



# The Once-Only Principle Project

## Drivers and Barriers for OOP (1st version)

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Submitted to the EC on 29/08/2017

## Horizon 2020 The EU Framework Programme for Research and Innovation



**PROJECT ACRONYM:** TOOP

**PROJECT FULL TITLE:** The Once Only Principle Project

**H2020 Call:** H2020-SC6-CO-CREATION-2016-2017

**H2020 Topic:** CO-CREATION-05-2016 - Co-creation between public administrations:  
once-only principle

**GRANT AGREEMENT n°:** 737460

### D2.7 Drivers and Barriers for OOP (1<sup>st</sup> version)

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<b>Deliverable Id :</b>	D2.7
<b>Deliverable Name :</b>	Drivers and barriers for OOP (1 <sup>st</sup> version)
<b>Version :</b>	V1.0
<b>Status :</b>	Final
<b>Dissemination Level :</b>	Public
<b>Due date of deliverable :</b>	M8 (August 2017)
<b>Actual submission date :</b>	29/08/2017
<b>Work Package :</b>	WP2
<b>Organisation name of lead partner for this deliverable :</b>	TUT
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<b>Partner(s) contributing :</b>	All beneficiaries

**Abstract:**

This deliverable presents the TOOP pilot participants' perception of the key barriers and drivers for the cross-border implementation of the once-only principle (OOP), which were studied on the basis of a literature review, survey, focus group interviews and workshops. In regards to legal challenges, key concerns for cross-border OOP implementation include meeting the requirements of lawfulness and compliance, legal value and validity of data exchanged, privacy, data protection and protecting confidentiality. Key technical barriers are found around technical and semantic interoperability. The study also identified that reluctance to change existing systems may act as a barrier; it is therefore expected that the architecture for cross-border OOP is compatible with existing national solutions. Organisational and political barriers relate to organisational inertia, low political prioritisation of the OOP, multiple stakeholders and interests, limited resources, organisational interoperability and different pricing policies. Last but not least, demonstrating the benefits for businesses and public administrations is perceived very important.

## Table of Content

<b>LIST OF FIGURES.....</b>	<b>6</b>
<b>LIST OF TABLES.....</b>	<b>7</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>8</b>
<b>EXECUTIVE SUMMARY.....</b>	<b>9</b>
<b>1. INTRODUCTION.....</b>	<b>11</b>
<b>2. BARRIERS AND DRIVERS OF CROSS-BORDER OOP: LITERATURE REVIEW.....</b>	<b>14</b>
2.1. TECHNICAL AND INTEROPERABILITY FACTORS .....	15
2.2. ORGANISATIONAL, ADMINISTRATIVE AND POLITICAL FACTORS.....	16
2.3. LEGAL FACTORS .....	17
2.4. DEMAND SIDE FACTORS.....	18
2.5. INVENTORY OF KEY BARRIERS AND DRIVERS.....	19
<b>3. PERCEIVED BARRIERS AND DRIVERS OF TOOP PILOTS: RESULTS OF THE TOOP SURVEY AND WORKSHOPS.....</b>	<b>22</b>
3.1. GENERIC BARRIERS AND DRIVERS .....	22
3.2. BARRIERS AND DRIVERS FOR THE CROSS-BORDER E-SERVICES FOR BUSINESS MOBILITY PILOT.....	27
3.2.1. BARRIERS.....	27
3.2.2. DRIVERS .....	29
3.3. BARRIERS AND DRIVERS FOR THE UPDATING CONNECTED COMPANY DATA PILOT.....	30
3.3.1. BARRIERS.....	30
3.3.2. DRIVERS .....	31
3.4. BARRIERS AND DRIVERS FOR THE ONLINE SHIP AND CREW CERTIFICATES PILOT.....	31
3.4.1. BARRIERS.....	32
3.4.2. DRIVERS .....	33
<b>4. DISCUSSION AND RECOMMENDATIONS.....</b>	<b>34</b>
4.1. LEGAL CHALLENGES .....	35
4.1.1. KEY BARRIERS .....	35
4.1.2. RECOMMENDATIONS.....	35
4.2. TECHNICAL INTEROPERABILITY CHALLENGES .....	36
4.2.1. KEY BARRIERS .....	36
4.2.2. RECOMMENDATIONS.....	37
4.3. CHALLENGES RELATED TO UNDERSTANDING OOP BENEFITS AND IMPACTS .....	37
4.3.1. KEY BARRIERS .....	37
4.3.2. RECOMMENDATIONS.....	37
4.4. ORGANISATIONAL AND POLITICAL CHALLENGES .....	38
4.4.1. KEY BARRIERS .....	38
4.4.2. RECOMMENDATIONS.....	38

<b>CONCLUSIONS.....</b>	<b>40</b>
<b>REFERENCES.....</b>	<b>42</b>
TOOP DELIVERABLES.....	42
OTHER REFERENCES .....	42
<b>CONTRIBUTORS.....</b>	<b>44</b>
<b>APPENDIX I: QUESTIONNAIRE ON SPECIFIC CONDITIONS AND CONSTRAINTS AT PILOTING COUNTRIES AND ORGANISATIONS.....</b>	<b>45</b>

## List of Figures

Figure 1: Key perceived drivers for TOOP pilots.....	23
Figure 2: Political prioritisation of the implementation of OOP at a cross-border/European scale.....	23
Figure 3: Key perceived barriers for TOOP pilots .....	24
Figure 4: TOOP pilot organisations' openness to sharing data .....	25
Figure 5: TOOP pilot organisations' openness to sharing personal data .....	25
Figure 6: Willingness to make organisational and technological changes to enable OOP .....	26
Figure 7: Key challenges for pilot implementation .....	26
Figure 8: How TOOP Pilots Fit into the Big Picture.....	34

## List of Tables

Table 1: Inventory of barriers and drivers that affect the implementation of the OOP .....	19
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## List of Abbreviations

Acronym	Explanation
BRIS	Business Registers Interconnection System
CEF	Connecting Europe Facility
D[X.Y]	TOOP project deliverable ( <i>X.Y refers to deliverable number</i> )
DG GROW	European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
GDPR	General Data Protection Regulation
eIDAS	The Regulation (EU) N°910/2014 on electronic identification and trust services for electronic transactions in the internal market
EIF	European Interoperability Framework
EIRA	European Interoperability Reference Architecture
EU	European Union
ICT	Information and Communication Technology
IMO	International Maritime Organisation
OOP	The once-only principle
PA[X]	Pilot Area ( <i>X refers to pilot area number</i> )
SDGR	Single Digital Gateway Regulation
T[X.Y]	TOOP project task ( <i>X.Y refers to task number</i> )
TAM	Technology Acceptance Model
TOOP	The Once-Only Principle Project
UTAUT	Unified Theory of Acceptance and Use of Technology



## Executive Summary

The Once-Only Principle Project (TOOP) was launched by the European Commission in January 2017 as an initiative of about 51 organisations from 21 EU Member States and Associated Countries. The main objective of TOOP is to explore, demonstrate, and enable the implementation of the once-only principle across borders, focusing on data from businesses. This is done by developing a generic federated OOP architecture, implementing three pilot projects (TOOP pilots), analysing the legal aspects and exploring the barriers and drivers for OOP.

The **objective** of the current deliverable is to explore how the TOOP pilot participants perceive the key barriers and drivers for the cross-border implementation of the once-only principle (OOP), to make an inventory of the barriers and drivers for OOP more generally and for the TOOP pilots more specifically, and to develop some initial recommendations for addressing the barriers.

This exploration took place in the form of a literature review, survey, and focus group interviews. Key input was received from the filled in questionnaires where 15 TOOP pilot countries responded, as well as from three workshops.

Regarding the key barriers, it is concluded that the successful implementation of the OOP assumes a comprehensive understanding of the interlinked issues, ranging from technical to legal, organisational, political and demand-side factors. Of these, the key barriers for the OOP are associated with 1) legal interoperability and compliance with legal requirements, 2) lacking empirical evidence and low awareness of the benefits of the OOP, and 3) the difficulty of changing existing information systems, organisational processes and service pricing policies.

In regards to **legal challenges**, the following are perceived as key barriers: lawfulness and compliance (an adequate legal basis for the OOP), legal value and validity of data exchanged, privacy and data protection of natural persons and, finally, protecting the confidentiality and business secrecy. The use of TOOP Pilots' Federation Agreements can offer a way for the TOOP pilots to proceed during the course of the project. However, such agreements create high transaction costs and their viability in practice depends both on the ability and willingness of parties to sign them (i.e. when a public authority indicates that they cannot sign any agreement because they have no legal mandate to do so, only a revision of legislation would solve the legal issues). Therefore, the legislative push at the EU level is seen as an important driver in the long term in order to suppress any remaining legal barriers.

**Technical and interoperability barriers** were also perceived as very important, especially around technical and semantic interoperability. It has been agreed upon by the interviewed stakeholders that there is a need for the realisation of a federated OOP architecture that supports the interconnection and interoperability of national registries at the EU level. However, public administrations are generally not willing to undertake major technological and organisational changes in order to enable the OOP at a cross-border level, so a very high level of compatibility with the existing technical solutions at national and organisational levels is expected.

**End user benefits** – administrative simplification and efficiency – is perceived as the key driver for the cross-border implementation of the OOP. Other major expected benefits include administrative simplification and efficiency for government and increased service quality. Low number of potential end users and potentially low take-up were a clear concern. Thus, in the development of the OOP, priority should be given to developing services that would benefit large number of end users/governments and/or bring considerable benefits, which would be supported by impact assessments.

