of G2G initiatives enabling cross-border electronic information sharing between judicial organisations. Moreover, the participating organisations are familiar with e-CODEX and are therefore able to indicate whether certain factors have influenced the adoption process. The next subsection will give an overview of the unit of analysis.

3.2. | Unit of analysis

The unit of analysis comprises the two use-cases, namely the FP and MLA/EIO use-cases, one organisation that is planning to adopt e-CODEX, and the e-CODEX project consortium. Subsequently, the target-group will be those employees from the organisations participating in

these pilots and who have been involved in the adoption of e-CODEX. To give an idea of the sample in relation to the population: So far, seven use cases or pilots have been launched by a total of ten Member States. All seven pilots apply e-CODEX to a specific legal procedure (European Commission, 2020b). To collect more diverse data and perspectives on the matter, the sample also includes members of the project consortium and one organisation that is intending to adopt e-CODEX.

For the FP use-case, the participating organisations are the Central Judicial Collection Agency (in Dutch: CJIB) in the Netherlands, the National Agency for Automated Offence (ANTAI) in France, and the Federal Office of Justice (Bundesamt für Justiz) in Bonn, Germany (Häussermann & Johnson, 2019). These organisations are the central authorities responsible for the FP Framework Decision. Due to time constraints, the Federal Office of Justice in Bonn was not approached for an interview and only respondents from the CJIB and ANTAI have been interviewed. While it would be desirable to include all perspectives of the FP use-case participants, the data collected from the CJIB and ANTAI are believed to be sufficient due to extensive information provided by CJIB about the pilot with their German partners.

For the MLA/EIO use-case, the participating organisations are the International Legal Assistance Centre (in Dutch: IRC) in Limburg, the Netherlands, and the Ministry of Justice in North Rhine-Westphalia (Ministerium der Justiz des Landes Nordrhein-Westfalen) (European Commission, 2020b). In this pilot, e-CODEX supports the cooperation for criminal matters by realising the electronic exchange of requests for legal assistance. The pilot between IRC Limburg and the Ministry of Justice in North Rhine-Westphalia went live in 2015 (e-CODEX, 2016). It is only since the respondents have been interviewed, that it has become clear that the MLA/EIO pilot has stopped in the summer of 2021.

To provide a more extensive view on the issue, interviews are also held with a judicial organisation that is planning to adopt e-CODEX (the European Public Prosecutor's Office (EPPO)), and members of the e-CODEX project consortium. One member of the e-CODEX project consortium formally works for Justid (the judicial information service in the Netherlands, which is part of the Ministry of Justice and Security), an organisation that has put a lot of effort into the technical aspect of e-CODEX, both as creator and facilitator.

The respondents were all chosen and contacted through snowball sampling. The Dutch members of the e-CODEX project consortium were interviewed first due to their proximity to the author which made it easier to get first-hand information, and for further recruitment of other relevant actors. As G2G collaborative projects are relatively hidden for the public, snowball sampling was necessary in order to find accurate and relevant samples for the research

subject central in this thesis. Through snowball sampling, the respondents from the interviewed organisations could be approached. Respondents were then selected based on their willingness to participate. As any other non-random sampling method, snowball sampling does not guarantee representation of the population.

While it would be desirable to interview all organisations that decided or intent to adopt e-CODEX, the number of interviewed organisations had to be limited mainly due to a short time frame and respondents' busy agendas. A higher number of interviews would increase the empirical value of the study. However, the advantage of a limited and diverse sample is that extensive in-depth interviews could be held with the interviewees, resulting in valuable data. The interviewees are individuals who work as consultant, legal advisor, policy officer, or (former) head of department at the e-CODEX project consortium (respondents 1, 2, and 3) or a judicial organisation (respondents 4, 5, 6, and 7). For an overview of the respondents, their function, and organisation, see appendix II. Because of their role and involvement, their knowledge and experience will be relevant for the research of this thesis.

3.3. | Data collection

According to Yin (2003), interviews are one of the most important sources of case study information. The data collection method for this thesis is the conduction of 8 in-depth semi-structured interviews (mostly via videoconference due to restrictions because of the COVID-19 pandemic). The videoconference application that was used, is called 'Webex by Cisco'. All respondents were approached and invited for an interview by e-mail. None of the approached individual refused to be interviewed. In three cases, the interviews were held face-to-face on location, because the COVID-19 restrictions were less strict in that particular period. The semi-structured interview guide allowed interviewees to fully reflect on their experiences. The interviews are conducted in Dutch or English, and the length of the interviews ranged from 50 minutes to 1 hour and 20 minutes. A distinction was made between three groups, on which the interview guide was adapted: One interview guide was made for organisations that are piloting e-CODEX; one interview guide for organisations that are considering to start participating in e-CODEX; and one interview guide for members of the e-CODEX project consortium. Within these groups, all interviewees were asked the same questions from the interview guide, as provided in appendix I.

The interview questions derive from the formulated factors and hypotheses based on the theoretical framework and are partly based on the interview questions by Akbulut (2003). General and miscellaneous questions were needed for the context, but also to identify possible

other factors than those provided in the theoretical framework. Appendix I presents the interview guide used, with each question linked to a hypothesis.

The conducted interviews were recorded with a mobile recorder, whereafter the recorded data was transcribed and analysed thoroughly. After transcribing the interviews, the qualitative data was coded in order to categorise the factors so that it could be better analysed and interpreted.

3.4. | Data analysis

Data analysis comprises the examination, categorisation, and tabulation of the qualitative evidence to address the initial propositions of a study (Yin, 2003). The strategy of data analysis was to follow the theoretical propositions or hypotheses. Three phases of data analysis were followed: first, the data was reduced, then the data was displayed, and finally the conclusions were drawn (Miles & Huberman, 1994). The main tool of data analysis for this thesis is coding. Qualitative codes "take segments of data apart, name them in concise terms, and propose an analytic handle to develop abstract ideas for interpreting each segment of data" (Charmaz, 2006, p. 45).

After transcribing all interviews in Word documents, the data was coded at the sentence and paragraph level. The data was reduced by categorising the relevant data under predetermined codes, deriving from the predetermined factors from the TOE framework. The codes are therefore theory-driven and prior research-driven, meaning that there was already a start list of codes based on past research (Charmaz, 2006). Each sentence or paragraph was coded into one or more of the categories based on the predetermined factors. Irrelevant data (data that was unrelated to the factors influencing the adoption process) was discarded. After coding, the data was organised in a data set so that it permitted to draw conclusions. The data set can be found in appendix III.

Conclusion drawing is the process of noting patterns, themes, seeing plausibility, and making contrasts or comparisons (Miles and Huberman, 1994). In this stage, meaning is generated by attempting to offer interpretation of the collected data (Charmaz, 2006). The data is analysed in the findings chapter and interpreted and discussed in the discussion chapter.

3.5. | Operationalisation

Operationalisation is the process by which is spelled out how variables will be measured. Table 1 provides a summary of the operationalisations for each of the independent variables.

Table 1: Summary of the operationalisations for each of the independent variables

Independent variable	Operationalisation	Reference
Relative advantage	The degree to which e-CODEX is perceived to be better than the idea it supersedes providing greater perceived organisational benefit.	Roger, 2003
Compatibility	The degree to which e-CODEX is consistent with existing structures, processes and needs of the adopting organisation.	Roger, 2003; Pardo et al., 2012
Complexity	The degree to which e-CODEX, or its adoption, is perceived as relatively difficult to understand and use.	Roger, 2003
Trialability	The ability to experiment with e-CODEX on a limited basis.	Roger, 2003
Observability	The degree to which the results of e-CODEX are visible to others.	Roger, 2003
Top management support	The degree to which the values of the management are in favour of e-CODEX thus creating a supportive climate for its adoption.	Bigdeli et al., 2013; Zheng, 2013
Slack resources	The degree to which financial, personnel, and IT resources are available.	Zheng, 2013; Akbulut et al., 2009
Perceived costs	The degree to which perceived costs are clear and exceed the benefits of e-CODEX.	Landsbergen & Wolken, 2001; Zheng, 2013
Championship	The commitment to the adoption of e-CODEX by a person within an organisation.	Akbulut, 2003; Greenhalgh, 2004
Facilitative leadership	The commitment of an external entity to facilitate support collaborating partners.	Ansell & Gash, 2007; Bigdeli et al., 2013
Disposition to and readiness for collaboration	The degree to which goals, interests and objectives of collaborating organisations are aligned.	Bigdeli et al., 2011; Scholl & Klischewski, 2007
Inter-organisational trust	The level of trust between organisations that performed actions will result in positive outcomes.	Dawes, 1996; Landsbergen & Wolken, 2001; Akbulut, 2009
External pressure of social networks and network externalities	The degree to which pressure of social networks and network externalities is felt by adopting organisations	Mohammed et al., 2015; Greenhalgh, 2004
Legislation and policy	The degree to which legislation and policies are in place to facilitate the adoption and use of e-CODEX in one way or the other.	Bigdeli et al., 2013; Yang & Wu, 2014

3.6. | Reliability and validity

Reliability and validity are some of the most prominent criteria for the evaluation of social research. The reliability of a study says something about the repeatability of results or observations. Validity is about the integrity of the conclusions of a study. The two distinctions of validity that will be made in this thesis are internal validity and external validity (Bryman, 2012). According to Brink (1993), error is one of the key factors affecting validity and reliability and must therefore be minimised as much as possible. Major sources of error can be the researcher, the subjects (respondents), the situation, and the methods of data collection and analysis.

Reliability can be ensured by minimising the researcher bias (Brink, 1993). As mentioned earlier, the author of this thesis had prior experience as intern and employee at the Dutch e-CODEX team at the Ministry of Justice and Security, hence the interest in the subject matter of the study. It was therefore assured that the same interview guide and method was used for all respondents, including (former) colleagues. The interview questions were all strictly based on theory and prior research, instead of prior knowledge or assumptions. Moreover, all conducted interviews were in a quiet setting to set the same stage for everyone. Therefore, all interviewed respondents were treated the same way. Finally, all interviewed respondents gave permission to audiotape the interviews after asking beforehand.

Two errors arose during the conduction of the interviews. Firstly, for the interview with the EPPO, there was not enough time to finish the interview, hence some questions had to be skipped. The second error arose during the interview with ANTAI. Because of technical issues regarding the Webex videoconference application, it was not possible to conduct a one-to-one interview with this organisation. However, input was still provided by answering the questions in writing. Yet, the answers are therefore less extensive than the other conducted interviews.

Validity determines whether the research truly measures that which it was intended to measure by the researcher (Golafshani, 2003). Internal validity is the extent to which research findings match reality. Internal validity could be a concern, as unexpected external factors, or factors that are not included in this thesis, may be of influence. However, in order to provide as many as possible propositions and to maximise internal validity, all respondents were systematically asked whether other factors could also be of influence. For the factors chosen in this thesis, an extensive literature review was conducted to identify as many factors as possible that are relevant for the context of this thesis. A factor that jeopardizes internal validity is the selection of subjects. For the unit of analysis, the author had chosen its respondents based on prior experience as employee within e-CODEX. This can, however, be justified, as the

respondents are selected on ground of relevance to the research question and hypotheses proposed. After the first interviews with members of the project consortium, snowball sampling led to the other respondents.

Finally, the external validity is the extent to which the results are generalisable to other settings or problems (Charmaz, 2006). By focusing on the specific case of e-CODEX, the aim of the research was to expand the theoretical framework to the context of the European justice domain, with relevance for practitioners. However, because e-CODEX is a unique example of a technological innovation, it would be difficult to mirror the results to other cases. Also, due to the limited number of respondents and non-random sampling, the external validity and generalisability are hard to proof.

4. | Findings

This chapter presents the findings from the interviews conducted across eight different individuals and five different organisations in the European justice domain. The TOE framework was used to structure the interview questions and to divide the questions into the different underlaying factors and hypotheses as derived from the literature. First, the findings regarding the technological context will be laid-out, followed by the organisational and environmental contexts.

4.1. | Technological context

4.1.1. | Relative advantage

The first factor is about the relative advantage of e-CODEX as technology. The results of the interviews show that e-CODEX was or is initially perceived as an improvement and more beneficial option than its predecessor, which motivated the respondents to participate. Therefore, the first hypothesis is supported. Respondents from the e-CODEX project consortium mention the following advantages of e-CODEX:

> "The scalability and the enormous volume that you can achieve in digital collaboration is an important advantage. So, you can achieve enormous volume, you can collaborate much faster, and the usability of the data to be received." (Respondent 1).

> "The speed, the error sensitivity, and the volume which e-CODEX can support are important drivers for organisations. In particular, reliability and the elimination of error-proneness are the most important criterion." (Respondent 2)

> "The advantage of e-CODEX is that you can send data, such as electronic evidence, electronically and securely to another Member State (…) With e-CODEX you know for sure that information ends up in the right place on the other side and not in a physical mailbox of someone where it really doesn't belong." (Respondent 3).

Respondents 1 and 3 note that the benefits of e-CODEX depend on how progressed the IT infrastructure of an organisation is. If an organisation does not have a progressed IT infrastructure of its own, then sending and receiving via e-CODEX would be a difficult task.

Considering that members of the project consortium are more inclined to positively ascribe the perceived advantages to e-CODEX, more value can be attached to the respondents of organisations that are either using e-CODEX or are planning to adopt the system. From the perspective of organisations that have already adopted e-CODEX, respondent 4 of the CJIB mentions that initially optimization, speed (of the work process), and security were the main perceived benefits when they started using e-CODEX. However, the CJIB notes that the many updates are considered a drawback in the work process, something that is also cited by members of the project consortium:

> "But if you look at technological aspects, we encounter a lot of errors in this trajectory, with updates that are not known to everyone or that are not implemented properly by everyone. Every time we have the system back on track a little bit, and there is another update in the system, it is completely upside down again." (Respondent 4).

For the French organisation involved in the Financial Penalties pilot, e-CODEX is perceived as beneficial because it enables something that was previously not possible:

> "Foreign drivers could get away with fines while driving in France. Compared to EUCARIS[1], e-CODEX enables the forced collection of fines from foreign drivers." (Respondent 5).