**Organisational and political barriers** relate to organisational inertia and reluctance to change, low political prioritisation of the OOP, multiple stakeholders and interests, limited resources, organisational interoperability and different pricing policies.

An updated version of the current deliverable will be published at the end of the project, where the barriers and drivers will be revisited to reflect the experiences of the implementation of the TOOP pilots and to develop recommendations for the TOOP use cases, as well as cross-border OOP implementations beyond the TOOP project.

## 1. Introduction

According to the OOP, public administrations should collect information from citizens and businesses only once and then share this information with other administrative bodies while respecting regulations and relevant constraints. Although many Member States of the European Union (EU) have started to implement OOP at a national level, its application is still evolving and fragmented. At the same time, some Member States have also made a clear political commitment to extend OOP to cross-border transactions within the EU in order to lower the administrative burden and contribute to a well-functioning digital single market. However, in spite of political expectations and technical advances, the cross-border implementation of OOP is so far limited to very few services (see TOOP Deliverable D2.6 2017).

The Once-Only Principle Project is a large-scale European project that runs from 2017 to 2019 and aims to facilitate the cross-border application of OOP; it focuses specifically on information related to business activities. TOOP aims to contribute to a solution where business would need to provide certain standard information to a national or supra-national public administration only once. This, thus, would allow for cross-border use of such information that may be shared with public administrations in different countries, respecting privacy regulations and other constraints.

To achieve this, TOOP aims to contribute to advancements on the technical front by developing a generic federated architecture that supports the interconnection and interoperability of national registries across state borders (for the 1st version of the generic federated OOP architecture for Europe, see TOOP D2.1 2017). In order to test the architecture, several pilot projects will be conducted in the fields of company data, cross-border e-services for businesses, and ship and crew certificates (for details, see TOOP D2.6 2017). The project also pays careful attention to the legal landscape and regulations. Key legal principles with a basis in EU law have been identified and a legal assessment framework has been created that allows legal barriers and challenges to be identified in any OOP use case a specific applicable legislation per pilot area has also been analysed and a legal solution framework has been proposed. While the execution of the pilots is feasible, the pilots need to be legally supported by an appropriate contractual framework, based notably on pilot-specific federation agreements (for a detailed legal analysis, see TOOP D2.5 2017). During the course of the TOOP project, this is the only feasible approach until a legislative framework is created that offers better sustainability and scalability assurances.

However, next to the technical aspects (addressed in Task 2.1) and legal challenges (addressed in Task 2.2), there are other factors that affect public administrations' ability to adopt OOP and successfully manage innovation. These include the structural, organisational and cultural features of public sector organisations, political context, demand-side factors, and many other variables. Such factors, which can act either as **drivers** that enable or support the cross-border implementation of OOP, or as **barriers** that challenge or inhibit this process, are addressed in Task 2.3 of the project.

This deliverable presents the results of the work that has been conducted to-date, within Task 2.3, also, when necessary, referring to relevant work that was carried out during Tasks 2.1, 2.2 and 2.4, for the sake of presenting a comprehensive overview of the major barriers and drivers.

The **objective** of this deliverable is to explore how stakeholders perceive the key barriers and drivers for the cross-border implementation of the once-only principle. More specifically, the deliverable aims to:

- propose an inventory of the general barriers and drivers that affect the implementation of OOP;

- identify the specific barriers and drivers that, according to initial estimations, may affect the TOOP pilots;
- provide some initial recommendations for addressing the barriers that could be useful both for TOOP pilots and other possible OOP use cases.

This work should give a first indication on how to best gain from the drivers and deal with the barriers, both in the TOOP pilots as well as in contexts beyond TOOP. An **updated version of this deliverable (D2.8)** will be delivered before the end of the project (summer 2019) where the barriers and drivers will be reiterated and more detailed recommendations will be developed based on the experience of the pilots.

The **methodological approach** to Task 2.3 involved the following components:

- **Literature review**, conducted with the aim to understand what factors may affect the cross-border implementation of OOP. The result of the literature review was the first version of an inventory of OOP barriers and drivers.
- **Focus group interviews** with TOOP pilot coordinators, conducted with the aim to validate the inventory and develop an initial overview of pilot-specific barriers and drivers.
- **Survey** among the organisations participating in the TOOP pilots, conducted with the aim to enhance the inventory and priorities the barriers and drivers per pilot. The result of the focus groups and the survey was an overview of the specific barriers per pilot.
- **Further analysis of the literature and survey** to propose initial recommendations for overcoming the barriers that could be useful for TOOP pilots and any other OOP use cases.

The research activities conducted for the development of the current deliverable consisted of **four main steps** taken over the period of January to August 2017.

1. First, an analysis of existing academic and policy literature was conducted from January to April 2017 to search for influential factors that may affect the cross-border implementation of OOP. Since OOP is still scarcely discussed in literature, the literature search was expanded to also involve academic papers and policy reports on e-government and public sector innovation. This resulted in an inventory of barriers and drivers covering interoperability issues, organisational, user and business aspects and other relevant factors. This inventory was then used as an input for the development of specific survey questions for the TOOP pilots. These questions were included as a specific subset of questions in a survey coordinated by WP3. The survey itself (see Appendix I) was broader in scope and it also included questions prepared by other tasks of the project.
2. For the second step, data was collected from pilot partners from April to July via an online survey. The survey questionnaire (see Appendix I) was distributed and responses were collected via e-mail. Out of the 18 pilot countries to whom the questionnaire was sent, responses were received from 15 – AT, BG, DE, EE, FI, GR, IT, NL, NO, PL, RO, SE, SI, SK, TR – yielding an overview of pilot-specific and country-specific understanding of the main drivers and barriers.
3. In parallel, to gain deeper insight into the perception of pilot-specific barriers and drivers, several workshops and focus groups were carried out. First, generic factors influencing the implementation of the OOP were discussed at the TOOP kick-off meeting in Tallinn on 26 January 2017. More in-depth and pilot-specific discussions took place in three 90-minute focus group interviews with pilot area coordinators in the project workshop in The Hague on 19 April 2017. Finally, the preliminary findings from the survey and focus group interviews were presented and discussed in depth in two 120-minute sessions with some 30 pilot participants in Rome on 23 and 24 May 2017.

4. Finally, the analysis and synthesis of the results was carried out in June and July. Based on this, a refined inventory of key barriers and drivers for TOOP pilots was compiled. In order to support TOOP pilots in addressing the key barriers, recommendations were formulated for pilots based on possible solutions identified in the course of the previous steps of the study.

It is important to note that at the time of publishing this report (August 2017), TOOP pilot scenarios are still under development. As long as no final agreements have been made between data providers and consumers on the exact data to be exchanged and the technical details of the TOOP solution, the analysis of pilot-specific barriers and drivers can only be preliminary. Further research needs to be conducted once the pilots have reached the implementation stage. The results of this research will be published in the updated version of this deliverable (D2.8) towards the end of the project.

The work on barriers and drivers (T2.3) is strongly **interrelated** with other tasks in the TOOP project. Most importantly, the current deliverable has benefitted from, and contributed to, the following TOOP project tasks:

- T2.1 (federated technical architecture). This deliverable received input on the foreseen technical solution for the TOOP architecture and the related technical drivers and barriers;
- T2.2 (legal landscape analysis). This deliverable received input from the analysis of the legal challenges and reflects on these challenges in the context of analysing the barriers to cross-border OOP;
- T2.4 (impact assessment). This deliverable received input on the benefits associated with OOP and feeds its analysis of key drivers and barriers back to the work of T2.4;
- T3.1, T3.2 and T3.3 (TOOP pilots). This deliverable received input from pilots on the barriers and drivers perceived as important by the pilots and will feed the results of the analysis back to the pilots' work.

This deliverable is divided into five main parts. After the current introductory chapter, Chapter 2 will briefly describe the barriers and drivers related to OOP and cross-border e-government initiatives. The aim of this chapter is to establish an analytical framework for studying the barriers and drivers for cross-border OOP in the framework of TOOP. Chapter 3 will present the results of the empirical study of TOOP pilots. The results will be further discussed in Chapter 4 and conclusions will be provided in Chapter 5.

## 2. Barriers and drivers of cross-border OOP: literature review

According to TOOP D2.6, the implementation of the once-only principle has been associated with significant potential benefits; however, the shift to OOP is packed with challenges of different kinds. The following sections discuss some of the perceived key factors that may affect public administrations' readiness and ability to adopt OOP for national and cross-border transactions, as well as the demand and acceptance of OOP solutions by businesses as end users. It is important to note that, thus far, only limited research has been conducted on the implementation of OOP, the most notable exceptions being Gallo et al. 2014 and Cave et al. 2017. Due to this research gap, the discussion in this report also relies on related streams of research, extracting potentially relevant barriers and drivers from academic literature and policy studies on topics such as interoperability, (cross-border) e-government, public sector innovation and technology acceptance.

Various studies looking at the implementation of ICTs in the public sector suggest that the success of ICT projects is not only affected by technical factors. For example, Gil-Garcia and Pardo (2005) have proposed five categories of factors that affect ICT projects in the public sector. These include: (1) Information and data (such as information and data quality and dynamic information needs); (2) Information technology (including usability, security issues, technological incompatibility, technology complexity, technical skills and experience and technology newness); (3) Organisational and managerial challenges (such as project size, managers' attitudes and behaviour, users, organisational diversity, lack of alignment of projects to organisational goals, multiple or conflicting goals, resistance to change, turf, and conflicts); (4) Legal and regulatory challenges (emerging e.g. from restrictive laws and regulations, from one year budgets or from intergovernmental relationships); and (5) Institutional and environmental challenges (such as privacy concerns, the autonomy of agencies, policy and political pressures and the environmental context including social, economic and demographic factors). Similarly, an extensive literature review by Savoldelli, Codagnone and Misuraca (2014) on the adoption barriers to e-government found that the implementation of ICTs in government is not only associated with technological and operational barriers, but also strongly with managerial-organisational and political-institutional barriers.

Looking more specifically at the development of e-government in the EU, Germanakos et al. (2007) identify a number of different factors that aggravate e-government development, from technical, legal and social to the institutional environment. In the context of the implementation of the once-only principle at the European level, the report by Cave et al. (2017) outlines a number of different gaps and barriers; they are grouped into legal, organisational, semantic, technical and "other" issues (the latter category includes diverse factors ranging from political will to the difficulty of measuring the costs and benefits of OOP for end users).

The discussion of the barriers and drivers in the current deliverable follows a similar broad approach. **Technical and interoperability issues** are discussed first (in Section 2.1) as they are generally perceived as the key factors influencing the implementation of the OOP on a cross-border scale. This is followed by a discussion of **organisational, administrative and political context** (Section 2.2) and **legal aspects** (Section 2.3). Finally, factors influencing **demand and acceptance by users** will be discussed in Section 2.4. Building on the previous sections, the chapter concludes with an inventory of potentially influential barriers and drivers that can have an influence on the implementation of the OOP.

## 2.1. Technical and interoperability factors

Due to their reliance on heterogeneous information and process models, technical and interoperability barriers are recognised among the most challenging problems for modern cross-organisational information systems (Mocan et al. 2011). For similar reasons, a number of technical and interoperability problems are also associated with the OOP. According to Cave et al. (2017), the main challenges to OOP in a cross-border context stem from the type and quality of data that is being exchanged, the particularities of databases and information systems, interoperability issues, but also the features of the broader e-government infrastructure in different countries. In short, the study emphasises the following factors:

- **Data:** data quality, metadata quality, difficulty of assessing data quality, different data models, inconsistent definitions of data elements;
- **Databases and data handling systems:** unclear ownership of databases, differences in data handling systems, fragmentation;
- **Interoperability:** heterogeneity of existing ICT systems, interoperability at national level, semantic interoperability, language differences, national differences of concepts and meanings;
- **Broader ICT infrastructure:** availability and accessibility of digital services, national OOP experience/maturity.

Interoperability, the key element of cross-border OOP, is defined as the ability of different organisations to interact towards mutually beneficial and common goals, which involves the sharing of information and knowledge by means of the exchange of data between their respective ICT systems (Cave et al. 2017). The European Interoperability Framework (2017) distinguishes four layers of interoperability: technical, semantic, legal and organisational. Technical interoperability covers the applications and infrastructures linking systems and services. Semantic interoperability means that the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties. Legal interoperability is about ensuring that organisations that operate under different legal frameworks, policies and strategies are able to work together, and organisational interoperability refers to the way in which public administrations align their business processes, responsibilities and expectations to achieve commonly agreed goals.

As the OOP presumes data exchange between registries in different countries, the technical aspects that affect the implementation of the OOP are the reusability of components or registry software, user and system interconnection interface(s), and procedures for third party authorisation and authentication. Technical interoperability barriers to cross-border OOP involve local solutions that might not meet OOP requirements, such as legacy systems, different local or national approaches to handling specific types of data, imperfect incentives and lack of critical mass, and limited possibilities to develop common access tools for non-base repositories, access to distributed data sources and query-based access to data. Other significant technical obstacles that affect EU-wide OOP are the heterogeneity of ICT systems and the lack of national interoperability. (Cave et al. 2017)

In TOOP D2.1 (2017) semantic interoperability is defined as the ability of software to accept data from external sources so that the software does not draw invalid conclusions about the state of affairs about the shared reality. According to the authors, the main challenge is to enable semantic interoperability between the IT systems of different governments.

Despite the numerous challenges to the cross-border OOP, there are also technical drivers that support the implementation of the OOP. According to Cave et al. (2017), specifying and implementing base registries is an important success factor. Although many countries have some system of base registries in place, new base repositories may need to be set up and other databases



may need to be OOP-enabled. In addition to that, it is important that the architecture for cross-border OOP reuses existing frameworks and building blocks and is capable of interconnecting individual architectures in different states (see TOOP D2.1 2017).

Finally, it is believed that existing national level experience with OOP can either enable or constrain a Europe-wide OOP, depending on the success of past experiences. A driver may be identified when national level OOP implementations have led to overcoming of legal, organisational, semantic and technical barriers (Cave et al. 2017). It is therefore of crucial importance to study the current implementation practices and learn from them.

## 2.2.Organisational, administrative and political factors

Studies on ICT-driven innovation in the public sector frequently emphasise the organisational, administrative, political and regulatory context as a source of barriers and drivers for innovative initiatives. As the application of OOP presumes significant changes in the institutional logics, organisational structures and workflows, as well as close collaboration and coordination between different organisations, it is bound to face a number of organisational and administrative barriers that affect organisations' will and capacity to implement OOP.

The most common barriers that are faced during the implementation of OOP at the national level have been found to include governmental silos and lack of communication between government departments, the complexity of changes in organisational structures, working practices and cultures, and concerns about high implementation costs (Gallo et al. 2014). The same constraints are also very much present at the cross-border level. According to Cave et al. (2017), the implementation of OOP across Europe is hindered by the complexity and cost of substituting legacy systems and changing organisational structures, limited mechanisms for cost-sharing, difficulty of reorganising business processes and changing routines, strong organisational inertia, weak political will, cultural resistance to change, cautious attitudes towards data sharing, and generally low awareness of the benefits of OOP. The latter can be considered one of the key impediments to OOP – as the study notes, the political will to implement OOP tends to depend on the existing national experience with OOP and the extent to which OOP has demonstrated clear benefits for individuals, businesses and public administrations (Cave et al. 2017).

These findings are well in line with previous research in public sector innovation and e-government. Studies have found that the innovation capacity of public sector organisations is determined by a number of organisational factors such as organisational structures, existing networks and inter-organisational relationships (De Vries et al. 2016), collaboration, coordination and information-sharing within and across organisations (European Commission 2013), organisational culture, including propensity to risk aversion (De Vries et al. 2016; European Commission 2013), resource constraints (Bekkers et al. 2013; European Commission 2013), lacking knowledge and innovation capabilities (European Commission 2013), lack of qualified personnel and training (Drew 2011), leadership styles and management capacity (De Vries et al. 2016; European Commission 2013), etc. Public sector organisations are also strongly affected by variables beyond the power of individual organisations, such as the legal culture and administrative traditions of the state (Bekkers et al. 2013). Moreover, the inherent complexities of public sector organisations make any organisational and technological innovation difficult in the first place. Being accountable to a number of public and private stakeholders, public sector organisations are highly dependent on political goals and tensions, conflicting demands, external crises and complex structural arrangements (Rashman et al. 2009). This makes the implementation of changes extremely difficult.

Although researchers generally agree that the specific context of the public sector generates more barriers than drivers to innovation, some drivers still exist. A favourable environment can be



generated by external triggers, e.g. competitive pressures by other organisations, countries and international bodies (Bekkers et al. 2013), legal obligation (Cave et al. 2017), the development of cross-organisational and cross-border knowledge transfer networks (Albury 2005; Bekkers et al. 2013; Ferguson et al. 2013), strong innovation leadership by administrative and political managers (Heeks 2005; Panopoulou et al. 2010; Bekkers et al. 2013), and broader environmental factors such as political priority and public demand (De Vries et al. 2016).

### 2.3. Legal factors

In the context of innovation in the public sector, regulatory issues are perceived to be important in several respects. On the one hand, existing regulations are often seen to stifle innovation; however, regulations can also promote innovation, for example, by imposing legal obligations on administrations to implement innovative solutions (De Vries et al. 2016). With regard to OOP, the legal context is extremely important as it sets the rules and limits for data sharing and personal data protection. According to Gallo et al. (2014), resolving any legal obstacles and establishing a sound legal basis for OOP is seen as one of the most important strategic issues next to technological and political issues.

At the cross-border level, regulatory aspects play an even more important role as existing national legal frameworks not only need to allow national administrations to consume and share data but also ensure compatibility with regulations in other countries to enable data sharing and reuse across borders. Therefore, the implementation of OOP at the European level is perceived to require addressing gaps and obstacles in national legislation on issues such as data protection, data sharing, information management, etc., as well as harmonisation and coordination at the EU level. Although some directives and regulations have been adopted to support interoperability at the EU level (e.g. eIDAS, Services Directive and most recently GDPR), there is a need to establish a common legal basis at the EU level to fully support an EU-wide OOP (Cave et al. 2017).

TOOP D2.5 provides an overview of the key legal principles with a basis in EU law, in order to identify horizontally applicable rules that govern the application of the OOP, and to create a legal assessment framework. In sum, the following legal barriers and challenges have been identified in any once-only use case:

- **Accountability** demands the implementation in a way that ensures that all participants are aware of their obligations, and that the persons relying on the OOP have the right to restitution of any damages caused by noncompliance with these obligations insofar as this is possible under applicable law.
- According to **justice** principle, the OOP must be implemented in a way that ensures the right to recourse for the persons relying on the OOP, and that contains appropriate enforcement mechanisms.
- **Privacy, data protection and confidentiality** demand the OOP to be implemented in a way that safeguards the fundamental rights to privacy and data protection for natural persons, and respecting the legitimate interests of confidentiality and of professional and business secrecy.
- According to the principle of **equality and solidarity**, the OOP must be implemented in a way that ensures non-discrimination (evidence must be transferred on a neutral basis, without prejudicing any decisions that would be made by the receiving competent authority on the basis of the evidence) and universal accessibility, including to persons with disabilities.
- **Lawfulness and compliance** demand the implementation of OOP so that it ensures that evidence is only transferred if there is an adequate legal basis for this, and in compliance with any applicable legal requirements.