For the organisations participating in the MLA/EIO use-case, similar benefits were perceived at the start of the collaboration in e-CODEX. For the Ministry of Justice of North Rhine-Westphalia, the main benefit of e-CODEX was that it promised to create a secure and quick communication channel between the operational levels of national or regional authorities in a cross-border setting. This is ascribed by the IRC Limburg authority in the Netherlands:

> "We expected that the major advantage would be that our requests for legal assistance from abroad could be submitted digitally and that it would automatically appear in LURIS, our system in which we process requests for legal assistance in the Netherlands (…) We had the hope that the process would become easier." (Respondent 6).

[1] EUCARIS (European Car and Driving License Information System) is an information exchange system to share car- and driving licence-registration information.

For both organisations, the initial perceived benefits were not realised over the course of the pilot, which led to the recent decision to discontinue the e-CODEX pilot. It can therefore be argued that the perception of the benefits is indeed an important factor for organisations to adopt e-CODEX or start collaboration, but it is not enough for full implementation, as disappointment regarding the initial benefits could lead to rejection.

Finally, from the perspective of an organisation that is not using e-CODEX but that is planning to do so soon, many advantages are seen in the interoperability aspects of e-CODEX. Besides the secure way of communicating and the efficiency, respondent 6 of the EPPO ascribes the interoperability framework of e-CODEX as main advantage compared to their current work processes. Connecting the back-end system of national authorities with the case management system of the EPPO could lead to more efficiency. It is a perceived advantage that e-CODEX could digitally connect any national authority with the EPPO, including those with a lower level of digitalisation. The latter could be a misplaced perception, as respondents from the project consortium mentioned that the benefits of e-CODEX depend on the level of digitalisation, as mentioned earlier.

In sum, all interviewees seemed to initially perceive e-CODEX as an improvement of an organisation's work processes, due to the security and speed of communication, and the efficiency and reliability of the method used. But in the case of the pilots, the perception of the benefits declined once the pilots progressed.

4.1.2. | Compatibility

According to the literature, organisations that are compatible with the innovation in terms of technology and organisational needs, are more likely to adopt the innovation. Respondents from the project consortium of e-CODEX affirm that the organisations that could more easily connect their back-end system to e-CODEX, were also more prone to the adoption of e-CODEX. This is especially the case for Dutch judicial organisations, such as CJIB and IRC Limburg:

> "For the Dutch context (…) it was quite easy because e-CODEX as a solution is based on how we do it in the Netherlands, the 'electronic message traffic' (EBV), as organized by Justid. So, in the Netherlands, yes, it is very compatible and relatively easy to implement." (Respondent 3).

> "Both IRC Limburg and the CJIB did have an existing application. Both were set up for analogue (paper) exchange that was digitized by employees from which they could

> further handle the matters to be exchanged, and in that sense, you can say that it was simple because the paper flow was replaced by a digital one, and because a digital work process for outgoing flow already existed internally." (Respondent 2).

Respondent 4 from the CJIB also confirmed that e-CODEX was technically compatible with their systems and work processes:

> "Of course, we still had to make adjustments to our systems, set things up and make a differentiation between countries and the influx. (...) We have had almost no errors, let me put it this way. That is also because we were already on the justice standard. The way we exchange is not very different from what we normally do." (Respondent 4)

According to the project consortium and the CJIB, these Dutch organisations had the advantage of having Justid (the Dutch Judicial Information Service), which has been closely involved in the development of e-CODEX and constructing the data structures as IT supporting service.

However, during the Financial Penalties pilot (after adopting e-CODEX as IEIS) it also became clear for CJIB and especially ANTAI that the systems were not consistently technologically compatible, leading to various technical complications. In the case of ANTAI, technological struggles have resulted in the inability to digitally exchange data through e-CODEX with their Dutch counter partner up until today:

> "The first test of sending a case through e-CODEX was in May 2016. Thereafter, ANTAI needed almost a year (between May 2016 and July 2017) to build an operational system and be able to send 25 cases per month to our Dutch counterparts. ANTAI had to assess and manage the technical and organizational impact. It revealed that new developments were needed in order to reinforce the pre-selection rules of files. Accepting or rejecting a file is still done manually by the French and Dutch authorities, which is time-consuming." (Respondent 5)

According to respondent 1 from the project consortium, some organisations thought they would be technologically compatible with e-CODEX, but it then turned out they were not. This shows that actual compatibility and the misperception of compatibility is an important distinction for the adoption of a technological innovation, which in turn could lead to technical difficulties after the adoption of an innovation.

Yet, the EPPO, the organisation that is planning to adopt e-CODEX as IEIS, is confident that their case management system is compatible with the e-CODEX data structures:

> "The understanding is that particularly for the CMS to CMS of data exchange, at the moment we are able to map by e-CODEX connectors our data model and data structure with the one of the e-CODEX. We should not have major issues. All the consultants and our architects we had discussions about this were very confident that in an extremely short timeframe we would be able to integrate with e-CODEX." (Respondent 8).

In terms of compatibility with the needs of an organisation, both organisations involved in the Financial Penalties pilot mention the organisations' own self-interest in relation to adopting e-CODEX. For ANTAI, adopting e-CODEX would assure that foreign drivers would be forced to pay their fines to France. For CJIB, adopting e-CODEX and cooperating with the French counterpart was also considered an opportunity and boost for the digitization process of the CJIB. For IRC Limburg, e-CODEX also fitted their organisational needs. However, the expectations of e-CODEX were not met once they started the pilot with the German counterparts: "Where it can ease or simplify my work by making it automatic, that fits our needs. Unfortunately, it's not quite there yet." (Respondent 6).

In short, compatibility in terms of technical integration and organisational needs seems to positively affect the adoption of e-CODEX. Therefore, the second hypothesis can be supported. However, as mentioned, organisations may also incorrectly perceive their organisation as digitally compatible with e-CODEX, leading to difficulties in the implementation. This could in tun complicate the collaboration between organisations.

4.1.3. | Complexity

Complexity refers to the degree to which an innovation is perceived as difficult to use and understand. But also, the participation in electronic information sharing could be perceived as complex, resulting in the potential rejection of an innovation (Rogers, 2003; Akbulut, 2003).
The interviewees of the project consortium all mentioned the relative simplicity of e-CODEX in terms of technology, at least on paper. According to respondent 1, e-CODEX was designed to be implemented within the existing systems of organisations, precisely to minimize alteration and maximize acceptance of the adopters. Especially in the Netherlands, organisations could implement e-CODEX more easily, because the national and European standards are similar, and the IT landscape has a high level of digital maturity. Most organisations participating in e-

CODEX pilots did not perceive the technology itself as complex. The complexity of implementing e-CODEX is mainly perceived by the respondents to be related to organisational factors. This was emphasized by the CJIB in their experience with the Financial Penalties pilot. Respondent 4 mentioned that properly testing the technology across borders is considered as complex, as well as making good agreements about it and to keeping each other well informed.

> "I think implementing is easy to do, and not very complex if you free up the right people and capacity within your own organisation, because, again, it's not like e-CODEX provides the IT people. (...) I think it's mainly about maintaining e-CODEX afterwards. So, if there are updates or if there are hiccups, then there should be a team of people who solves that." (Respondent 3).

Based on above, it can be argued that the implementation of e-CODEX is less complex if the IT expertise within the organisation is in order, so that they can deal with updates or other hiccups regarding e-CODEX.

Respondents 7 and 8 of the Ministry of Justice of North Rhine-Westphalia and IRC Limburg mentioned that different data definitions negatively impacted the proper functioning of the data transmitting. This could be considered complexity in both technological and organisational terms, because technological errors were experienced due to organisational issues (lack of agreements regarding definitions).

The only organisation interviewed that had a hard time implementing e-CODEX in terms of technology, was ANTAI. According to the respondent, the information system of ANTAI needed some substantive development in order to be able to exchange information via e-CODEX. According to the CJIB respondent (ANTAI's partner), the important difference between their organisation and ANTAI is that CJIB has very short lines between IT experts and the actual users. ANTAI hires an external ICT company with a limited budget and an assignment that was not very clear at the start. Here as well, it is more the organisational complexity and the complexity related to the collaboration between participating partners.

In sum, the technological and organisational complexity arose mainly during the implementation phase, resulting in the rejection for one organisation (IRC Limburg), but not for the CJIB and ANTAI. Organisations could hardly perceive e-CODEX as complex from the start, as they had no experience with e-CODEX before. Because complexity is rarely directly cited as a barrier to adoption, hypothesis 3 is weakly supported.

4.1.4. | Trialability

The responses of the respondents vary slightly when it comes to the trialability of e-CODEX. In the case of the Financial Penalties pilot, both respondents 4 and 5 note that there was no ready-to-use package they could try when the pilot started. Only after the adoption, there was the phase of trialability where both CJIB and ANTAI could use the test environment to exchange information. Beforehand, both organisations had to commit and invest in e-CODEX in order to enter the test environment. This was also confirmed by the respondents of the project consortium. Respondent 2 acknowledged the risk that the organisations took by entering an e-CODEX pilot while it was not widely used or tested yet:

> "For the CJIB and the IRC Limburg, the lack of trialability was not a problem. They have been prepared to stick their necks out, but other Dutch organizations may have been more reluctant to do so." (Respondent 2).

For the Ministry of Justice in North Rhine-Westphalia, the decision to participate in the e-CODEX pilot was a political decision, according to respondent 7. Because e-CODEX had yet to be developed the moment the Ministry of Justice of NRW and IRC Limburg started their pilot in 2010, they were involved in the whole build-up of the e-CODEX system. Therefore, they did not have the opportunity to first try the system before adopting it.

When asked whether the ability to experiment with e-CODEX before adopting it, the EPPO responded that it would be fundamental, as the data exchange between case management systems needs to be tested at the level of staging environment (instead of the live production environment). This means that while the CJIB, ANTAI, IRC Limburg, and the Ministry of Justice of NRW adopted e-CODEX without (free) access to any trial, it is considered fundamental by another organisation. Although trialability could still have a positive effect on IEIS adoption, the data suggests that the possibility to experiment is not considered a requirement for adoption. The hypothesis can therefore be moderately supported.

4.1.5. | Observability

In all the responses, the observability of e-CODEX prior to the adoption does not seem to be of any relevance. The EPPO has had two talks with users of e-CODEX, prior to any decision to adopt it, but the respondent mentioned that he wants his organisation to be an initiator that "really shows to the rest of Europe the real advantages of using e-CODEX" (Respondent 8). The number of users or experiences of other users seem less important.

Regarding the Financial Penalties pilot and the MLA/EIO pilot, both pilots started early after e-CODEX was launched, therefore there were no other pilots or results that could have motivated these organisations to use e-CODEX. Because observability was rarely cited, hypothesis 5 received weak support.

4.2. | Organisational context

4.2.1. | Top management support

Top management support is described by the respondents as a crucial factor for the adoption of e-CODEX. In all cases where e-CODEX was adopted (Financial Penalties and MLA) or is considered for adoption (EPPO), the support of the top management was/is necessary. Hypothesis 6 can therefore be supported. First of all, support was expressed at the DG level within the Ministry of Justice and Security in the Netherlands. According to one respondent from the project consortium, this assured that organisations that fall under this Ministry would run faster to adopt and implement e-CODEX.

According to the respondent of IRC Limburg, not only the top management support was present, e-CODEX got the support of employees of all levels:

> "Yes, it was positive. (...) I have a team of older people who have been doing that work for years. And when something new comes along, it takes some time to get used to it. Anyway, they saw, or at least there was hope that it would bring us benefits and they were also enthusiastic, 'we are going to do it!'." (Respondent 6).

However, when the initial benefits were not perceived as beneficial anymore by the users, it got also more difficult for the top management to continue the support for the use of e-CODEX.

The EPPO is, at the time of writing, in discussion with the project consortium about the adoption of e-CODEX. The respondent is receiving support from his boss, the top management of operations and IT to lead the discussions with the project consortium. However, respondent 6 emphasizes that the full endorsement is still needed from the members of the College of EPPO and the European Chief Prosecutor. Although the respondent notes that there are some concerns about convincing one of the Deputy European Chief Prosecutor, because of his negative experience with electric tools, the respondent is confident that the adoption of e-CODEX will be endorsed by all layers of the top management.

In the case of Financial Penalties, the top management of both CJIB and ANTAI endorsed the adoption of e-CODEX. The (former) directors of these organisations were both

personally involved in the implementation of e-CODEX. They went to the e-justice conference together in Amsterdam to present their collaboration. By expressing their support in e-CODEX publicly, they established their confidence in e-CODEX and the employers responsible for the implementation. According to respondent 1 from the project consortium, it also had a positive impact on making the innovation more visible.

However, according to CJIB, it will be more difficult to receive ongoing support from the top management when the adopted innovation does not live up to its value. In the case of Financial Penalties, the rollout has not been the most successful. When the adoption costs more than it earns, top management support could disappear, according to respondent 4. Nonetheless, at the time of writing, this is not the case and the CJIB is even working on the expansion of its e-CODEX connection to new Member States.

Respondents from the project consortium also emphasized that some organisations failed to adopt e-CODEX because top management support was missing. One example that is mentioned by two respondents of the project consortium, is the European Payment Order pilot. When the Court of The Hague was approached to join this pilot, the chairman of its board rejected the plan because their IT service provider could not develop the outgoing flow in the information exchange: "Then the chairman of the board said, 'it will not go ahead'. He said if we can't do two-way traffic, we'll stop" (Respondent 1).

4.2.2. | Slack resources

In the literature, one of the most frequently cited barriers to the adoption of electronic information sharing is the lack of (financial) resources. As well as for e-CODEX, the availability of financial, personnel, and IT resources is often cited to be an important factor for the adoption of the system. Therefore, hypothesis 7 can be supported.

> "With regard to financial resources, this is why we always hoped that we could connect to existing systems because that would minimize the investment for the receiving party. If you embed (e-CODEX) in existing systems, you don't have to train more people in how the system works, nor do you have to make a lot of investment in the interface. Ideally, we would therefore connect to existing systems." (Respondent 1).

This shows that the project consortium designed e-CODEX in a way that the financial and technical impact on users would be minimised. Yet, according to the same respondent, IT-expertise within the organisation is crucial in order to maintain and test e-CODEX. Respondent

3 also mentioned that the organisations themselves are responsible for implementing the necessary updates of software elements and for meeting the correct security requirements. In the case of ANTAI, IT personnel had to be hired externally for the adoption of e-CODEX, which was problematic because there was no structural IT expertise within the organisation for the maintenance of the information exchange and there was also the inability to act fast in cases of technology issues (respondents 4 and 5).

Regarding financial resources, all respondents cited the importance of the availability of financial resources for the adoption of innovation. According to the project consortium, some organisations or countries decided not to participate in e-CODEX because of a lack of financial resources. For example, Belgium initially wanted to join the MLA/EIO pilot. However, the IT environment was not as far developed yet as the German and Dutch authorities' IT environment. The Belgian authorities could not join the pilot because they did not have enough financial resources available to meet the technical requirements to exchange data via e-CODEX with the Dutch and German counterparts.

For the CJIB, the use-case with the French ANTAI did not meet the expectations it had when they started the pilot. Hence, the investment has not been paid back yet, making it more difficult to convince the top management to continue the pilot and implementation of e-CODEX, according to respondent 4. However, for now there is still enough motivation for CJIB to continue with e-CODEX. Because the investment is already done, any expansion would not cost a lot more money.

For other interviewed organisations, financial resources were given by their head department, such as the Ministry of Justice in the Netherlands for the IRC in Limburg, or the coverage of half of the costs by the French Ministry of Justice for ANTAI. This made the decision to adopt e-CODEX significantly easier (respondents 2, 5, 6).

4.2.3. | Costs

The perceived potential costs of the adoption of an IEIS are closely related to the availability of slack financial resources. Landsbergen and Wolken (2001) note that the costs of the adoption of an innovation such as IEIS must be very clear for an organisation in order to decide whether to participate or not. However, most respondents indicated that the costs of implementing e-CODEX were/are not clear, despite having already adopted the system and having made the investment:

> "(The costs were) not clear at all. We discovered the costs at the same time as implementing e-CODEX." (Respondent 5).

> "No, there was no calculation at the beginning. (...) it was more the investment in the personnel staffs, you know, people working on that." (Respondent 7).

> "(The costs), that was still a bit vague. The costs add up as soon as there are errors, of course. You have to test (...) so that was not very clear at the front, no." (Respondent 4).

The respondents from the project consortium also mention that the costs were not clear for organisations. One respondent emphasized that this was deliberately done so:

> "We have never mapped out the costs very well, consciously, because the costs differ for each Member State. Because personnel costs differ, we found it very difficult to put a price tag on something for the organisation. So, we have always communicated in man-hours and FTE that is required, but that is also a bit off-the-cuff, because you can say one FTE IT specialist is needed to do this, or to do that, but that will also differ per country." (Respondent 3).

Based on the answers of the respondents, the lack of clarity was no barrier for those organisations who decided to participate in a pilot with a partner organisation. However, these organisations did get funded (at least partly) by centralized money, which could make it easier for an organisation to enter a pilot without a clear estimation of costs. Because the costs were unclear for the organisations, and the perceived costs were not cited as problematic for adoption, hypothesis 8 cannot be fully supported.

4.2.4. | Championship

A champion within an organisation is committed to introducing an innovation to the organisation. The respondents all mention the importance of such a champion within the organisation, and therefore hypothesis 9 can be supported.

> "(Such champions are) crucial. Because as a policy officer at the Ministry or, in my role as an IT service provider, you can tell a wonderfully beautiful story, but there must be an internal business driver present, so there must be a need for them to start looking for

that internal cooperation in the first place, plus you need an internal sponsor." (Respondent 2).

"Yes, I think (champions are) super important! (...) If we had a champion in every organisation, we would be much further with the implementation of e-CODEX. So, I think (champions) are really important and we don't have enough of them. Currently, it is a small bubble of people who deal with e-CODEX and see the importance of it. So, I think that more investment in (champions) is needed." (Respondent 3).

According to the respondents of the project consortium, champions who understand the benefits of the innovation are necessary for the successful adoption of e-CODEX. However, they also acknowledge how difficult it is to have a champion within an organisation, and that the lack of such champions could have an impact on the adoption rate of e-CODEX.

Respondent 4 is responsible for the implementation of e-CODEX within the CJIB from the start. This person indicates that a lot of work had to be done to internally enthuse the organisation and gain support. This respondent, who clearly understands the benefits of e-CODEX, provided leadership in pursuing the enthusiasm and support within the organisation. The respondent also led the establishment of contact with foreign partners in order to expand the e-CODEX network. It shows that a champion could be considered as a driver for the adoption and implementation of an innovation within the organisation.

The respondent of the Ministry of Justice in North Rhine-Westphalia, who was also responsible for the implementation of e-CODEX for the MLA/EIO pilot, affirms the effort that is needed to enthuse all relevant actors: "You need to get support by the partitioners, so you must find allies at a high level, not only at the ministry level but also on, let's say, the local level." (Respondent 7).

Respondent 8 from the EPPO is also responsible for the adoption of e-CODEX and leads the talks with the project consortium. This respondent, who is also convinced of the benefits of e-CODEX, pushes forward the talks internally with the top management, members of the College and the deputies of European prosecutors in order to gain enthusiasm and support within the organisation. These actions would be way more difficult to perform as an external party from the outside.

4.3. | Environmental context

4.3.1. | Facilitative leadership

Facilitative leadership is an environmental factor that could influence IEIS adoption. An external actor could bring stakeholders or partners together and motivate them to collaborate, or it could offer technical support. For e-CODEX, the project consortium could be considered such a facilitative leader. However, according to the respondents of the project consortium, more could have been done by the project consortium to facilitate collaborating organisations.

> "On paper, the project consortium does have the connecting role, and the intention was to bring organisations together, but in practice, I think this has been more up to the organisations themselves. One of the goals of the project consortium was to facilitate this collaboration, so to bring parties together, and we tried or are trying to do that by organizing events or occasions or meetings where parties can meet. (…) But in practice, I think it was mainly up to the organisations themselves to seek that connection and also to make agreements with each other to implement e-CODEX. Both parties must see the added value in making such a connection with each other." (Respondent 3).

Despite a lack of facilitative leadership, efforts were still made by the project consortium by helping to connect the partners of the existing pilots and to technically support them, especially at the start. In the Netherlands, the Ministry of Justice and Security and Justid (also the Dutch representatives of the project consortium) made such an effort for the EIO/MLA pilot by offering funding and knowledge. They also brought the French ANTAI and Dutch CJIB together for the collaboration:

> "Justid has of course been helpful. (…) (A member of the project consortium) did some good work there, and he eventually came with France, who wanted to collaborate with us. So, the offer of a ready-to-start use-case, which turned out to have potential, did help." (Respondent 4).

> "Justid was our partner in the context of cooperation. They were actually the supplier of the system, and we were the user and there was never a complaint about that in itself." (Respondent 6).

But after the first dialogues between the partners were set up by the consortium, the facilitation by the project consortium faded away. In the case of the EIO/MLA, the lack of facilitative leadership in combination with the lack of work effort between the partners contributed to the end of the pilot.

For the respondents outside of the Netherlands (respondents 5 and 7), the facilitative support seemed to be completely absent, which means that facilitative leadership or support was offered to a select group of organisations situated in the Netherlands with short communication lines with the ministry and Justid. But once the facilitative support faded, the motivation to continue the pilot also disappeared for at least one organisation so far. It could therefore be said that hypothesis 10 can be moderately supported, as facilitative leadership was cited as helpful by some but not experienced by all.

4.3.2. | Disposition to and readiness for collaboration

According to the respondents, one of the most important factors for the successful adoption and implementation of IEIS is a feasible collaboration between partners. The respondents all mention very clearly that an innovation, where inter-organisational collaboration is necessary, needs at least two partners that are willing to collaborate, that both feel the necessity, and seek the same goals and expectations. Without a successful collaboration, IEIS has no base to survive. Therefore, the respondents mention the readiness for collaboration as a crucial factor for the adoption of e-CODEX, and consider the lack of disposition or readiness for collaboration as one of the most important reasons to reject e-CODEX. Interdependence is an often-mentioned issue for the collaboration:

> "(…) e-CODEX is a solution that is offered centrally, but its implementation is completely decentralized and the responsibility for its operation rests with the collaborating partners. So, you actually get the software and manual to implement e-CODEX. But to follow that manual and for partners to work together, they are completely dependent on each other to do that." (Respondent 3).

> "You always need two parties to work together, and if you do well on one side and not on the other side, it will not work out." (Respondent 2).

According to respondents 1 and 2 from the project consortium, the readiness for collaboration in the case of e-CODEX is closely related to the level of digital maturity of an organisation,

because if one organisation has no functioning IT environment, it cannot collaborate due to the mutual dependence for organisations to work together.

The Financial Penalties and EIO/MLA pilots have both been impacted by a lack of disposition to or readiness for collaboration in different ways. First, the respondent from the CJIB mentioned that in general, the collaboration is going well, especially with Germany, because of similar expectations and IT architectures. Content wise, the cooperation with France is also going well, and the willingness to cooperate exists. But in terms of ICT, the cooperation is very difficult, because the IT systems of the French ANTAI are operated by an external party. In this case, the distinction between the level of digital maturity is frustrating the collaboration, and therefore the pilot. Despite the lack of readiness for successful collaboration, both parties are still involved in the Financial Penalties pilot and the CJIB is working on expanding its e-CODEX connection to Germany and Belgium. This could be because of factors such as trust and internal motivation.

In the case of the EIO/MLA pilot, the willingness to collaborate was great at the start of the pilot. According to respondent 7, the goals and objectives were very much aligned:

> "Digitalising the cross-border communication between criminal public prosecution services, that was the common idea we had. And it was clear that the way we were communicating at that time was not sustainable for the future. We needed something. That was quite clear that there was something necessary for new channels of communication, especially between the Dutch and the German side." (Respondent 7).

This view was confirmed by the respondent of the Dutch counterpart, IRC Limburg, who also emphasized that the relationship between Dutch and German authorities is generally very good. However, throughout the pilot, the communication via e-CODEX was fading because of the errors that arose. Despite the initial disposition and readiness to collaborate, both authorities switched back from e-CODEX to former ways of communication such as e-mail and post services because the trust in e-CODEX was declining

In sum, inter-organisational collaboration is necessary for an interoperable initiative such as e-CODEX to work. It is frequently cited by the respondents that when collaboration is obstructed because one organisation has decided to stop collaborating, as is the case of the MLA/EIO pilot, then it is more likely for IEIS to get rejected. Therefore, hypothesis 11 can be supported.

4.3.3. | Trust

According to the respondents, trust is an important factor in crossing the first threshold for collaboration between partners. Distrust that could develop or arise during collaboration does not necessarily result in the rejection of e-CODEX. For example, the technical issues that arose during the collaboration between the CJIB and ANTAI led to a decrease of trust in the external IT supplier of ANTAI. While the technical issues make it impossible to use e-CODEX, the pilot is still ongoing because of trust between the partners responsible for the implementation. Respondent 4 attributes this to the interpersonal trust of the collaborating partner:

> "The relationship is just fine. But that is also because we invest a lot in personal relationships, so I've been abroad a lot, and it's not just business. Trust is very important. (...) Starting collaboration is always a leap of faith and there will always be things that you cannot foresee. Then it is very important that you also have some kind of personal assessment of the people who you have to work with." (Respondent 4).

Also, some respondents indicate that there could be a high level of trust, for example, because of good previous experiences, but the communication and collaboration could still be considered difficult and slow because of other factors. In the case of the MLA/EIO pilot, trust did not seem to be lacking between the Dutch and German partners, but trust in the innovation itself started declining during the pilot, eventually leading to the decision of IRC Limburg to reject e-CODEX because of technical and organisational errors.

According to the respondents from the project consortium, errors caused by organisations themselves eventually reflects on e-CODEX as well, resulting in a possible decrease of trust in the innovation:

> "Even if we had done everything right on the Dutch side and within the German application, not even at e-CODEX level, something went wrong, resulting in the data not being exchanged, then e-CODEX caused it. You cannot blame such a user at all. The user is working with e-CODEX and he/she has to spend time sending a case and he/she is not really interested in where things go wrong, but thinks: that e-CODEX does not work." (Respondent 2).

In sum, trust in the other organisation is a frequently cited factor that influences the (willingness) to collaborate and start a pilot. Therefore, hypothesis 12 can be supported. While

trust is needed for a collaboration to start and continue, any error related to the collaboration or the technology could result in distrust in the innovation itself. Subsequently, organisations could opt out of the collaboration despite having trust in the collaborative partner.

4.3.4. | External pressure of social networks and network externalities

Some respondents indicate that the collaboration between partners in e-CODEX is mainly based on already existing social networks and informal relations. Good interpersonal relation between organisations is considered helpful, but not as necessary for collaboration. The CJIB and ANTAI, for example, had no previous collaboration experience, while the IRC Limburg and NRW Ministry of Justice already had a good collaborating relationship.

According to Greenhalgh (2004), organisations are influenced in their decision to adopt an innovation by organisations that are comparable. Similarly, respondent 4 from the CJIB mentioned that the organisation was motivated to participate by the organisational similarities between ANTAI and CJIB, plus the fact that France is a large country and therefore of importance. For ANTAI, the decision to start the pilot with the CJIB was not trust or positive prior experiences, rather it was based on the number of fines according to the contravener country, which happened to be the Netherlands.

The IRC Limburg and NRW Ministry of Justice had already worked a lot together when they started collaborating with e-CODEX. IRC Limburg was approached by the German counterpart. However, according to the respondent of IRC Limburg, the decision to enter the pilot did not depend on the good relationship already present, nor on any pressure from the counterpart. According to respondent 6, it depends on the degree of which the organisations are already cooperating (before e-CODEX was adopted). Because only in that case an innovation such as e-CODEX would be beneficial. This suggests that the perceived benefits surpass any external pressure to adopt e-CODEX.

In short, external pressure of social networks and network externalities are not directly cited by the respondents as influential for the adoption of e-CODEX and therefore there is weak support for hypothesis 13. Regarding network externalities, an explanation could be that there is and was no high number of users of e-CODEX that could have motivated the interviewed organisations to participate. The Financial Penalties and MLA/EIO pilots were one of the first use-cases, of which the benefits still had and have to be evident.