- **Control** demands for the evidence exchange mechanism to contain appropriate controls to ensure that the evidence is relevant and to allow incidents to be detected and addressed.
- The **legal value and validity** of any evidence exchanged under the OOP must be clear to all competent authorities participating in the exchange.
- **Secure implementation**, i.e., in a way that protects the exchanged evidence against accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to the evidence, thereby ensuring its integrity and authenticity.
- Transparency, clear and shared understanding on the **quality of data** (assurances of its accuracy, factual correctness, timeliness of updates, etc.) and **the service**.
- Ensuring **semantic and technical interoperability** of the evidence exchanged under the OOP.

TOOP D2.5 (2017) identifies substantive legal requirements that have been encountered in literature on the OOP, in relevant legislation at the EU and national level, and through the questionnaires that have been circulated towards TOOP participants. These legal requirements and acts are listed in Table 1, for more details on the relevance of each for the OOP, see TOOP D2.5 (2017).

## 2.4. Demand side factors

The study by Cave et al. (2017) highlights the importance of demand by citizens and businesses as an influential factor for cross-border initiatives. According to the study, demand for cross-border services can be a significant driver for cross-border data exchange and administrative simplification. However, it is suggested that the actual level of demand is strongly linked to factors such as the inflow of foreign citizens and businesses to a country, citizens' cultural awareness of OOP, trust in data providers and re-users, and the overall maturity and accessibility of digital service infrastructures. Although the study does not provide an assessment on the level of demand for cross-border OOP-based services, the analysis seems to hint that this level may vary greatly between countries and domains.

Research on acceptance and use of technology offers valuable insights into how the adoption of new technologies takes place, and can provide indications of the factors that affect the demand for OOP-based solutions. The general point of departure of such literature is that there are a number of factors that will influence the user as to whether or not to adopt a novel technology. The goals of many studies have been to find factors that can be used to motivate the user to accept and start using the new technology (see, e.g., Ash 1997; Mathieson 1991; Venkatesh 2000).

One popular approach for mapping those relevant factors is the technology acceptance model (TAM), which argues that the perceived usefulness (the degree to which a person believes that using a particular system would enhance his or her (job) performance) and ease of use (the degree to which a person believes that using a particular system would be free from effort) determine whether a technology is adopted or not (Davis 1989). TAM's derivative, the Unified Theory of Acceptance and Use of Technology (UTAUT) is perhaps the most widely used technology acceptance model currently available. It is more elaborate and incorporates additional factors compared to TAM. It was first formulated by Venkatesh and colleagues in (2003) and developed further in Venkatesh et al. 2012. UTAUT explains how a decision is formed about the use of an information system. The theory builds on four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions.

Performance expectancy refers to the degree to which an individual believes that using the system will help him or her to attain gains in performance. In the current context, performance expectancy covers both the expectations of the government as well as end users in relation to the implementation of services that are based on the OOP. This includes direct benefits, such as positive economic impact – for businesses this includes time-savings and less administrative costs so they can

focus on their core business. There is a potential for major administrative gains in the form of fewer calls to customer service centres, less paper mailing and mistakes, faster processing as well as time-savings by way of a decreased need for data collection, improved re-utilisation of data and a reduced number of unnecessary data-submission demands. Benefits can also include more general public policy targets, such as making the digital single market a reality. Furthermore, the system has to meet many additional requirements, such as privacy, data protection and confidentiality. It needs to carry legal value and validity and contain appropriate controls to ensure that the evidence is relevant, and allow incidents to be detected and addressed (see Section 2.3).

Effort expectancy relates to the degree of ease associated with the use of a technology. This means that the technical solution for cross-border OOP needs to be easy to use both for public administrators and businesses. It also needs to be compatible with existing IT systems used in different countries and domains.

Social influence indicates to the degree to which important others are perceived to believe one should use the new system. In the case of OOP, it is the influence of other companies, important others (role models, opinion leaders, other governments) that would either encourage or discourage the use of OOP solutions.

Finally, the literature brings out other facilitating conditions, such as the existence of a supporting organisational and technical infrastructure, skills, etc. Other variables like gender, age, experience with a specific or related technology, and voluntariness of use are considered to influence the adoption process. The issue of ICT skills and digital divide in society is also emphasised by Cave et al. (2017). In their literature review, Van Veenstra and colleagues (2011) similarly conclude that lack of IT-skills can create hurdles for the adoption of new technologies in public administration.

## 2.5. Inventory of key barriers and drivers

The earlier literature review pointed to a multitude of factors that may influence the implementation of OOP in a cross-border context. Table 1 provides a brief summary of these factors.

Table 1: Inventory of barriers and drivers that affect the implementation of the OOP

TECHNICAL AND INTEROPERABILITY FACTORS	
<b>Data</b>	Data quality, difficulty of assessing data quality
	Metadata quality
	Data incompatibility: different data models, inconsistent definitions of data elements
<b>Databases &amp; data handling systems</b>	Unclear ownership of databases
	Syncing problems, data accuracy
	Usability of databases
	Data security
	System of registers
<b>Interoperability</b>	Heterogeneity of existing information systems
	Interoperability of information systems at national and cross-border level
	Semantic interoperability
	Differences of languages and concepts
	Need for certified translations
	Technical interoperability issues, diversity of data management systems

	Reuse of existing building blocks and frameworks
<b>Broader ICT infrastructure</b>	Availability of digital services, digitisation level of government organisations
<b>Standards</b>	Architecture
	Requirements
	Software security
	Software quality
<b>Technical aspects of data repositories</b>	Reusability of components or registry software
	User and system interconnection interface(s)
	Procedures for third party authorisation and authentication
<b>ORGANISATIONAL, ADMINISTRATIVE AND POLITICAL FACTORS</b>	
<b>INTRA-ORGANISATIONAL FACTORS</b>	
<b>Awareness and incentives</b>	Lack of awareness of the benefits of OOP; lack of reliable evidence of the impacts of OOP
<b>Organisational culture</b>	Resistance to organisational change, risk aversion
	Resistance to data sharing, low trust in data referents and third party data providers
<b>Complexity of organisational change</b>	Inertia of existing organisational structures, systems, routines; complexity of the implementation of new business processes and changing workflow management in the public sector
	Difficulty of substituting legacy systems
<b>Management</b>	Leadership styles
	Innovation management capacity
<b>Financial resources</b>	High costs of the deployment and maintenance of supporting systems, substitution of legacy systems and change management
	Asymmetric distribution of costs for cross-border OOP, limited mechanisms for cost-sharing
<b>Human resources</b>	Digital skills of public sector employees
<b>INTER-ORGANISATIONAL FACTORS</b>	
<b>Inter-organisational collaboration</b>	Silos of information, lack of communication between government departments
	Existing networks and inter-organisational relationships
	Practical need for collaboration with neighbouring countries (driver for cross-border services)
	Policy emulation, best practice sharing with more advanced organisations/government levels
<b>POLITICAL ENVIRONMENT</b>	
<b>Political will and support</b>	Support to the implementation of OOP at the political level
<b>Multitude of stakeholders</b>	Multiple and possibly conflicting interests characteristic to the public sector
<b>LEGAL FACTORS</b>	
<b>National legislation</b>	Different legal frameworks at national level
	Differences of data sharing requirements by type of data (e.g. company data vs personal)
	Laws on information management

<b>Legal requirements for data sharing and reuse</b>	Accountability
	Accuracy
	Audit and logging measures for control
	Clarity on legal value and validity of evidence exchanged
	Compliance with pre-existing national legal requirements
	Data minimisation
	Fairness
	Integrity and confidentiality
	Justice
	Non-discrimination
	Purpose limitation
	Quality of data
	Quality of service
	Security
	Semantic interoperability
	Storage limitation
	Technical interoperability
	Transaction on legal basis (consent or legal obligation)
	Transparency
	Universal accessibility
<b>EU legislation with implications on OOP</b>	Data Protection Directive
	General Data Protection Regulation (GDPR)
	e-Commerce Directive
	eIDAS Regulation
	EU Charter of Fundamental Rights
	Proposal for a Single Digital Gateway Regulation (SDGR)
	Public Sector Information Directives (PSI and PSI II Directive)
	Services Directive
<b>DEMAND SIDE FACTORS</b>	
<b>Awareness</b>	Awareness of the OOP and the e-service
<b>Nature of the service</b>	Number of potential end users
<b>Technology acceptance</b>	Expected benefits
	Ease of use
	Influence of others
	Supporting organisational and technical infrastructure
	ICT skills
<b>Broader conditions for the use of ICT and e-services</b>	Availability of broadband connection
	General availability and accessibility of e-government services
	Number of internet users in the country, extent of the digital divide

Source: authors, based on literature review presented in Chapters 2.1-2.4.

In order to understand how this variety of factors may affect the TOOP pilots, empirical data was collected directly from the pilot coordinators and participating organisations through workshops, focus groups and a survey. Chapter 3 analyses the findings from the empirical study in the lines of the broad categories of factors presented above.

### 3. Perceived barriers and drivers of TOOP pilots: results of the TOOP survey and workshops

The TOOP consortium has the ambition to demonstrate the project's contributions in a real-world setting, focusing on cross-border exchanges of company and registry data. Three pilots will be implemented in the following areas: (1) Cross-border e-Services for Business Mobility, (2) Updating Connected Company Data, and (3) Online Ship and Crew Certificates. The main criteria for pilot selection were: (1) cross-border relevance, (2) potential to reduce administrative burden, and (3) feasibility of implementation. TOOP aims to connect 38 'data consumer' information systems – i.e. receiving data – and 32 'data provider' information systems – i.e. sending data to data consumers in any-to-any transactions.