4.3.5. | Legislation and policy

The final factor influencing the adoption of e-CODEX as mentioned by respondents is legislation and policy. According to the literature, legal mandates and binding policies could stimulate or motivate organisations to use an innovation such as IEIS, and it could also improve trust among participating organisations as regulation could remove concerns about uncertainty (Akbulut et al., 2009; Fan et al., 2014; Yang & Wu, 2014). The respondents mentioned that e-CODEX is non-compulsory, meaning that up to now, there is no EU or national legislation that is dictating the use of e-CODEX for judicial organisations. Up until December 2020, any EU legislation on e-CODEX was non-existent. According to some respondents, EU legislation is necessary for the sustainability of any IT project:

> "For the sustainability of the e-CODEX project and also for the development of its technical environment it is necessary to have European legislation on that matter. (…) it is a complex technical infrastructure that was not so easy to handle (…). And for that, you need a kind of sustainable legislation that offers the framework which guarantees also the necessary resources that will be provided also in the future to guarantee development." (Respondent 7).

The respondents of the organisations participating in the Financial Penalties pilot mention that, like all European judicial procedures, there is a legal base for the exchange of judicial information between countries. For example, the Council Framework Decision 2005/214/JHA of 24 February 2005 on the application of the principle of mutual recognition to financial penalties enables a judicial authority to transmit a financial penalty to another European authority. However, the exact way of how information is exchanged is not prescribed in the Framework Decision, enabling countries to find their own method of exchanging information. The same goes for the MLA/EIO legislation. Respondent 4 pointed out that authorities are obliged to use established certificates, which could be sent via e-CODEX. However, as there are no dictations on how to exchange the certificates, most authorities still use the post, e-mail, or other means.

According to the respondents, a new development in terms of legislation could influence the further use of e-CODEX in Europe. Respondents from the project consortium mention 'digital by default' as a possible stimulator for e-CODEX, as countries are dictated to digitise their processes. In two new regulations concerning the European legal procedures 'service of documents' and 'taking of evidence', the requirement will now be 'digital by default', meaning

that the procedure should be digitalised unless it is impossible to do so. This would lead to more digitalisation throughout the EU and a possible up-take of the adoption and use of e-CODEX.

To the question of whether e-CODEX should be mentioned by EU or national law as the default option, all respondents reject this idea, as it would close the door to further innovation:

> "I don't know whether this is a good idea. Like the vaccination, you need to convince people about that. The technical solution must be convincing enough so that the people like to use it (…). That must be the aim, in principle." (Respondent 7).

According to the respondents from the project consortium, the published proposal for EU regulation on e-CODEX will have a further impact on the adoption of e-CODEX, as it would take away any uncertainty among organisations about the sustainability and existence of e-CODEX.

In sum, the lack of legislation and policies regarding e-CODEX is cited mainly by members of the project consortium as a barrier to adoption due to uncertainty about the sustainability of the system. They mention that this barrier will be removed once the proposal for a regulation on e-CODEX is implemented and e-CODEX is formally handed over to eu-LISA. Other respondents, however, did not cite (the lack of) legislation and policy as a significant factor influencing their decision to adopt e-CODEX or not. Therefore, hypothesis 14 can be moderately supported.

5. | Discussion

In this study, 14 hypotheses related to factors from the technological, organisational, and environmental contexts were proposed and tested by interviewing those involved in e-CODEX. Seven hypotheses are supported by the data deriving from the interviews. Three hypotheses are moderately supported and four receive weak support from the data. Table 2 provides a summary of the findings. In this chapter, the main findings are discussed per context.

Table 2: Summary of the findings

	Hypothesis	Findings
H1	Higher perceived benefits of IEIS will lead to greater intent to adopt IEIS.	Supported
H2	IEIS compatibility has a positive effect on IEIS adoption.	Supported
H3	Perceived complexity of the technology and/or the participation in electronic information sharing has a negative effect on IEIS adoption.	Weak support
H4	Trialability of IEIS has a positive effect on IEIS adoption.	Moderate support
H5	Observability of positive results has a positive effect on IEIS adoption.	Weak support
H6	Top management support has a positive effect on IEIS adoption.	Supported
H7	Organisational slack resources have a positive effect on IEIS adoption.	Supported
H8	Perceived costs of IEIS have a negative effect on IEIS adoption.	Weak support
H9	Championship within the organisation has a positive effect on IEIS adoption.	Supported
H10	Facilitative leadership has a positive effect on IEIS adoption.	Moderate support
H11	The more distinct the disposition and collaboration readiness among collaborative organisations, the less likely an organisation will adopt IEIS.	Supported
H12	Inter-organisational trust has a positive effect on IEIS adoption.	Supported
H13	External pressure of social networks and network externalities have a positive effect on the adoption of IEIS.	Weak support
H14	The lack of legislation and policy has a negative effect on IEIS adoption.	Moderate support
Supported: Frequently cited in the interviews. **Moderate support:** Moderately cited. **Weak support:** Rarely cited.		

5.1. | Technological context: relative advantage and compatibility

In explaining the relationship between technological context and the adoption of IEIS, the innovation itself is of course indispensable. The findings show that the perception of the benefits of e-CODEX is evident: it promises to fasten the work process and make the communication between authorities more reliable and secure, resulting in overall more efficient judicial cooperation within the European legal procedures.

However, the findings indicate that while perceived benefits would indeed lead to a positive attitude towards adoption, the perceived benefits should also be tangible for adopters in order for the innovation to receive continued acceptance. When too many errors or other complexities arise, and the innovation does not live up to its promises, the confidence and trust in an innovation could decrease (respondent 4, 6). In his DOI theory, Roger (2003) describes the relative advantage as the degree to which an innovation is *perceived* as being better than the idea it supersedes. The findings in this thesis support this, however, the perception of relative advantage is not enough. The new technology needs to function properly and consistently for the long-term sustainability and uptake of the innovation. Regarding inter-organisational electronic information sharing, facilitative leadership could play a key role in mitigating any issue related to the technology.

The second observation based on the findings is that it is easier to adopt IEIS when the IT environment of an organisation is already mature enough (respondents 1, 2, 3, and 4). Especially in cases where the innovation solely connects existent information systems of organisations, as with e-CODEX, the organisations need to be digitally mature enough to meet the criteria of adopting the system. This could be considered a technological barrier to adoption, as e-CODEX raises the bar for potential adopters that could be interested, but who do not have the required level of digital maturity.

A third important observation is the importance of a match between what e-CODEX promises to offer, and the degree to which e-CODEX meets a need felt by the adopting organisation. This need seems to be related to the self-interest of an organisation. Whether that self-interest is based on political wishes (respondent 7), financial gains (respondent 5), or purely based on efficiency and effectiveness (respondent 4 and 6), it all motivated them to participate in a pilot. In the context of interoperability, Landsbergen and Wolken (2001) argued that federal/state sharing can only be accomplished when it is perceived to be in the self-interest of agencies. They consider this as one of the critical success factors in the development of interoperable systems.

5.2. | Organisational context: top management support, resources and champions

The organisational context has often been ascribed as the most important context to consider in relation to interoperability. This is mainly because interoperability and inter-organisational collaboration require the willingness and approval of all collaborating organisations in order to be able to collaborate. Organisational barriers are more likely as two organisations (or more) operate as separate entities (dos Santos & Reinhard, 2012). If one organisation does not have top management support, the necessary resources, or an internal champion committed to the implementation, then the process of collaborating and adopting IEIS would be greatly frustrated, if not made impossible. The findings in this thesis also underscore the relevance of organisational factors in the context of IEIS adoption.

As expected, the findings show that top management within an organisation is crucial for the support and getting resources to adopt e-CODEX (respondents 4, 6, 7, 8). It is observed that the continuation of top management support depends on the tangibility of perceived benefits, as the support could decline when goals are not achieved (respondents 4 and 6).

It is also observed that the availability of financial, personnel, and IT resources are also crucial for the successful adoption of e-CODEX. This factor could be considered related to top management support, as resources often needs the approval at management level. Findings show that organisations that receive external financial funding from, for example, the ministry of which the organisation is part (respondents 5, 6), have an advantage over organisations that use their own resources (respondent 4). If the latter is the case, then an organisation needs enough resources to implement the technology and to keep it running. This could be considered a barrier for adoption, as it requires sufficient resources from an organisation. The findings also indicate that external IT personnel could be an obstacle for a sustainable adoption, as short lines of communication were missing between the operational and IT sides, which slowed down the process of fixing emerging technical issues. Also, structural internal IT knowledge about the technology is missing (respondents 4 and 5).

Finally, championship within an organisation is often cited as a crucial factor for the successful adoption of e-CODEX. As inter-organisational collaboration for the adoption of e-CODEX requires high effort from all parties involved, a lack of work effort at one side could already frustrate the whole implementation process of e-CODEX. Besides, internal support can also be better achieved when an employee within an organisation can make a case for the adoption and use of e-CODEX (respondents 1, 2, 3, 4, 8).

5.3. | Environmental context: External support, collaboration, trust, and legislation

According to both the literature and the findings, the final context of the TOE framework, the environmental context, is essential for understanding inter-organisational collaboration and interoperability (Bigdeli et al., 2011). Especially the cross-border aspect was expected to give another dimension of complexity to IT adoption. The findings support this expectation, as respondents often cited that collaboration was either a critical success factor or one of the main barriers. Inter-organisational collaboration could be generally considered as more complex than intra-organisational collaboration, because more organisations and therefore more influential factors are involved (Yang & Maxwell, 2011). The findings confirm this and show that the cross-border context involves even more complications for the successful implementation of interoperable electronic information sharing systems.

First of all, the findings indicate that in the pilots studied, internal champions seemed more relevant than external facilitative leadership. Especially for the organisations outside of the Netherlands that barely received facilitative support (respondents 5 and 7). A possible explanation could be related to the geographical proximity, meaning that larger geographical distances between the facilitative party and the user could have complicated the cooperation (Knoben & Oerlemans, 2006). As facilitative leadership was mainly offered by the Dutch Ministry of Justice and Justid, it seems plausible that the lines of communications were way shorter between the facilitators and the organisations falling under the same Ministry (CJIB and IRC Limburg), than they were with organisations situated in other countries.

Proximity in terms of disposition to- and readiness for collaboration is also an often-cited factor that determines the level of success of e-CODEX adoption (respondents 1, 2, 3, 4, 6, and 7). The findings indicate that the readiness for collaboration also strongly depends on the level of digital maturity (respondents 1, 2, 3, and 4). An interesting observation here is the difference between perceived readiness for collaboration in terms of technological feasibility, and actual readiness for collaboration. ANTAI seemed to be ready for collaboration, but it turned out that their IT environment did not meet the requirements of e-CODEX, making the actual implementation more difficult (respondents 4 and 5).

A factor that is almost intertwined with the disposition to- and readiness for collaboration is trust, another factor often cited as an important influential factor to the adoption of e-CODEX (respondents 1, 2, 3, 4, 5 and 6). The findings show that prior work experience between organisations can fortify trust for new collaborations (respondents 6 and 7). A history of working together is considered a critical success factor in the development of interoperable systems by Landsbergen and Wolken (2001). However, the findings also show that a prior work

relation between organisations is not necessary to start inter-organisational collaboration (respondents 4 and 5).

Finally, legislation and policy are factors that the literature quotes as an external factor influencing inter-organisational information sharing projects (Landsbergen & Wolken, 2001; Yang & Wu, 2014). While most respondents from the piloting organisations do not directly cite legislation as an important driver or barrier, the respondents from the project consortium do emphasize the impact of (the lack of) legislation has on the sustainability of e-CODEX. Respondents 1, 2 and 3 expect that the new proposal for a regulation on e-CODEX would realise that sustainability, as eu-LISA will be responsible for its maintenance and development. No respondent was in favour of the obligatory use of e-CODEX in Europe, as it would block the way for innovation and too much would be asked from organisations with lower levels of digital maturity. Instead, 'digital by default' might come closest to forcing judicial organisations to use e-CODEX (respondents 2 and 3). But as long as e-CODEX is of non-compulsory use, its existence depends on factors related to the success of interoperable electronic information sharing systems.

6. | Conclusion

6.1. | Connecting the 'IT dots' between judicial organisations in Europe

This thesis has proven the consistent relevance of the TOE framework and DOI theory for research on the adoption of a broad range of technological innovations. In this case study, the TOE framework and DOI theory was used to identify key factors influencing the adoption of a European interoperable electronic information sharing initiative called e-CODEX.

The relevance of this study is evident. The adoption and use of e-CODEX is limited after eleven years of development. The issue of low adoption of e-government can be considered a trend within IT use in the public sector, also called the e-government paradox (Savoldelli, 2014). While most studies have focused on e-government adoption within G2C and G2B relations in national contexts, this study has looked at G2G e-justice adoption between judicial organisations in a cross-border context. The adoption of this kind has often the aim to enhance the efficiency and speed of work processes between public organisations. The success of e-justice in Europe is relevant for improved cooperation between judicial organisations across borders, and therefore for a safer and more just Europe.

As the EU is moving quickly towards a digital proof future, and digitalisation has become an increasingly relevant element of EU policy, it is important to research the factors influencing interoperable electronic information sharing in the EU. So far, no research has been done on the cross-border context of interoperable electronic information sharing in the European judicial domain, despite the relevance of improved cooperation between judicial organisations and improved access to justice. Therefore, the question asked in this thesis was: *What are the key factors influencing the adoption of cross-border interoperable electronic information sharing in European judicial organisations?*

All factors proposed in this study seemed to be relevant to at least some extent for the adoption of IEIS. However, the findings show that some factors have greater relevance than others. The findings indicate that key technological factors influencing the adoption of IEIS are relative advantage, the technological compatibility between the IEIS technology and an organisation's information system, and the organisational compatibility between IEIS and the needs of an organisation. The key organisational factors influencing the adoption of IEIS are top management support, the availability of slack resources, and an internal champion within an organisation. The key environmental factors are external facilitative leadership, disposition to- and readiness for collaboration, trust between collaborating partners, and legislation. The

lack of these factors would frustrate the adoption of IEIS, while the presence would positively influence the adoption of IEIS.

Previous studies have concluded that the problem of interoperable e-government is multi-faceted and complex, influenced by interwoven legal, organisational, and technical issues and constraints (Scholl & Klischewski, 2007). The findings in this thesis show that the influential factors are indeed a complex, and often interrelated and interdependent mixture. For example, the availability of slack resources for the adoption often depends on top management support. The work of an internal champion could be frustrated by the lack of resources or top management support. The findings also showed that external facilitative leadership largely depends on internal championship within an organisation, and that the readiness for collaboration depends on the level of compatibility and relative advantage of the technology.

In short, all three TOE contexts and the deriving key factors can be considered to be highly relevant for the success or failure of the adoption of e-CODEX, mainly due to its inter-organisational, cross-border, and non-compulsory characteristics. Because organisations are not forced by law to use e-CODEX, other environmental factors are highly relevant for the adoption and diffusion of e-CODEX: Readiness for collaboration and trust between collaborating partners are the foundation for success, as long as the other contexts are also taken into account.

However, while this thesis was grounded in relevant theoretical debates, some limitations must be acknowledged when conducting this qualitative study. First of all, the factors that were used in the TOE framework were chosen on the basis of an extensive literature review in relation to the cross-border, inter-organisational, and G2G contexts. While the interview respondents were asked whether other factors were of notable importance, no specific other factors were provided. The TOE framework and the contexts limit the scope, and therefore possible unforeseen factors are not included.

In addition, the respondents for the interviews were mainly selected based on snowball sampling and their proximity and willingness to participate, rather than being randomly selected. Therefore, the respondents do not necessarily represent all members of the e-CODEX project consortium or (future) e-CODEX users. Nevertheless, the proximity due to the author's experience at the Dutch Ministry of Justice did lead to relevant actors with knowledge and authority on the subject, and therefore the content of the interviews is still very relevant for answering the formulated research question.

Moreover, no clear distinction was made between perceived factors and actual factors while conducting this research. The findings indicated, however, that there is a clear distinction between two types of factors. For example, an individual can perceive the technological

readiness of an organisation for the implementation of a new technology. However, it could be that the organisation is in fact not ready for the implementation of the new technology. Likewise, perceived benefits do not equate to real benefits.

Finally, by conceptualising adoption as the organisational 'decision' or 'intention' to adopt e-CODEX, this research did not include the actual adoption and continued use of the innovation. As a result, the conclusions do not reflect the level of acceptance and satisfaction of e-CODEX as perceived by users after implementation, while these would be relevant factors for the success and sustainability of the innovation.

6.2. | Theoretical and practical contribution

The TOE framework has enabled to analyse the issue of the adoption of interoperable electronic information sharing through three relevant perspectives: the technological, organisational, and environmental context. While many studies have already proven the importance of all facets offered by the TOE framework (i.e. Kamal, 2006; Akbulut, 2009; Savoury, 2019), the European and judicial contexts of this thesis show that aside from the importance of technological and organisational factors, environmental factors related to cross-border inter-organisational collaboration seems to bring another dimension of complexity that needs to be highlighted. This thesis has therefore given an extensive contribution to the literature on IT adoption in the public sector by adding factors relevant for the cross-border and judicial contexts.

Although the case of e-CODEX is not representative of the adoption of all IT initiatives in the European Union, lessons can be learned from this research. Where regions or political and economic unions such as the EU are focused more and more on digitally connecting its entities to create a space where citizens, businesses, and public administrations can seamlessly and fairly access and provide digital content and services, the concepts of interoperability and electronic information sharing are indispensable. In order to improve cross-border cooperation between judicial organisations, the interoperability between the organisations needs to be enhanced. The findings are therefore relevant and important for policymakers working at (judicial) organisations in a cross-border setting, and policymakers who work at supranational, national, and local levels of government.

6.3. | Future research

This thesis comprised an initial step in understanding the European context of interoperability and IEIS adoption. As already mentioned, this study did not make a distinction between

perceived factors and actual factors. Future research should make this clear distinction in order to distinguish the difference. In addition, future research should make a better distinction between the different phases and variables of adoption in order to observe which factors are connected to which phase or variable of adoption. In example, measuring the actual (continued) use of e-CODEX would give more insights on the popularity and satisfaction of the innovation, and therefore its sustainability.

Furthermore, future research should interview more actors with a broad focus on Europe, considering the limited number of interviews in this thesis and the focus on a Dutch perspective. Also, a comparison between e-CODEX and similar initiatives could give interesting new insights on the topic of interoperability and IT adoption.

Finally, future research should focus more on the cross-border and interdependence aspects of IT adoption by zooming in on factors related to the environmental context. Possible future research questions could be: What drives organisations from different countries to collaborate in IT initiatives? Which factors influence the readiness for collaboration by organisations? What are barriers to or success factors for facilitative leadership or trust?

7. | References

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Appendix I

Interview guide for organisations that are piloting e-CODEX:

The interview guide is partly based on the interview questions by Akbulut (2003).

General questions	
Q1	How did your organisation learn about e-CODEX?
Q2	Why did your organisation decide to participate in e-CODEX?
Q3	How did your organisation exchange information with European counterparts before e-CODEX?
Technological context	
Q4(=H1)	What are the benefits for your organisation to participate in e-CODEX?
Q5(=H2)	Was it easy to integrate e-CODEX with the existing computer systems of your organisations? Were they compatible?
Q6(=H2)	Was e-CODEX compatible with the needs of the organisation?
Q7(=H3)	Do you think that implementing and using e-CODEX is a complex process?
Q8(=H3)	Are the skills required for implementing and using e-CODEX complex for employees?
Q9(=H4)	Was your organisation able to experiment with e-CODEX before adopting it?
Q10(=H5)	Did you learn about other use-cases of e-CODEX before participating? If so, did the experiences of other use-cases motivate your organisation to participate?
Organisational context	
Q11(=H6)	What was and is the attitude of your chief/manager toward participation in e-CODEX?
Q12(=H6)	Did the top management fully support the participation in e-CODEX?
Q13(=H7)	To what extent did the availability of resources, such as budget and IT expertise, play a role when deciding upon the adoption of e-CODEX?
Q14(=H8)	To what extent were the costs of implementing e-CODEX clear for your organisation?
Q15(=H8)	Do the benefits outweigh the costs of e-CODEX?
Q16(=H9)	Who was responsible for introducing e-CODEX in your organisation?
Environmental context	
Q17(=H10)	Did your organisation receive external support and help in implementing e-CODEX and finding collaborative partners?
Q18(=H11)	How does your organisation experience the cooperation with your partners? Do you share similar interests and expectations regarding e-CODEX?
Q19(=H12)	In general, how are the relationships between your organisation and your collaborating counterparts across the border?
Q20(=H13)	Did the number or identity of other organisations participating in e-CODEX affect your organisation's participation decision?
Q21(=H14)	Has EU/national legislation or policies influenced your organisation's decision to participate in e-CODEX?
Q22(=H14)	Do you think adoption of e-CODEX should be mandated by law?

Miscellaneous questions	
Q23	Are there any other factors that could influence the adoption of e-CODEX in your opinion?
Q24	In your opinion, should e-CODEX be fully implemented or expanded within your legal procedure after the pilot?
Q25	Do you have anything else to add to this interview?

Interview guide for organisations that are considering to start participating in e-CODEX:

General questions	
Q1	How did your organisation learn about e-CODEX?
Q2	Why is your organisation interested in participating in e-CODEX?
Q3	How does your organisation exchange information with European counterparts now?
Technological context	
Q4(=H1)	What benefits do you expect from e-CODEX for your organisation?
Q5(=H2)	Do you expect that the existing computer systems of your organisations will easily integrate with e-CODEX?
Q6(=H2)	Is e-CODEX compatible with the needs of your organisation?
Q7(=H3)	Do you think that implementing and using e-CODEX will be a complex process?
Q8(=H3)	Do you think your organisation has employees with enough expertise to implement e-CODEX?
Q9(=H4)	Would you want to be able to experiment with e-CODEX before adopting it?
Q10(=H5)	Do the experiences of other organisations with e-CODEX motivate your organisation to consider using e-CODEX?
Organisational context	
Q11(=H6)	What is the attitude of your chief/manager toward participation in e-CODEX?
Q12(=H6)	Does the top management fully support participating in e-CODEX?
Q13(=H7)	To what extent do you expect that the availability of resources, such as budget and IT expertise, play a role when deciding upon the adoption of e-CODEX?
Q14(=H8)	To what extent are the costs of implementing e-CODEX clear for your organisation?
Q15(=H8)	Do you expect that the benefits will outweigh the costs of e-CODEX?
Environmental context	
Q16(=H10)	Does your organisation already have collaborative partners with whom your organisation could start using e-CODEX? If not, will you act yourself to find collaborative partners?
Q17(=H12)	In general, how are the relationships between your organisation and your collaborating partners?
Q18(=H13)	Did the number or identity of other organisations participating in e-CODEX affect your organisation's consideration to participate in e-CODEX?
Q19(=H14)	Has EU/national legislation or policies influenced your organisation's consideration to participate in e-CODEX?

Q20(=H14)	Do you think adoption of e-CODEX should be mandated by law?
Miscellaneous questions	
Q21	Are there any other factors that could influence the adoption of e-CODEX in your opinion?
Q22	Do you have anything else to add to this interview?

Interview guide for members of the e-CODEX project consortium:

General questions	
Q1	What is your role in the e-CODEX project?
Technological context	
Q2(=H1)	What are the benefits for organisations to participate in e-CODEX?
Q3(=H2)	So far, has it been easy for organisations to integrate e-CODEX with the existing computer systems of organisations? Were they compatible?
Q4(=H3)	Do you think that implementing and using e-CODEX is a complex process?
Q5(=H3)	Are the skills required for implementing and using e-CODEX complex for employees in organisations?
Q6(=H4)	Are organisations able to experiment with e-CODEX before adopting it?
Organisational context	
Q7(=H6)	So far, has the support of top management within organisations been necessary for the adoption of e-CODEX?
Q8(=H7)	To what extent does the availability of resources, such as budget and IT expertise, of organisations play a role in the adoption of e-CODEX?
Q9(=H8)	To what extent are the costs of implementing e-CODEX clear for organisations?
Q10(=H9)	To what extent are champions within organisations important for the adoption of e-CODEX?
Environmental context	
Q11(=H10)	To what extent does the project consortium support and facilitate the e-CODEX collaborations between organisations?
Q12(=H11)	To what extent is trust between collaborating organisations an important factor influencing their decision to adopt e-CODEX?
Q13(=H13)	Do organisations tend to adopt e-CODEX more easily when their counter partners have already done so?
Q14(=H14)	Has EU/national legislation or policies influenced organisations' decision to participate in e-CODEX?
Q15(=H14)	Do you think adoption of e-CODEX should be mandated by law?
Miscellaneous questions	
Q16	Are there any other factors that could influence the adoption of e-CODEX in your opinion?
Q17	Do you have anything else to add to this interview?

Appendix II

List of respondents by function and organisation

	Function	**Organisation**
Respondent 1	Former project leader e-CODEX for the Dutch team in the project consortium.	Ministry of Justice and Security in the Netherlands
Respondent 2	Architect and consultant for the e-CODEX service in the Netherlands	The Judicial Information Service (Justid) (part of the Ministry of Justice and Security in the Netherlands)
Respondent 3	Consultant at the Dutch team in the project consortium	Ministry of Justice and Security in the Netherlands
Respondent 4	Legal and international affairs advisor	The Central Judicial Collection Agency (CJIB) in the Netherlands
Respondent 5	Legal and international affairs advisor	Agence Nationale de Traitement Automatisé des Infractions (ANTAI)
Respondent 6	Head of department	International Legal Assistance Centre (IRC) in Limburg, the Netherlands
Respondent 7	Former head of department	Ministry of Justice for the North Rhine-Westphalia region
Respondent 8	Policy officer / coordinator at the operations department	European Public Prosecutor's Office (EPPO)

Appendix III

	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8
	e-CODEX project consortium members			Piloting organisations				Yet to adopt
Perceived benefits	Het is ten eerste afhankelijk hoe goed de eigen IT in elkaar zit. Als je een hele goede IT omgeving hebt, is e-CODEX een heel makkelijk opstappunt om ook met andere partijen te gaan samenwerken. De schaalbaarheid en het enorme volume dat je kan halen in digitale samenwerking is een belangrijk voordeel. Je kan dus enorme volume halen, je kan veel sneller samenwerken, en de bruikbaarheid van de te ontvangen data.	Ik denk vooral dat het lastig om te zeggen, is dit nu een technologische of een organisatorische context, maar de snelheid, de foutgevoeligheid en het volume waarmee de digitalisering die de dienstverlening kan ondersteunen dat dát een belangrijke driver voor ze is. Met name de betrouwbaarheid en de foutgevoeligheid uitbannen, dat dit het belangrijkste criterium is.	Het voordeel van het deelnemen aan e-Codex is dat zodra je digitaal te werk wilt gaan dat je dat op een veilige manier kan doen, dus dat dit niet via email gaat of dat het op een, nou ik heb wel eens in het verleden verhalen gehoord dat er b.v. over het elektronisch bewijsmateriaal dat het op een harde schijf gezet werd, maar dat met aangetekende post naar een andere lidstaat of ander OM ging in het buitenland. Dus het voordeel van e-Codex is dat je dit elektronisch en veilig kan versturen naar een andere lidstaat.	Het past in ons optimaliseringsidee en snelheid, en ook beveiliging, want met de post is helemaal niet meer zo veilig tegenwoordig.	Foreign drivers could get away with fines while driving in France. Compared to EUCARIS, e-CODEX enables the forced fines-collections of fines from foreign drivers	Wij hadden de verwachting dat het grote voordeel zou zijn dat we rechtshulpverzoek vanuit het buitenland digitaal aangeven werd en dat het wel in LURES, ons systeem waarin we de rechtshulpverzoeken in Nederland in verwerken, dat die wel de automatische hulp…, dat het een hele eenvoudige opgave was en even op de knop download, en dat het rechtshulpverzoek uit Duitsland -omdat dat onze enige partner was, Duitsland- en dat het dan zichtbaar was. Dat hadden wij, de hoop dat dat makkelijker zou zijn	The benefits in a proper sense is, first of all to rethink the communication channels between the operational levels. And to think about: how can we establish something more quick, more secure and more appropriate to, let's say, modern times.	I already see technical benefits, so, we have a secure way to communicate data, documents and information.
Compatibility: technology	Ik denk dat veel organisaties het echt moeilijk hebben gevonden. Heel veel partijen denken dat ze volwassen zijn in	Zowel het Nederlands OM in geval van de rechtshulpverzoeken als het CJIB hadden natuurlijk wel een bestaande applicatie.	Voor de Nederlandse context was dat vrij makkelijk omdat e-Codex als oplossing gebaseerd is op hoe we dat in Nederland	Wat ik begreep is dat omdat het op de Jubi standaard zit, het makkelijker was. We moesten natuurlijk nog wel	Not compatible. Needed some substantive development within ANTAI IS. First test sending	Of dat makkelijk is geweest of niet, ik heb het idee dat dit best wel wat problemen heeft opgeleverd en dat het nu nog altijd niet	So, the idea was, as I already said, to have a tool which permits to adapt to all work floor on both	We had some discussions with different Member States, with the consortium. The understanding is