However, as demonstrated in Chapter 2, the success of such initiatives is dependent on a number of factors that range from the technical aspects of cross-border data sharing to the characteristics of public sector organisations. In order to map the factors that are likely to have either a positive or negative affect on the TOOP pilots and the cross-border implementation of the OOP, the TOOP pilot coordinators and piloting organisations were asked to assess the perceived importance of different barriers and drivers for their pilot areas and organisations. To this end, input was collected from pilot coordinators and participants through an online survey and workshops. The generic barriers and drivers of the OOP are presented in Section 3.1, followed by a pilot-specific analysis in Sections 3.2-3.4.

As stated in Chapter 1, the exact pilot scenarios are still under development. While this development is ongoing, the first round of empirical data gathering from pilot participants has already been conducted between January and May 2017 in order to generate a first understanding of the possible barriers and drivers. Therefore, the discussion in the next sections, especially as far as pilot-specific barriers and drivers are concerned, is only preliminary and demands further research once the TOOP solution, data involved and concrete data providers and data users are final.

#### 3.1. Generic barriers and drivers

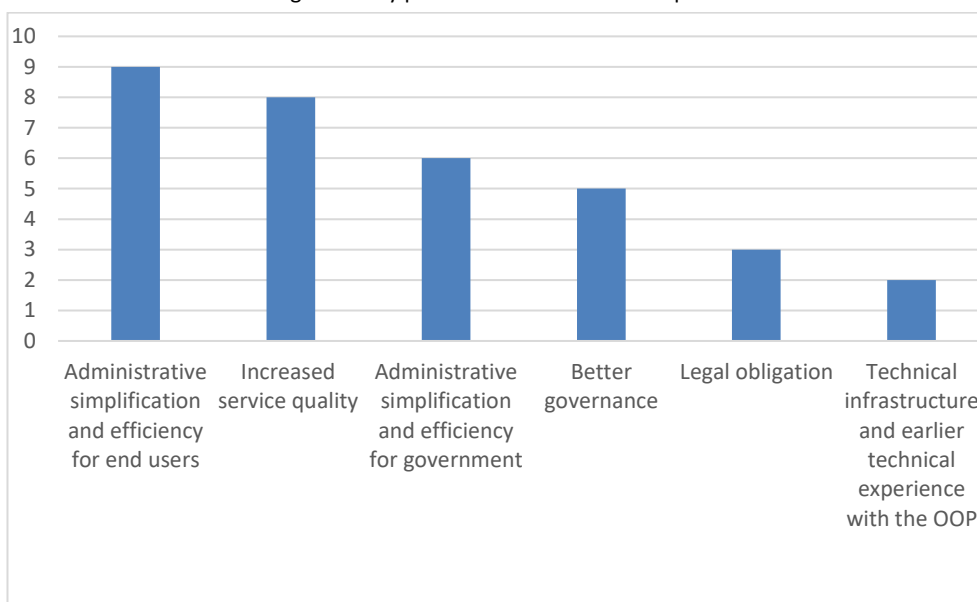
As part of the TOOP survey, pilot organisations were asked in an open answer question to indicate the most important drivers for the TOOP pilots. After grouping the responses from 15 country representatives, it appears that the major driver encouraging organisations to implement OOP appears is the perception that OOP can bring significant benefits for public administrations, citizens and businesses. In short, the following drivers were frequently mentioned by the respondents (see also Figure 1):

- In all countries, the **benefits for businesses** in the form of **reduced administrative burden and increased efficiency** are perceived as the key driver.
- Relatedly, **increased service quality**, benefitting both the end users as well as the service providers, seems to be an equally important driver.
- **Administrative simplification and efficiency for government** is another important driver.
- **Better governance**, referring to various governance related aspects the respondents brought out, such as agile and adaptive governance and increased transparency was mentioned as a driver.
- Interestingly, **legal obligation** is seen as less of a driver, probably due to the fact that the emergence of the cross-border OOP related legislation may take a long time, and there are

other ways to proceed with the provision of cross-border OOP services (such as contractual arrangements).

- Existence of a **technical infrastructure**, combined with earlier technical experience with the OOP was also in some occasions seen as key driver.

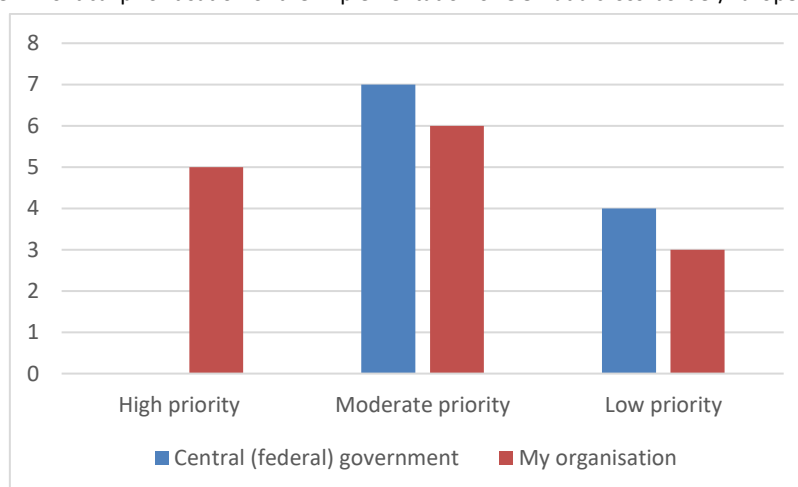
Figure 1: Key perceived drivers for TOOP pilots



Source: TOOP Survey (2017)

Although political will was not explicitly listed as a driver, the survey implies that OOP is currently becoming a political priority in the countries participating in the TOOP pilots. Out of the 11 country level responses in regards to the prioritisation of the OOP, the OOP is perceived to be a moderate priority for the central or federal government level in 7 countries and a low priority for 4 governments. In the participating organisations, the commitment to implementing the OOP is stronger – according to five piloting organisations it is of high priority, according to six organisations a moderate priority and in three organisations a low priority (Figure 2).

Figure 2: Political prioritisation of the implementation of OOP at a cross-border/European scale



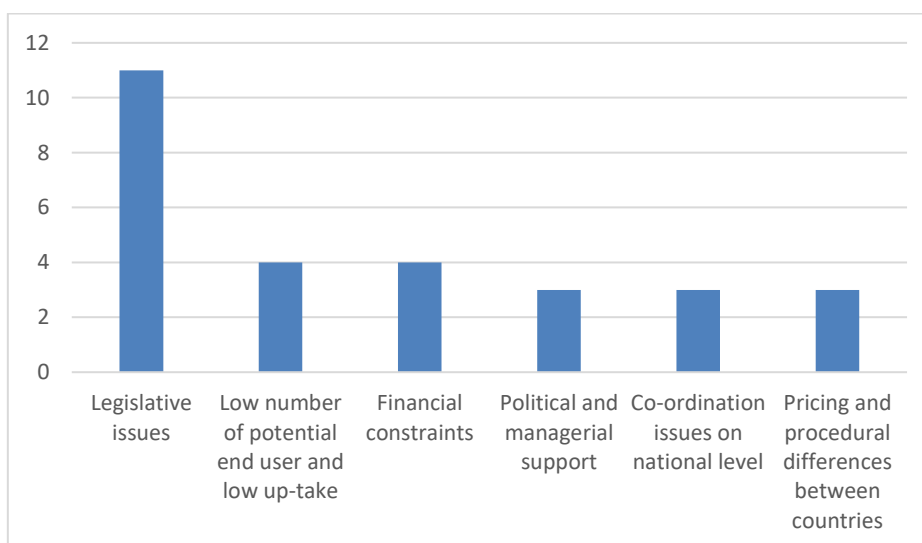
Source: TOOP Survey (2017)



The survey respondents were also asked in an open answer question to indicate the most important barriers facing the TOOP pilots. After grouping the responses from the 15 country representatives, several conclusions became evident (see Figure 3):

- The answers are more heterogeneous compared to the perception of drivers, varying by country and piloting area contexts;
- **Legislation** related issues are by far perceived as a key barrier. 11 out of 15 participating state responses included this among the top barriers. The answers refer to lawfulness and compliance, privacy, data protection and confidentiality aspects (especially privacy and data protection issues for natural persons).
- **Low number of potential end users and potentially low take-up** were considered as a key barrier by four countries;
- Similarly, four countries were concerned about **financial constraints** for implementing and running the solutions;
- **Lack of political and managerial support** was considered as a key barrier in four countries, as was the related issue of **coordination on national level**.
- Also, **pricing and procedural differences between countries** were a shared concern, referring to possible interoperability problems.
- In less ICT-developed contexts, digital education and different levels of digitisation between various authorities were brought out as barriers.

Figure 3: Key perceived barriers for TOOP pilots



Source: TOOP Survey (2017)

These findings largely overlap with the barriers outlined by the TOOP partner organisations in the first project workshop in Tallinn (conducted in January 2017). The factors often mentioned in the discussion included concerns about data protection and privacy regulations, lack of legal obligations or an incomplete legal basis for implementing the OOP nationally and beyond national borders. Organisational and political barriers were also brought up frequently, ranging from high costs and different pricing models to the willingness to share data and establish close collaboration with other organisations.

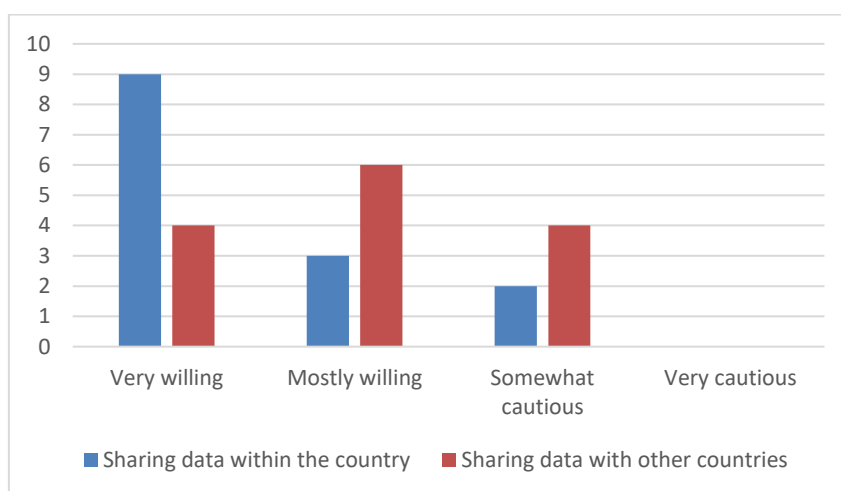
According to the literature review (Section 2.2), organisational motivation and openness to change are among the key factors that affect the successful implementation of innovative solutions in government. Therefore, piloting organisations were asked to evaluate their openness towards some



of the key aspects of the OOP. These aspects included data sharing, implementation of technological changes, and implementation of organisational changes in order to enable the OOP at the national or cross-border level.

Based on the responses received, it can be concluded that the public sector organisations participating in TOOP are very **open to sharing data with other organisations in their country**, but are somewhat **less willing to share data with organisations in other countries**. While nine pilot participants described their willingness to share data with other organisations within their country as very high, only four could say the same for cross-border data sharing (Figure 4).

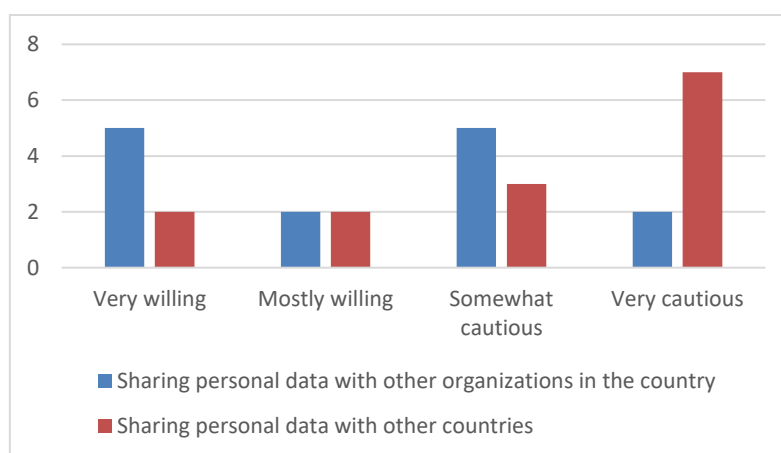
Figure 4: TOOP pilot organisations' openness to sharing data



Source: TOOP Survey (2017)

Secondly, while there is willingness to share personal data with other organisations within the country, there is strong **caution towards sharing personal data with other countries** (Figure 5).

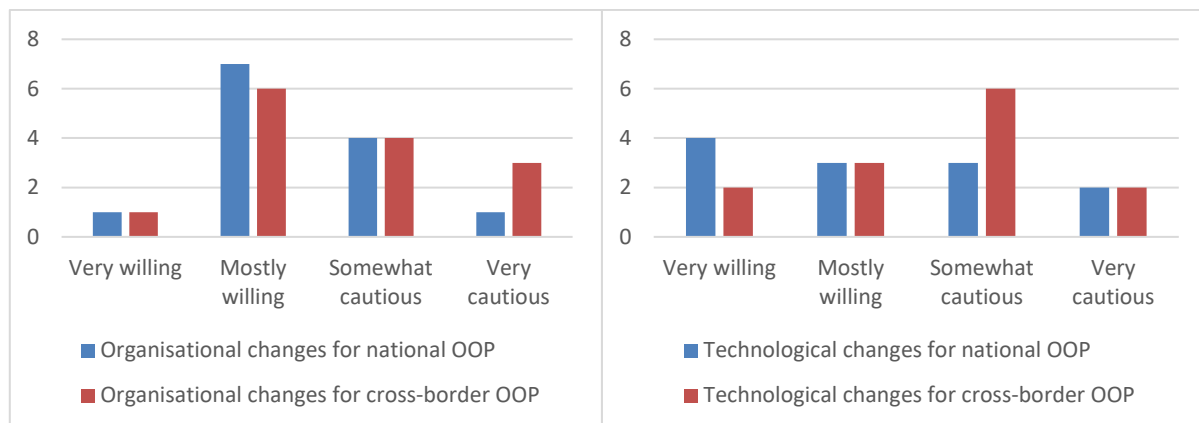
Figure 5: TOOP pilot organisations' openness to sharing personal data



Source: TOOP Survey (2017)

Thirdly, TOOP piloting organisations are rather motivated to undertake technological and organisational changes (i.e. changes in structures, processes, workflows) for the sake of enabling the implementation of the OOP at the national level. At the same time, they are **less willing to implement similar changes in order to enable OOP at the cross-border level** (Figure 6).

Figure 6: Willingness to make organisational and technological changes to enable OOP



Source: TOOP Survey (2017)

The pilot organisations were also asked to assess the extent to which they believe certain particular technological, legal and organisational factors would pose challenges to the implementation of the TOOP pilots. These factors were presented as a list of 12, drawing on the barriers found in the literature review and in the first TOOP participants' workshop in January 2017. The survey results show that data protection requirements are seen as the most likely challenge – 8 respondents evaluated this factor as “very likely” or “quite likely” to be challenging (Figure 7). The next major concern is related to limited financial resources, which 7 respondents rated as a likely challenge. Although another cost-related factor – the cost of sustaining the pilot results in the long term – seems to be less of a challenge, it is evident that resource limitations is an issue many organisations are concerned about. Next in importance are the perceived lack of human resources, and the implementation of organisational and technological changes. At the same time, communicational and cultural factors were mostly not perceived as a problem.

Figure 7: Key challenges for pilot implementation



Source: TOOP Survey (2017)

A comparison of these responses to the responses given to the open-ended questions described further above shows that in both types of questions, legal barriers (in particular those related data protection) and financial constraints consistently emerged as the key challenges. Throughout both types of survey questions, participants also highlighted concerns related to organisational interoperability and the alignment of work processes with other organisations. In addition to this, the open-ended questions demonstrated that pilot organisations also foresee strong political and demand-side barriers. It can therefore be concluded that barriers and challenges to OOP are likely to emerge from several areas at once, including the legal, organisational and political context, as well as the demand side.

In order to assess the relative importance of these factors on the TOOP piloting domains and create a better understanding of any possible additional domain-specific barriers, the survey results were complemented with data from pilot-specific focus groups and workshops (see the Introduction for a more detailed overview of the methodology). Sections 3.2, 3.3 and 3.4 will discuss the main barriers and drivers from the viewpoint of the three TOOP pilot areas.

## 3.2. Barriers and drivers for the Cross-border e-Services for Business Mobility pilot

The first pilot area (PA1) – **Cross-border e-Services for Business Mobility** – is versatile and composed of different usage scenarios that are of interest to the participating states. For example, participation in public procurement procedures across borders, doing cross-border business, and cross-border service provision. PA1 is based on the assumption that government administrations from different countries expose e-services directed at Economic Operators from various countries. During the respective service provision, company-related information is needed. The pilot will show how such information can be automatically retrieved from the Economic Operators' country of origin without the business representative having to enter it again. The expected impact of all three use cases is not only aimed at reducing the administrative burden for Economic Operators, but also at reducing operational costs of competent authorities and the time required for service provision.

### 3.2.1. Barriers

This pilot area is broad in scope and aims to enable data sharing between countries for various purposes. There are a number of internal and external factors that may be viewed as potential challenges for the implementation of PA1 by the pilot participants. Some of the most important ones are listed below.

#### Technical and interoperability barriers:

- **Semantic interoperability and language issues.** Since original data may, in many cases, only be available in the national language, the application of the OOP requires translation support for data, which would also enable the correct transliteration of characters, etc. The building blocks for translation exist at the EU level but the translated information currently lacks legal value. This is a potential barrier that the pilot needs to examine further.
- **Absence of EU-wide unique identifiers for businesses and natural persons.** This might turn out to be a challenge for PA1, but the extent of this problem requires further investigation. It is possible that the implementation of the eIDAS Regulation provides a solution already.