	IT, maar als wij op ons niveau vragen gingen stellen, dan bleek dit helemaal niet het geval te zijn. E-CODEX is alleen op data georiënteerd. We sturen alleen maar XML over en weer om van systeem naar systeem te kunnen praten. Heel veel organisaties zijn nog applicatie georiënteerd, 'het zit in de applicatie en daar moet het uit'. Er waren helemaal niet zoveel partijen die dit konden overnemen. Nederland ook niet in het civiel recht. Daarom was het ook moeilijk, partijen werden geconfronteerd met hun onvermogen. Er is geen één consultant die het leuk vindt om steeds tegen een partij te zeggen 'dit is nog niet op orde, daar moet je heel hard aan werken'. Daar konden we niet echt op werven, dat was wel naar.	Voor beide gold dat ze waren ingericht op een papieren stroom die door medewerkers werd gedigitaliseerd van waaruit ze de uit te wisselende zaken verder konden behandelen, en in die zin kun je zeggen dat het eenvoudig geweest is omdat de papieren stroom werd vervangen door een digitale in en uitgaande stroom en dat het werkproces digitaal al bestond intern. Dus dat heeft het wel eenvoudig gemaakt. Ook als je het moet uitdrukken in tijd waarin ze het hebben weten te realiseren. Dat is best kort geweest, relatief kort geweest. Dus, voor hen, als organisaties, moet dat redelijk eenvoudig geweest zijn	doen, dat elektronisch berichtenverkeer (EBV), zoals dat vanuit Justid georganiseerd is. Dus in Nederland, ja, het is heel erg compatible en relatief makkelijk te implementeren. In andere landen was dat soms lastiger omdat er dan dingen aangepast moesten worden aan hun eigen backhand systeem om inderdaad compatible te zijn.	aanpassingen maken in onze systemen, zaken klaarzetten en dat we een differentiatie gingen maken tussen landen en de instroom. Maar dat hebben we goed voor elkaar gekregen, maar ik heb ook wel het idee dat onze ICT afdeling best wel kwalitatief goed is, dus dat werkte altijd best wel goed. We hebben weinig hobbels gehad, laat ik het zo zeggen. De hobbels die we hadden was omdat het in het buitenland bleef hangen of omdat het bij Justid even blijft hangen, maar niet bij ons eigenlijk. Dat komt ook omdat we al op de justitie standaard zaten. De manier waarop we uitwisselen is niet heel anders dan wat we normaal doen.	a case through e-Codex on May 2016. Thereafter, ANTAI needed almost a year (between May 2016 and July 2017) to build an operational system and be able to send 25 cases per month to our Dutch counterparts. ANTAI had to assess and manage the technical and organizational impact. It revealed that new developments were needed in order to reinforce the pre-selection rules of files. Accepting or rejecting a file is still done manually by the French and NL police agent, which is time-consuming. Between 2018 and 2019, the Austrian authorities were in charge of the e-CODEX platform. They did not know about the FR-NL	volmaakt is, geeft aan dat er nog altijd een probleem was.	sides of the channel. And, that was maybe also the problem, because any way of unique way of transfer of technology of both sides of the channel. That was not 100% working on both sides, that is unfortunate.	that particularly for the CMS to CMS of data exchange, at the moment we are able to map by e-CODEX connectors our data model and data structure with the one of the e-CODEX. We should not have major issues. All the consultants and our architects we had discussions about this were very confident that in an extremely short timeframe we would be able to integrate with e-CODEX. With reference to the e-delivery nodes, I assume that is also relatively simple as an approach. I don't see major complications from a technical perspective for the CMS to CMS.

					collaboration. They decided on upgrade of the e-CODEX platform which stopped the exchanges between the two countries. By April 2019, the exchanges resumed with 37 files sent. Still in 2021, ANTAI has had technical difficulties to send files to the NL counterparts.			
Compatibility: organisational needs				Het was op een gegeven moment wel een opportunity waarvan wij op dat moment inschatte, als Frankrijk ook inderdaad wil en gaat aanleveren, dan levert het ons ook wat op. de combinatie van het idee dat Frankrijk zou aanleveren, dat we innovatief bezig waren, dat we dan ook richting het buitenland gingen. Bij elkaar haalden ons dit over. Maar we waren niet aan het zoeken naar dit systeem, laat ik het zo zeggen.		Waar we eigenlijk altijd naar op zoek zijn is om op zo eenvoudig mogelijke wijze de registratie te doen van verzoeken. Heel even een zijsprongetje, we hebben heel veel repeterend werk, ik moet in LURES invoeren, ik moet zelf (?) invoeren, het BPL politiesysteem invoeren. Ik moet een summit invoeren….. Dat zijn 5 handelingen waarvan ik vind dat het technisch zodanig zouden moeten gaan dat met één druk op de knop en het moet in het systeem komen. Ze zeggen mij altijd: een computer kan alles als je maar de goede opdrachten geeft, maar		

						dat bleek lang niet zo te zijn. Dus daar waar het mijn werk kan verlichten of te vereenvoudigen door het automatisch te laten geschieden, dat sluit aan bij onze behoeften. Alleen, het is helaas nog niet zover.		
Complexity: implementation and use	De implementatie is super ingewikkeld, dat komt omdat je zoveel verschillende mensen bij elkaar moet halen. Maar als dat eenmaal loopt, dan is het hoog productie. De investering die je moet doen om ergens te komen is erg hoog. De mensen die je samen wilt brengen kennen elkaar gewoon niet. Het bij elkaar brengen van de juiste mensen en die op het juiste niveau met elkaar laten praten is het aller aller moeilijkste.	Nee, in essentie niet als dat een Nederlandse organisatie is. In Nederland is het strafrecht als civielrecht goed georganiseerd met een goede IT ondersteuning. Dus dat is een volwassenheidsniveau dat het mogelijk maakt om relatief eenvoudig mee te gaan	Ik denk dat het implementeren ervan makkelijk te doen is, en ook niet heel complex is als je daar de juiste mensen en capaciteit binnen je eigen organisatie voor vrijmaakt, want, nogmaals, het is niet zo dat e-Codex de mensen meelevert. Het zijn uiteindelijk de organisaties die moeten de capaciteit vrij maken om e-Codex te implementeren. Ik denk dat het hem vooral zit in daarna e-Codex onderhouden. Dus, als er updates komen en als die er dus zijn of dat er hick-ups zijn, dat er dan een team van mensen of dat er verantwoordelijkheden belegd worden bij specifieke personen die dat oplossen.	Ik denk dat het complex is op verschillende manieren. Het is een ICT samenwerking in een keten met buitenlandse partners met hele andere culturele verschillen, en soms mensen die er politiek in zijn gestapt en niet vanuit praktijk, dus dat maakt het lastig in het samenwerken. Met de techniek is het altijd lastig als je met meerdere partners werkt en het idee is simpel denk ik, met het idee iedereen heeft zijn eigen achterlandschap en je hoeft er niks aan te wijzigen en de connector is universeel zeg maar. Maar dat heeft niet altijd de goeie aansluiting met			Yeah, well, at the beginning not! We tried to find possibilities to implement it in a programme in an easy way, and I think we achieved that at a certain point, that the construction or the build-up to configure a message to send it and to receive it was possible, but the … problems was in the interface between the two systems. Messages came in, but couldn't be integrated in the work flow(floor?) of the arrival or of the receiving authority. That was sometimes a problem, you know. Because of this matching…	

				elkaar. Dus daar kunnen altijd hobbels op komen en het is best wel lastig, zeker grensoverschrijdend, om dan goed te testen, goeie afspraken over te maken en elkaar goed op de hoogte te houden			or translating of the… were often problems, because we have different definitions and complexity of roles which had at that time a lot of impact on the, let's say, the proper functioning of the data transmitting!	
Complexity: IT skills	We hebben vanuit e-CODEX juist ingestoken om proberen te implementeren binnen bestaande systemen juist om de acceptatie, maar ook de inbreuk zo klein mogelijk te laten zijn. Vooral organisatorisch en met name hoe je stakeholder in de verschillende landen bij elkaar brengt, dat is echt het moeilijkst (vond ik).	Wat ik in Nederland heb gezien, nee! Maar dat heeft misschien ook wel te maken met dat we goed georganiseerd zijn en de standaarden op Europees en nationaal vlak op elkaar lijken. Er waren wel uitdagingen natuurlijk maar bekendheid met standaarden en hoe te implementeren hadden we allemaal onder de knie.	Nee, ik denk dat dit heel erg meevalt.	Ik heb daar nooit wat van gehoord. Wat bij ons een voordeel is denk ik, heb ik in het traject gezien, en bij Duitsland zie je dat ook wel terug, is dat de lijnen tussen de IT en mensen van inhoud heel kort zijn. Dus afgezien van je technische abilities en hoe je die aansluiting maakt op e-CODEX en zorgt dat jou achterliggende landschap er ook mee kan werken, is daar een heel goed besef van inhoud en proces en wat er moet gebeuren. Het is altijd moeilijk als inhoudsdeskundige en als ICT'er om elkaar te vinden. In Frankrijk zag je dat	Software engineers that manages both the ANTAI and e-CODEX infrastructures	Kijk, het verzenden van een bericht, dat viel wel mee, kijk, als ik een verzoek verstuurde naar het buitenland toe, viel dat reuze mee. Maar de handelingen die ik moest doen om een verzoek binnen te krijgen, vanuit het buitenland dan he, dat was zo omslachtig. Dat kon je ook niet iedereen laten doen. Daar moest je gewoon de mensen, de administratie voor hebben. We hadden met een pilot, ook weer niet allemaal, maar een beperkt aantal mensen die met e-Codex konden werken. Maar die moesten het echt elke dag doen om die vaardigheid erin te houden. Ja, en op een gegeven moment	If you establish such a system by having proper skills only for that, you would not getting any acceptance. So, the aim must be every time to use it as easy as an e-mail. So, if you do not that, so, you would not get it into practice, so much is clear. If you don't have IT skills, it doesn't work, The whole work, let's say as an example for a prosecutor today or his assistance is IT based. And that what people know that the IT system must be sufficient, also in	We have a group of extremely brilliant brains in our IT department. They did not have awareness of the work done by the Commission in terms of digital, so the activities of the CEF digital team or e-CODEX, we are closing that gap now. We are starting adopting e-delivery, e-translation etc. So we may not have the level of knowledge right now that is necessary, but we have the brains. The level of complexity of the architecture and infrastructure and

				het proces nog niet helder was, en dat er een extern ingehuurd ICT bedrijf met een beperkt budget, en een opdracht dat aan de voorkant niet heel goed duidelijk was, dat daar hobbels optreden en dat dat wel problemen oplevert		stagneerde het omdat de techniek ons in de steek liet.	using such a system.	the processes is really high, but I do think we have the right people for this.
Trialability	Volgens mij wel, maar dat zie ik vanuit een aanbiederskant. Ik vind 2 maanden al heel ruim. Maar ik kan me voorstellen dat ze bij het CJIB denken, dat is 2 maanden doorlooptijd en dat is geen reële tijd die we daarin kunnen steken. We hebben wel afspraken gemaakt over test windows tussen Antai, Justid en CJIB om dat voor elkaar te brengen.	De beginfase van e-Codex was natuurlijk ook een proof of concept en daarmee dus wel een experiment maar die proof of concept ging wel meteen van start in de officiële omgeving met de bedoeling om naar de productieomgeving te gaan. Dus in die zin, kan je zeggen: kon je experimenteren, nee, niet echt. Het was niet dat we een soort van proeftuin hadden of zo. We zijn met de echte omgevingen van de organisaties aan de slag gegaan. Dat kunnen we geen experimenteren noemen.	Ja, technisch gezien sowieso, want er is altijd eerst voordat je naar productie gaat heb je eerst nog een aantal andere fases waar je doorheen gaat voordat het daadwerkelijk life gaat. Dus wat dat betreft, technisch experimenteren dat kan sowieso. Daarnaast zijn er aantal projecten die ik daarnet al noemde dus EXEC en e-Codex plus, dus over de investigation order en de payment order, dat was, uiteindelijk was het doel van die projecten om organisaties aan te sluiten en ervoor te zorgen dat hun productieomgeving ready zou zijn om met e-Codex life te gaan uitwisselen met andere	Nee want e-CODEX was er gewoon nog niet (toen wij begonnen). Op het moment dat wij in een use-case stapte, hebben we het gebouwd en zijn we die pilot begonnen. We hebben natuurlijk wel eerst (toen we het gebouwd hadden) in de test omgeving dingen uitgewisseld, dat natuurlijk wel. Maar er lag niet iets dat je dacht, laten we even kijken, oh ja dat werkt goed, dus dat wil ik ook.. Zo werkte het niet.	No. Testing phase done after the adoption of e-CODEX.	Ja, we hebben een tijdje in het begin, ben ik samen met [redacted] ben ik in Almelo geweest. Daar hebben we die testfases ook gedaan, dus, daar hebben we gedaan, oke, ik krijg nu een verzoek binnen wat wil je hebben dat ik doe volgens de techniek dan zo he. Daar is op zich niks mis mee geweest. Dat ging an sich goed. Alleen die twee systemen, dat Duitse systeem en het Nederlandse, ja, die matchen niet met elkaar want LURES is ons registratiesysteem in Nederland voor alle justitiële en politie en rechtshulp, tja die twee systemen matchen gewoon niet met elkaar	As I already said, the ministry of justice has decided already before or had already decide before we jumped in this criminal e-Codex issue. To participate and to organise, to have a kind of key role by building up this new e-codex system, which hasn't been….initiated just before, on beginning 2010, so we have any experience in that way. So, we must build up, it was up to us to build up the concept and an idea of that. So we did not have any possibility to experience	This would be fundamental because, to give a concrete example, in a discussion we are having with the Member States we are interested in experimenting in data exchange (CMS to CMS), we will definitely need to work at the level of our staging environment (so not the production one) to do extensive testing to understand that data exchange comes to a good end. The first one is the data are correctly, imported, and then the data are correctly posted