#### Organisational, administrative and political barriers:

- **Multiple stakeholders with different interests.** PA1 involves a number of public and private stakeholders in different countries that have different interests, which may potentially turn out to be conflicting and may impede further development of the pilot. The challenge is to align these interests within TOOP and to align TOOP with other existing processes and initiatives in the pilot domain (e.g. DG GROW's working group on public procurement).
- **Different OOP maturity levels of participating states.** Countries with more experience implementing the OOP will face fewer organisational and political barriers to cross-border data sharing, while those with less experience might experience more challenges.
- **Compatibility with existing infrastructures and systems.** Organisations are generally not willing to invest in solutions that are incompatible with their existing systems. The substitution of legacy systems is difficult and costly; thus, organisations are unwilling to adopt solutions that require extensive organisational and technical changes. Therefore, it is important that the architecture for the cross-border implementation of the OOP is aligned with what already exists in the participating countries.
- **Lack of political will to implement OOP.** So far, pilot participants do not perceive sufficient political will to implement cross-border OOP. It is therefore important for the pilot to be able to demonstrate the benefits of cross-border OOP in order to avoid political barriers.
- **Lack of awareness of potential benefits of cross-border OOP.** This barrier also affects the political will to invest in the OOP.
- **Limited resources.** The implementation of the OOP for cross-border transactions entails costs, including development of information systems and changing work processes, etc. For the countries that are participating in TOOP, this barrier is not believed to become a "showstopper" due to the high motivation and commitment of the participating organisations. However, the volume of investment required may inhibit a quick scale-up of the solution.
- **Organisational inertia.** This factor is generic for any OOP-based initiatives and is strongly related to political will – if there is political commitment to the OOP, public sector organisations have stronger incentives to change their systems and processes to enable the OOP.
- **Organisational interoperability.** In order for cross-border OOP to be implemented, it is necessary to align different organisations nationally and across borders.
- **Silos of information.** Organisational silos have so far been characteristic for the public sector, but the implementation of the OOP and reduction of administrative burden for citizens and businesses requires the public sector to consolidate their processes and act in a joined-up manner.
- **Trust concerns.** The implementation of the OOP requires trust in data providers and third parties that will use the data. In order to increase trust, measures need to be taken to guarantee authorised access to data.

#### Legal barriers:

- **Legal requirements.** At the moment, legal requirements are not perceived as a major obstacle. Still, some legal precautions (such as validity of information, structure, relation to current implementation of the Public Procurement Directive) have been raised.
- **Absence of mandatory cross-border legislation for the OOP.** The current absence of a legal obligation to implement the OOP in cross-border transactions is seen as a barrier to the widespread adoption of the OOP in Europe.

#### Demand-side barriers:

- **Unclear demand.** Until business benefits from cross-border OOP are clear, many government agencies are reluctant to adopt the solution.
- **Possible resistance from public and private intermediaries.** Some intermediaries that have so far acted as local agents to facilitate companies' participation in public tenders in other countries may lose their unique role.
- **Learning effort.** Some adoption barriers may be created due to the effort required from target groups to familiarise themselves with new systems and procedures. The extent of this barrier depends on existing systems and procedures, e.g. the existence of eDelivery accounts.

### 3.2.2. Drivers

The following factors are seen as possible drivers for the advancement of the OOP at a cross-border scale in this area:

- **Legislative push at the EU level.** The implementation of the 2014 Public Procurement Directive and eIDAS have already reduced barriers for PA1. However, a legislative drive at the EU level in the form of a European-wide OOP regulation would be a much stronger driver, creating clear incentives for Member States to adopt the OOP. At the same time, as legislative changes tend to occur at a slow pace, this driver will only have an effect in the long term.
- **Existing OOP legislation at national level.** Existing national-level OOP can be an enabler but not necessarily a strong driver for cross-border OOP.
- **Political will.** The participating organisations emphasise the importance of political will and leadership for the implementation of the OOP in public sector organisations.
- **Raising awareness of the benefits of OOP.** In order to overcome demand-side barriers, the added value of cross-border OOP and the TOOP solution needs to be understood and communicated. However, soft communication strategies tend to be less effective than legislative action.
- **Understanding and demonstrating the actual demand from businesses.** Understanding and demonstrating the actual demand from businesses is another key driver. User needs should be studied in more detail. It can be presumed that businesses strongly prioritise reduced administrative burden and might greatly benefit from the cross-border application of OOP. However, there is currently not enough evidence of the actual demand for OOP. Pilot participants believe end user needs should be studied in more detail to understand their needs and tailor a solution that businesses would find valuable.

### 3.3. Barriers and drivers for the Updating Connected Company Data pilot

The second pilot area (PA2) – **Updating Connected Company Data** – foresees a central role for the business registers. Currently, company data are stored officially in the business register within the individual Member States according to the requirements of relevant EU regulations and directives as well as national legislation. In particular, the BRIS Regulation (Directive 2012/17/EC) has established cross-border updating rules that regulate exchanges between national business registers in order to align data on shareholding companies involved in cross-border mergers or with branch offices abroad. The update notification service shifts the burden of reporting changes from the companies to the business registers. However, companies often deal with foreign public authorities other than the business registers. These include national and local agencies handling sector-specific trade registers and agencies ensuring compliance with specific national and EU regulations; for example, in the areas of health, energy, the environment, labour, justice, etc. This means that information on companies is supplied to, and stored by, a number of public agencies, as well as by the registers. Supplying the information and keeping it up-to-date creates a significant burden and challenges for the involved businesses and administrations. TOOP responds to these two needs with services for accessing business register data when needed – on demand, or in “pull” mode – and also through a change notification service – by subscription, or in “push” mode – triggered by company “life event” changes which by law must be communicated to the register. The change notification service will extend the existing BRIS updating service, and will build on “Event Notification Services” currently available in several MS.

#### 3.3.1. Barriers

In many ways, this pilot is seen to face similar challenges to the Cross-border e-Services for Business Mobility pilot (PA1). The following factors are perceived as possible barriers by the pilot participants and coordinators:

##### Technical and interoperability barriers:

- **Interoperability of data, concepts and document formats.** As company data is collected and stored differently in different countries, further harmonisation of data elements and document formats will be needed. The use of prefilled forms requires high semantic interoperability and the ability to translate complex information into clear categories (e.g. yes/no).
- **Language issues.** This barrier is common to PA1 and PA2. In many cases, business register data is only available in the national language (in some countries this is a legal requirement). The application of the OOP requires translation of data, which brings about the questions of correct transliteration and legal value of translated text.
- **Absence of EU-wide unique identifiers for businesses and natural persons.** This is another potential barrier, common for both PA1 and PA2.

##### Organisational, administrative and political barriers:

- **Commercial policies of public sector organisations.** Different pricing models for business information has been a major obstacle in BRIS and may continue to be for TOOP. The requirements relating to the exchange of information between business registers need to be aligned, while organisations involved might be reluctant to change their commercial policies.

- **Compatibility with existing information infrastructures.** This barrier is similar to the one described for PA1. With regard to company data, it is particularly important to align the architecture for the cross-border OOP solution with BRIS.

The following barriers are considered equally important both for PA1 and PA2 (see a detailed discussion of these barriers in Section 3.2.1):

- **Different OOP maturity levels of participating states**
- **Lack of political will to implement OOP**
- **Lack of awareness of potential benefits of cross-border OOP**
- **Limited resources**
- **Organisational inertia**
- **Organisational interoperability**
- **Silos of information**
- **Trust concerns**

#### Legal barriers:

- **Absence of mandatory cross-border legislation for the OOP**

#### Demand-side barriers:

- **Unclear demand**

### 3.3.2. Drivers

Due to the similarities between PA2 and PA1, the main drivers and enablers for the company data pilot are seen in political, demand-side and legal factors, much like those mentioned in the context of PA1. According to pilot participants, the following drivers may support the application of OOP in the field of company data:

- **Legislative push at the EU level**
- **Existing OOP legislation at national level**
- **Political will**
- **Raising awareness of the benefits of OOP**
- **Understanding and demonstrating the actual demand from businesses**
- **Data quality.** One of the benefits that this particular pilot can potentially deliver is higher quality of data. Increased data quality also means reduced risks for fraud, which can be a driver and incentive for public administrations.

### 3.4. Barriers and drivers for the Online Ship and Crew Certificates pilot

The third pilot area (PA3) – **Online Ship and Crew Certificates** – addresses the need for simplification in the area of ship and crew certificates, which are currently issued and maintained in paper format and stored by national Maritime Administrations. TOOP aims to connect the databases of national Maritime Authorities and to make the information available to authorised parties, as well as providing a possibility of online certificates, which will substitute paper-based or electronically-



signed certificates that have to be carried on board. Once PA3 is implemented, the flag state's Maritime Authority will be able to issue the online ship or crew certificates, while all other interested parties, such as port authorities, police and border guard, will be able to view and check the online certificates.

### 3.4.1. Barriers

Due to the global scope of the maritime sector, the success of this pilot is not only affected by generic factors that influence cross-border data exchange, but also the particularities of the sector. Based on interviews with pilot partners, the following factors are perceived as potential hurdles that challenge the application of the OOP to ship and crew data:

#### Technical and interoperability barriers:

- **Data availability and accessibility.** Many public agencies do not store certificate data in an electronic format, hence the shift to a fully online process requires changes in the ways data and documents are managed more generally. The availability of electronic data is not a problem for the countries that have currently signed up for the TOOP pilot, but may be a problem for scaling up the results.
- **Technical and semantic interoperability.** The format of ship and crew certificates is internationally standardised, but national differences in the ways raw data is stored in databases may create interoperability problems.
- **National differences in definitions.** Barriers may be created by existing national and organisational differences in defining what constitutes an official document. For example, some administrations only recognise documents that are printed and signed, while for others a secure data exchange system may provide a sufficient guarantee and abolish the need for paper-based documents.

#### Organisational, administrative and political barriers:

- **Limited resources.** The required volume of investment in organisational, technical, and legal agreements to enable the cross-border implementation of the OOP is seen as a key barrier for the pilot. The adoption of the OOP and transition to a fully online certificate exchange requires substantial investment from organisations. The transition will be more costly for countries who do not have electronic certificate data. Additional costs are created by the need to maintain parallel certificate processes – paper-based and online – until the online process is fully embraced by all stakeholders.
- **Lack of trust.** Mutual trust between data providers and consumers is seen as a major factor affecting the pilot. In some countries, existing positive experience with the OOP is likely to translate into trust in cross-border data sharing, while other countries may be reluctant to share data with third parties. According to the interviews, building trust in the TOOP solution among all relevant stakeholders in the maritime sector is likely to require substantial time.