			landen, maar sommige landen zijn in de pilotfase blijven hangen, dus die kunnen alleen maar, laten we zeggen, in een testomgeving nu met andere landen uitwisselen. En, binnen het e-Codex project, dus dat is dan van 2010 tot 2016, dat was eigenlijk één grote pilot. Maar in ieder geval met mensen en capaciteiten moesten ze wel investeren!				before, because we were in, we initiate that.	to the correct fields. So the testing will be fundamental, the possibility to experiment, piloted.
Observability				We hebben wel een beetje meegelopen met de use-case van MLA (Europees Onderzoeksbevel) in die tijd, omdat zij ook net begonnen waren. Maar eigenlijk was het bijna gelijktijdig dat zij ook die aan sluiting zochten in Noordrijn-Westfalen. Dus het liep een beetje simultaan	No, ANTAI use of e-CODEX is confined by the Council Framework decision 2005/214/JAI of 24 February 2005 on the application of the principle of mutual recognition to financial penalties and the directive 2015/413 of 11 March 2015 facilitating cross-border exchange of information on road-safety-related traffic offences	Voor ons was het één groot nieuw project en dan had ik nog het geluk dat ik vanaf het begin erbij betrokken was en dus wel een beetje de voorwaarden kende en dus ook de voordelen, althans, de aangenomen voordelen, laat ik het zo zeggen. En vervolgens heb ik het binnen onze club, en daar waren drie andere collega's van de administratie aan uitgeleend, van zo gaan we het doen.	No, I would say, they were also on the level at that time that they were still in the beginning of their operational phase, so it was difficult to compare whether the use of the e-Codex system for criminal matters, would be as much easy as for civil matters.	Actually no, because I have just been reading some case studies, but I haven't been able to talk to anybody who's been using concretely e-CODEX

Top management support	Lippendienst was fijn. In die zin was de zichtbaarheid van de directeur van het CJIB bij de e-Justice conferentie in Amsterdam fenomenaal. Dat was heel erg welkom. Maar de betrokkenheid van de juridisch beleidsmedewerker (Sacha) die ons moest helpen om het voor elkaar te krijgen, die was in dat opzicht veel belangrijker. Het vertrouwen dat ze uitsprak in wat we aan het doen waren ondanks dat het allemaal lang duurde. Zij zag dat dit de weg was waar het naartoe moest.	Absoluut! Zowel aan OM kant als aan CJIB kant hadden we, zeker in de beginfase, hele goede sponsoren. Daarna werd het bij het OM, een jaar of 1.5 wat minder, omdat de taak gewoon niet meer op dezelfde manier belegd was, maar dat is nu weer heel goed. Vanuit het ministerie zat er ook heel veel support achter.	Dat het ons heel erg zou hebben geholpen en we merken ook dat het ons nu helpt als er op directie of DG niveau steun wordt uitgesproken voor zoiets als e-Codex. Zeker organisaties als het OM of onderdelen die onder Justitie en Veiligheid vallen, die gaan toch harder rennen als dat hier vanuit beleid of vanuit directie of DG niveau gestimuleerd wordt.	Toen we het hadden voorgelegd en dachten dit kan wat worden, en in samenwerking met het Franse ANTAI, toen eenmaal bedacht was ja dat gaan we doen met hun, toen hebben we ook wat meer bezoeken afgelegd en is er uiteindelijk een conferentie uit voortgekomen. Daar was wel veel enthousiasme. En ook het moment dat we dachten, oké dit is het, toen was die steun er wel. Op het moment dat het minder ging lopen was het natuurlijk lastiger. Ik heb geen tegenwerking gehad ofzo, maar het is niet de meest succesvolle uitrol gebleken tot nu toe, maar dat gaat misschien komen nog. Tot nu toe gaat het gewoon door, en we breiden ook uit. Alleen op het moment dat het wel heel veel geld gaat kosten, terwijl het weinig oplevert, dan gaat het wel een issue worden.	Yes, there was support. The former director of ANTAI, [redacted] was involved in the implementation of e-CODEX. He went to the NL for the first fine sent through e-CODEX in 2016.	Ja, die was positief. Van iedereen, van ook diegenen die ik heb proberen te betrekken van, hee jongens we gaan nu dit doen en het begint, alles wat nieuw is voor mensen die al jarenlang op een bepaalde manier werken. Ik heb een club van oudere mensen die dat werk al jaren doen. En als er iets nieuws komt dan is dat even wennen en voorbehoud maken. Maar goed, ze zagen, of althans de hoop was er dat het ons voordelen zou opleveren en die waren ook enthousiast, we gaan het doen! Maar ja, op een gegeven moment zien ze: verdomme, moet ik weer alles aanpassen, verdorie, het staat weer niet in de goede velden, ik moet weer downloaden en ik krijg het maar niet voor elkaar, dan gaat er aversie ontstaan met betrekking tot het systeem. En dan krijg je dat de ene zegt, ik scheid er mee uit. Dan probeer je wel te motiveren, maar dat doet de baas niet he, een zwaar woord, maar	They were very, as I already said, this was a decision by the ministers. The reaction was positive in the sense that there was the will to cooperate and so, yeah, we did that. So, the minister decides, we do it. There was clear mandate, clear task to do, they asked also regularly what happened during that times, in researching in the way to build up the system.	My boss is letting me do the job. So, I have a sort of blank shard in proceeding in the discussion, and I have been basically moving forwards on both grounds, so the discussion with DG JUST on e-EDES, and the one with the consortium on e-CODEX in complete autonomy. The top management of operations, the top management of IT and the boss of IT, are fully in line with reference to the members of the College, the European prosecutor, who I have already have discussions with one of the deputies European prosecutors who is absolutely in favour.

						het werkt gewoon niet, e-Codex.		
Resources	Dat laatste daar draait alles om. Het vinden van tijdsvensters om met elkaar te testen, om met elkaar te ontwikkelen en af te stemmen. Als je dat niet op orde hebt dan gaat het niet goed. IT-expertise is noodzakelijk. M.b.t. financiële middelen, dit waarom we de hele tijd hoopte dat we konden aansluiten op bestaande systemen, omdat daarmee de investering voor de ontvangende partij zo laag mogelijk zou zijn. Als je het inbed in bestaande systemen hoef je en niet meer mensen te trainen in hoe het systeem werd, en hoef je ook niet heel veel investeringen te doen in de interface. Idealiter sloten we daarom aan op bestaande systemen.	Dat is natuurlijk een beetje een open deur, want zonder middelen gebeurt er natuurlijk helemaal niets. Deze beperkende factor is wel enigszins beïnvloed in positieve zin omdat er vanuit het ministerie goede sponsering was. De aanpassingen aan het systeem van het OM, die nodig waren om vanuit papieren stromen digitale stromen te maken, die zijn grotendeels vanuit het ministerie bekostigd en niet vanuit het OM. Dus je zou kunnen zeggen, als dat er niet was geweest, dan was er waarschijnlijk niets gebeurd, dus heeft het een grote invloed.	Vanuit mijn rol bezien, en het zicht dat ik erop heb, denk ik dat het een grote rol speelt. Wat ik al eerder zei, de software elementen, die worden aangeboden en centraal wordt ervoor gezorgd dat die ge-update worden en aan de juiste beveiligingseisen voldoen, maar het is aan de organisatie zelf om zo'n update werkelijk door te voeren. Net zoals je op je computer de vraag krijgt 'wil je iets updaten dat je zelf op ja moet drukken om die update daadwerkelijk te doen. Misschien zijn er dan bepaalde processen op je computer die niet meer werken. Dat soort dingen gebeurt ook bij e-Codex. Ik denk dat de beschikbaarheid van financiële middelen, budget, mensen, dat dat heel belangrijk is om e-Codex te laten slagen.	We hadden het niet gedaan als het departement niet akkoord was gegaan en daar ook geld voor beschikbaar had gesteld. Dat hebben we alleen maar voor elkaar gekregen vanuit de positieve business case dat het zichzelf terug zou betalen wat uiteindelijk in de praktijk niet het geval is. Dus dat was wel belangrijk. Het was wel lastig, maar uiteindelijk hebben we dus wel middelen gekregen. We hebben misschien wel iets meer uitgegeven, maar we hebben vervolgens ook ons interne proces geoptimaliseerd en dat is gewoon heel succesvol. Dus ja, als we het geld niet hadden gehad, dan hadden we het niet gedaan.	Half of the costs were paid back by the Ministry of Justice	Wij als gebruikers, zeg maar, hebben ons daar totaal niet druk om gemaakt. En ook geen last van gehad. Het ging puur voor ons, wij hebben het systeem e-Codex, je krijgt een signaaltje in je email box dat er een e-Codex bericht binnen gekomen is, nou, je gaat downloaden, je voert in of je wijzigt wat in dit geval, want zelfs invoeren hoefde dan niet, maar je moest een hoop wijzigen. Dus wij hebben ons niet druk hoeven te maken over budget of expertise, nee.	Yeah, of course, there were resources and, of course, you need that before you start such a project and that is why we could… to participate or to initiate that project. We had that resources at that time. If you haven't, you would have gone. This is also what I already have said, or what I already mentioned. From the Belgium side, you know, Belgium, the IT environment for the traditional workers is in my view, was in that time, in a sense, not in the same way developed as in the Netherlands or in Germany. So, they had huge difficulties to build up on their, let's say, much more rudimental system such a developed concept and work	I don't see the adoption of e-CODEX to be, from the EPPO perspective, an extremely expensive exercise. A particular complex exercise from the perspective of straining resources in IT. Considering the possibility eventually to take external resources for support if needed, I don't see this as an obstacle for the adoption. So the costs for the adaptation of our systems I don't think would be exorbitant.

							around that we required for the use of the e-Codex system. That is why they also withdraw from their engagement.	
Perceived costs	Vanuit ons team hebben we daar wel ooit een rekenmodel voor gemaakt. Ten tijden van de impact assessment hebben we een rekenmodel gemaakt. Toen hebben we dus een schema gemaakt hoeveel tijd het zou kosten. Maar een IT ontwikkelaar in Estland is goedkoper dan een IT ontwikkelaar in Zweden of Noorwegen bijvoorbeeld.	wat ik wel weet is dat, zeker in de eerste me-Codex fase, vanuit het ministerie altijd een bijdrage in het vooruitzicht gesteld werd. Maar of het voor hen van te voren duidelijk was wat het ze zou kosten, dus als je kijkt, wat kost de e-Codex dienstverlening, was dat heel duidelijk? Dan is het antwoord nul. Maar als je het hebt over de kosten die zij moeten maken om hun systeem aan te passen en personeel op te leiden, dat kunnen ze alleen zelf inzichtelijk maken.	Eerlijk gezegd, ik denk niet zo duidelijk. Wij hebben namelijk de kosten nooit heel goed in beeld gebracht, bewust, omdat de kosten voor elke lidstaat verschillen. Want personeelskosten verschillen, dus we vonden het heel lastig om ergens een prijskaartje aan te hangen voor de organisatie. Dus we hebben eigenlijk altijd gecommuniceerd in manuren en FTE die nodig is, maar ook dat is natuurlijk een beetje uit de losse pols, want je kan zeggen dat er, zeg maar, wat een IT specialist, één FTE IT-specialist nodig is om dit of dat te doen, maar dat zal ook per land, dat wat een IT-specialist kan, zal verschillen. In het ene land is dat een duurdere rol of in een organisatie dan in een ander land. We zijn er	Nee, dat was nog wel een beetje vaag. De kosten lopen natuurlijk op zodra er hobbels zijn. Je moet testen, uitzetten, dus ja dat was aan de voorkant niet heel duidelijk nee.	Costs were not clear at all. Discovered the costs at the same time as implementing e-CODEX.	Nee de kosten waren totaal niet duidelijk.	No, there was no calculation at the beginning. We thought that more a kind of ….man, or… as I already said…. With board means I don't know how that was on the Dutch side. We had not a proper, I mean there wasn't a budget for e-Codex, it was a little bit larger but it was also for the other projects and the other use-cases and from there we got some money, but that was not so much. It was more work, it was more the personnel investment, of the personnel staffs, you know, people working on that	I think that from a technological perspective, the costs may be related to the work of our engineers, project programme managers, so the human costs.

			zelf altijd bewust vaag over gebleven, maar daardoor denk ik te vaag waardoor het wellicht voor organisaties niet altijd duidelijk was wat het nu voor hen zou betekenen.					
Championship	Zonder hun gaat het eigenlijk niet. Zij moeten echt wel het werk binnen de organisatie doen. Zij hebben hun interne netwerk. Zodra je één persoon aan de binnenkant van een organisatie van de buitenkant hebt weten te overtuigen en die gaat het werk voor je doen, want daar komt het feitelijk op neer, dan is je kostje wel gekocht. Maar dat is ingewikkeld, daar moet je heel veel tijd in steken. Bij het CJIB ging dat goed, maar bij andere organisaties is dit niet echt goed gelukt. Dit was ook zeker een reden waarom het moeilijk werd. Als je het van buitenaf doet, moet je ook kunnen leveren. Want als je niet kan leveren vanwege een partij	Cruciaal. Echt! Want je kunt als beleidsmedewerker van het Ministerie of in mijn rol als IT service provider een prachtig mooi verhaal neerzetten, maar er moet een interne business driver zijn, dus er moet voor hen een noodzaak zijn om die interne samenwerking überhaupt te gaan zoeken en je hebt een interne sponsor nodig.	Ja, ik denk, super belangrijk! Echt heel belangrijk. Je noemde al even Sascha van Willigen. Dat is echt, als we in elke organisatie zo'n persoon zouden hebben dan zouden we nu al veel verder zijn met de implementatie van e-Codex. Dus, ik denk dat die echt heel belangrijk zijn en dat we er daar te weinig van hebben. Dus het is een te kleine bubbel van mensen die zich met e-Codex bezighoudt en daar het belang van ziet. Dus ik denk dat daar meer in geïnvesteerd zou moeten worden en dat het geprobeerd is in het verleden om e-Codex ambassadeurs te creëren.	Ik heb daar met name aan de voorkant heel erg gelobbyd en geprobeerd in te schatten of dat voor ons positief zou kunnen zijn of niet. Ik heb behoorlijk veel werk verricht om ervoor te zorgen dat het departement om zou zijn. Eerst dat er intern natuurlijk enthousiasme was. En vanaf dat moment ben ik de hele tijd betrokken geweest bij het leggen van contacten met het buitenland. Dus een beetje een trekkersrol binnen het CJIB.		Ja, dat was ik dan met die twee dames van de administratie die het uiteindelijke werk hebben gedaan, altijd. We hadden er 5 bij elkaar gehaald, degenen die eigenlijk het meeste met het verzenden en het ontvangen van rechtshulpverzoeken, justitiële heb ik het dan over, belast waren. Er waren twee mannen, twee vrouwen en ik, dus met zijn vijven waren we. Die twee mannen die waren eigenlijk alleen maar belast met het verzenden van de rechtshulpverzoeken, althans van …..! Maar het bleek gewoon veel praktischer een pdf-je in de mail versturen naar de Staatsanwalt in Aken ten opzicht van het e-Codex gebruik.	Yes of course. I mean, first of all you have to double…(?) of the concept with your partners, then you have to get, you need to get support by the partitioners, so you must find allies in the high devise, not only on the ministry level but also on, let's say, the local level or that people would like to try. It is clear that on the beginning, such a new idea, I would say, such a new IT application needs more efforts than the facilitates to work	

	in het buitenland, dan ligt het niet aan de partij in het buitenland, maar dan ligt het toch aan e-CODEX en dat beeld krijg je niet meer weg.							
Facilitative leadership	Wij hebben dit wel geprobeerd. Ik had het graag beter gezien. Ik had graag iemand gehad die alleen maar daar mee bezig was. Daar heb ik het ook wel met [redacted] (toenmalig afdelingshoofd) over gehad. Maar je trekt dan iemand uit voor iets wat niet direct levert.	Ik denk dat de stimulans vanuit het ministerie kwam. Enerzijds door te zeggen: we hebben geld, maar anderzijds, we hebben ook een organisatie die jullie goed helpen kan. En dat is dan Justid. We hebben ook heel actief als Justid altijd de organisaties bijgestaan bij de implementaties, bij vragen.	Op papier heeft het project consortium wel de verbindende rol, en was het zeg maar wel de bedoeling om organisaties samen te brengen, maar in de praktijk denk ik dat dit meer bij de organisaties zelf heeft gelegen. Het was wel een van de doelen van het project consortium om die samenwerking te faciliteren, dus om partijen samen te brengen en o.a. probeerden of proberen we dat te doen door events of gelegenheden of meetings te organiseren waarbij partijen elkaar kunnen ontmoeten.	Ja.. Justid is natuurlijk behulpzaam geweest. En ik heb op een gegeven moment tegen [redacted] gezegd, ja we willen best wat, maar we gaan niet nu een systeem bouwen waar vervolgens geen Europese land op zit te wachten, dus dat gaan we niet doen. Daar heeft [redacted] toen wel behoorlijk wat werk verricht, en die kwam uiteindelijk dus met Frankrijk die met ons wel wilde samenwerken. Dus dat je ook een pasklare toepassing gepresenteerd kreeg, die potentie bleek te hebben, heeft wel geholpen.	No facilitative support was provided.	Justid was onze partner in het kader van samenwerking. Zij waren eigenlijk de leverancier van het systeem en wij waren de gebruiker en daar is op zich nooit over te klagen geweest.	No. Outer of the government we did not receive support.	
Disposition to and readiness for collaboration				Op zich gaat de samenwerking best wel goed. Met Duitsland ook heel constructief en heel snel. Daar hebben we ook duidelijk	As pilot in e-CODEX (2010-2016) on the implementation of the digital exchange infrastructure for	Ja, die is altijd goed, godzijdank, dat we niet afhankelijk waren van het e-Codex verhaal. We hadden in Aken heel veel gedoe met [redacted], dat is de	I mean, the political context behind was quite clear. Digitalise the cross-border communication between criminal	

				eenzelfde beeld, we kenden elkaar ook al. En qua techniek en inzet is dat allebei vergelijkbaar. Dus daar heel goed. België wil ook heel graag (samenwerken), en ik ga ervan uit dat dat wel voor elkaar gaat komen. Daar is de samenwerking en contact ook goed. Met Frankrijk is de samenwerking en contact ook goed, op de inhoud, maar op de ICT lastiger, omdat dat externe ingehuurde ict'ers zijn. Qua resultaten is dat tot nu toe gewoon niet succesvol. Maar we hebben wel een goede samenwerkingsband.	the European Justice domain, France and The Netherlands have started to exchange data on traffic fines. Due to the increase of NL cars on FR roads during summers and also, in order to ensure and promote road safety and reduce impunity on roads, CJIB and ANTAI decided to deploy e-CODEX for secure and reliable exchange of data related to traffic offenses. At first, a limited number of cases were exchanged allowing both agencies to get used to the technological and organizational impact.	Staatsanwalt van Aken. Die kwam heel vaak op de lijn en die kwam ook heel vaak bij mij op de lijn met kijk jij even of er bij jullie een e-Codex bericht is binnengekomen. Maar die Guido zei op een gegeven moment ook: stuur het me in godsnaam met de mail toe, dan weet ik zeker dat ik hem heb.	board prosecution services, that was the common idea we had. And it was clear that the way we communicating or we were communicating at that time was not sustainable for the future. We needed something. That was quite clear that there was something necessary for new channels of communication, especially between the Dutch and the German side.	
Trust	Dat is nummer één. Het OM zou niet als eerste partner Bulgarije of Roemenië zoeken. Het ging zelfs zo ver, dat bij internationale rechtshulpverzoeken het OM niet wilde	Nu, als alles in één keer goed gaat, dan is dat vertrouwen niet zo belangrijk want dat komt vanzelf wel, maar zeker in die beginperiode, waarin best wel veel fout gaat, omdat, b.v. met je Duitse partner ben	In principe doet e-Codex niets nieuws, analoog gezien weet je ook niet precies wat een andere organisatie met jouw data precies gaat doen, maar digitaal voelt het altijd nog een beetje spannender. Dus ik dat	Vertrouwen is wel heel belangrijk. Ik merk ook bij mezelf, als je kijkt naar België bijvoorbeeld, dat is natuurlijk een lastig land (qua taal, bestuur etc.), dus daar op nationaal niveau afspreken is	Good, we are collaborating only with the NL for now. Collaboration is not based on trust, rather based on the number of fines according to	Ja, wat dat betreft zijn we twee handen op één buik. Met de Duitsers en de Belgen.	I mean, trust is the key of everything, so without trust there is no cooperation, especially in criminal matters. So, it is clear that we need a certain,	

	dat de aansluiting van e-CODEX zou komen te staan in het ministerie van justitie, want daar konden ze niemand vertrouwen.	jij nog een implementatie aan het doen, waar de Nederlandse uitvoeringsorganisatie eigenlijk niets mee te maken heeft, maar het moet wel werken voordat ze ermee aan de slag kunnen en dat duurt soms lang. En ja, dan is dat vertrouwen wel erg belangrijk.	dat het vertrouwen, dat er ook aan de andere kant van de lijn op een goede manier met de data omgegaan wordt, die verstuurd wordt, want als er ergens een data lek plaatsvindt dan in Duitsland en daar zijn Nederlandse gegevens naartoe gestuurd, dan heeft Nederland daar natuurlijk ook last van. Dus ik denk wel dat het vertrouwen aan de andere kant van de lijn, ook na het stukje e-Codex, dus zodra het in het eigen nationale of regionale systeem terecht komt, dat dat heel belangrijk is.	best wel een risico, en daar zijn we nu wel aan het kijken en dat komt ook met name door de persoon die daar de opdracht heeft gekeken. Dus ik vind dat wel belangrijk. Je springt altijd wel in een soort diepe en er zullen altijd dingen zijn die je van te voren niet kan voorzien, en dan is het heel belangrijk dat je ook een soort persoonlijke inschatting hebt van de mensen die het daar doen. Het weegt voor mij mee om intern advies wel of niet te geven.	the contravener country.		let's say, between the partners working together that they can stand up the other. That is quite clear, and you need also information which you can exchange immediately and that the discussions are open and that we can also give things to the other and say: well, I am not so happy with what you are doing, let's start the other way around. I mean, this is the base for good cooperation. And between the Dutch and the North Rhein Westphalian colleagues, in that project, that worked very very well.	
External pressure and network externalities	Ja dat geloof ik wel. In Nederland was wel het geval dat de Rechtbank Den Haag niet meeging met de pilot voor het gebruik van e-CODEX in het Europese betalingsbevel en	Ik denk dat als we een gesprek zouden hebben met de rechtspraak dat ze vertrouwen zouden krijgen uit het feit dat Nederland al een goede dienstverlening levert aan OM en CJIB en vertrouwen	Ja dat denk ik wel. We zagen dat in Scandinavië en dan vooral ook bij Financial penalties, daar is natuurlijk veel verkeer tussen de Scandinavische lidstaten, en daar zien we wel dat als er b.v.	Nou nee, wij waren één van de eersten die erin stapten. We stapte in met de ANTAI en die kende we toch nog helemaal niet. We dachten wel: het is een organisatie die heel erg lijkt op	No.	Dat maakt in principe niet uit wie er nu mee kwam. Het samenwerkingsverband met de Duitsers en de Belgen is natuurlijk veel intenser dan met Frankrijk, noem ik maar even. Als Frankrijk, dan zou ik		

	geringe voorderingen. Oostenrijk en Duitsland hadden dit toen al, maar in Nederland was die procedure niet populair. Mensen namen dat verlies voor lief. De bedragen waren ook tamelijk laag. De business case was er niet.	uit het feit dat het proces waar zij aan mee zouden moeten doen tussen Duitsland, Oostenrijk, Italië en Estland al geïmplementeerd is.	over e-Codex gepraat wordt dat dit niet alleen maar wordt gedaan vanuit b.v. de Zweedse context of die van Finland, maar dat die met elkaar besluiten dat ze e-Codex interessant vinden om als oplossing te gebruiken voor hen om informatie uit te wisselen.	onze organisatie, en het is een organisatie van een groot land, dus goed om daar een relatie mee te hebben en mee samen te werken (ook op andere punten).		gedacht hebben, nou ja wat heeft het voor voordeel voor mij als Limburg, want ik heb weinig met Frankrijk.		
Legislation and policy	Ja, in afgelopen jaren was er geen stok achter de deur. Nu met de e-CODEX verordening moet alles digitaal in grensoverschrijdende procedures. Beter kan e-CODEX het niet krijgen.	Ik weet niet of het of het eerder van heel grote invloed was, maar het feit dat er een e-codex regulation in de maak was en nu bijna voltooid is, dat geeft wel extra vertrouwen van, hee, ik kan er aan mee gaan doen, want het blijft bestaan. Tot die tijd, ja, nee, het e-Codex traject is afgelopen, en we gaan er mee door en het wordt overgedragen, maar dat zijn dan allemaal alleen maar woorden.	Ja, nou er zijn een aantal Europese verordeningen geweest waarin is gekomen dat in principe de default option zou moeten zijn om digitaal informatie uit te gaan wisselen dus dan heb je de service of documents, en de taking of evidence verordening waar ook binnen die verordening echt gelobbyd is om ervoor te zorgen dat digitale uitwisseling in principe de standaard optie is en als je het analoog doet dat dat moment dat dat op een of ander reden echt niet lukt. Als dat in een verordening staat dan is het natuurlijk een incentive voor een lidstaat om ervoor te zorgen dat die digitale	Nou kijk, die Europese regelgeving over de overdracht van boetes heeft wel meegespeeld, omdat dat meteen maakte dat we wisten, oké als we dit gaan doen, dan kunnen we dat op die wijze gaan doen. Maar de exacte wijze hoe zaken worden uitgewisseld staat niet voorgeschreven. Er staat wel voorgeschreven op welke manier je informatie uitwisselt, namelijk met een vastgesteld certificaat. Maar dat certificaat kunnen we via e-CODEX verzenden.	Yes, e-CODEX is complementary to EUCARIS	Nee dat heeft totaal geen invloed gehad	for the sustainability of the e-Codex project and also of the development of this technical environment it is necessary to have a European legislation on that matter. What I already said, it is a complex technical infrastructure which was not so easily to handle, as I already said, not a simple email as be…. at the beginning. And for that you need a kind of sustainable legislation that offers the framework which guarantees also	

			uitwisseling ook kan plaatsvinden en op die manier wordt er dan naar e-Codex gekeken, het dat is een manier om dat te doen. Dat is dus wel, of dat gaat in de toekomst wel een boost worden voor e-Codex. Vanuit e-Codex is geprobeerd om daadwerkelijk 'e-CODEX' in de verordeningen te krijgen. Nou dat is niet gelukt, en ik denk ook echt dat dit had gemoeten. Het is juist goed om dat technologie-neutraal te beschrijven en dat is ook gebeurd, dus daar ben ik eigenlijk wel erg blij mee, maar het is wel zo op zo'n manier technologie-neutraal geformuleerd dat e-Codex past binnen de definitie die gebruikt is. Dat gaat wel heel erg helpen.				the necessary resources that will be provided also in the future to guarantee development.	