#### Legal barriers:

- **Privacy and security constraints.** As crew certificates include sensitive personal data, some countries may face legal impediments to sharing this data. The extent to which data protection regulations turn out to be a barrier for this pilot is dependent on the exact data that is shared, the data source(s), and the process by which the sharing is organised. These requirements differ between countries. Therefore, it is crucial to conduct a legal analysis



once the data and data sharing processes have been defined, and find a legal solution that would ensure that only authorised parties can access the data.

- **Confidentiality.** One of the secondary goals of this pilot is to make certificate data available as open data (i.e. freely reusable and machine-readable data). Although open data would only be published at an aggregate level, paying full respect to all data protection requirements, some countries may still be unable to publish certificate data as open data due to confidentiality legislation or business secret.

#### Demand-side barriers:

- **Need for global take-up.** Since the maritime sector is global in nature, real benefits will start to manifest only in case the TOOP solution is adopted by a critical mass of users. The solution will only be lucrative if sufficient take-up is achieved not only in Europe, but also around the world.
- **Learning effort.** As Port State Controls need to adopt new processes and change workflows, some resistance to TOOP is possible. However, this is not expected to be a major barrier as TOOP aims to develop a user-friendly solution.

### 3.4.2. Drivers

The main drivers that support the implementation of OOP in the maritime sector can be seen in end-user take-up, which in turn is related to the efficiency and quality of the service that is provided. In short, the following drivers have been highlighted by the TOOP pilot partners:

- **Legal push by the International Maritime Organisation (IMO).** IMO's endorsement and the creation of a legal obligation to use the OOP has the potential to drive a global shift to a OOP-based online data exchange in the field of ship and crew certificates. This, however, requires sufficient political will on the part of IMO's member states.
- **Security of the system.** Very secure authentication levels could help overcome the barriers relating to confidentiality by reducing the probability of data leaks and unintentional sharing of data. In order to overcome a possible lack of trust, it is important to guarantee that the sender and receiver of information are part of the trusted network. The process needs to be secure and users need to be able to see that it is secure.
- **Reliability of the system.** Proving the reliability of the system may help reduce organisational barriers and cultural resistance.
- **Quality of the service.** Trust can be enhanced by demonstrating the efficiency of the TOOP solution, i.e. providing a good-quality service.
- **Communication of the benefits of the OOP.** Systematic awareness-raising among maritime countries, in particular popular flag states, is seen as an important strategy for leveraging support to the TOOP system.
- **Making use of the multiplier effect.** The more maritime actors adopt the OOP, the more countries will be interested in following suit.

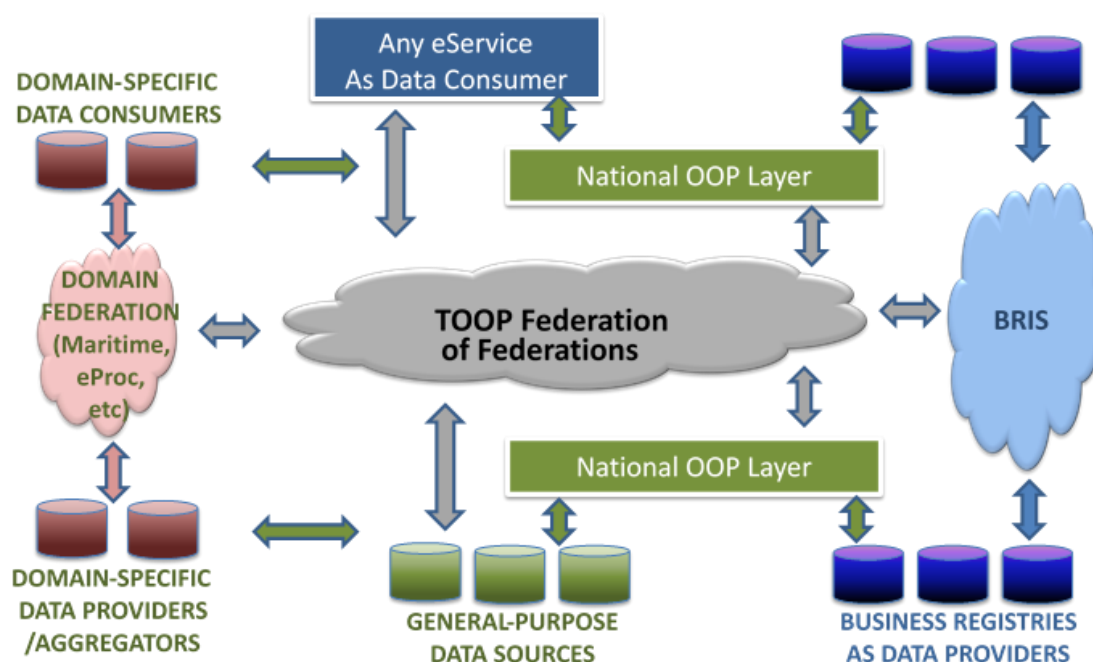
## 4. Discussion and recommendations

The literature review and the empirical study of the TOOP pilots pointed to a number of factors that affect the cross-border application of the OOP, both positively and negatively. At the most general level, three main conclusions have been drawn:

1. The most crucial barriers facing the application of the OOP are associated with:
  - a. **legal interoperability** and compliance with **legal requirements**;
  - b. **technical interoperability**;
  - c. **lacking empirical evidence and low awareness** of the **benefits of the OOP, unclear benefits on businesses**;
  - d. **limited resources, low political interest** and the difficulty of changing existing **organisational processes, information systems and commercial policies**.
2. The successful implementation of the OOP presumes that there is a **comprehensive understanding** that allows for barriers of different kinds to be handled, from technical constraints to legal, organisational, political and demand-side factors.
3. While most of the barriers are **generic**, the feasibility of cross-border OOP application also depends on which **specific domain** the OOP is implemented in. The legal framework governing the domain, the type of data that needs to be exchanged, and the potential user base of the solution are of particular importance in this respect.

With regard to the goals of the TOOP project and its broader context (see Figure 8), this means that it is important for TOOP to take note of the technical, organisational, political and regulatory context of data providers and data consumers in different countries, the legal framework and existing initiatives in the domains involved, and the technical, organisational and legal aspects of existing national and cross-border interoperability layers.

Figure 8: How TOOP Pilots Fit into the Big Picture



Source: TOOP D2.1 (2017)

In addition to that, as the barriers are manifold and differ in complexity, it is important to distinguish between the barriers that may be addressed within the scope of TOOP and those that require further action at the Member State or the EU level. The next sections will discuss the key challenges identified and propose some initial recommendations for addressing them.

## 4.1. Legal challenges

### 4.1.1. Key barriers

Legal challenges are perceived as the key barrier impeding on the implementation of the OOP at the European level, as well as to the TOOP pilots more specifically. Based on the framework developed in TOOP D2.5 (2017) and the empirical data obtained during the preparation of the current report, the key concerns of the piloting organisations can be related to meeting the following legal requirements:

- **lawfulness and compliance** – ensuring evidence is only transferred if there is an adequate legal basis for this, in compliance with any applicable legal requirements;
- **legal value and validity of evidences** exchanged;
- **privacy and data protection of natural persons** – safeguarding the fundamental rights of individuals;
- **privacy, data protection and confidentiality of businesses** – respecting the legitimate interests of confidentiality and of professional and business secrecy.

As the crew certificates exchanged in the framework of PA3 could include sensitive personal data, meeting data protection requirements is perceived to be the most challenging. Meeting of the other legal principles identified in Chapter 2 appears to be less of a concern at this point. This could be explained by the fact that the design of the TOOP solution is still preliminary, and legal problems may emerge, for example, from the potential accidental or unlawful destruction; however, loss or alteration of data may, to some extent, be prevented by the design of the technological solution. (For a detailed legal analysis of the domain-specific requirements that directly concern the TOOP pilots, see TOOP D2.5 (2017))

### 4.1.2. Recommendations

In order to meet the legal principles of the OOP, TOOP D2.5 (2017) proposes all pilot areas to set up **Federation Agreements** that govern the functionalities of the pilot area, including the limitations in terms of scoping, identification/authentication requirements, legal recognition, traceability and revocation. Data providers and data consumers would accede to this federation through specific accession agreements. However, such a solution would come with **transaction costs** for the different parties. Namely, they would have to determine if such federation agreements may be joined, e.g. if there is an adequate legal basis for this nationally, and if it complies with national legal requirements. This could also mean ‘bargaining costs’ to come to an acceptable agreement. The potential need to change legislation, existing practices and information systems on the national level could pose a considerable barrier that could be overcome only by demonstrating very clear benefits for national users (discussed in the Section 4.4). Further investigation is needed to see if such federation agreements are perceived sufficient for the countries to exchange personal data.

As the analysis in Chapter 3 shows, public administrations are careful to share data with organisations in foreign countries, especially when personal data is concerned. This is further

complicated by the fact that none of the countries analysed considered the implementation of the OOP at a cross-border/European scale as a high political priority. Thus, considering the perceived risks and moderate political backing, serious challenges lie ahead.

Overall, the recent developments around the European Interoperability Framework is supported by the analysis, as its third version, published in March 2017, has widened its area of intervention to include more on the legal interoperability.

Next to the Federation Agreements that would govern the implementation of the TOOP pilots, however, more generic and higher level solutions are seen as drivers of the development in the long term. The federation agreements between different countries for different domains may be a long and complicated procedure, involving high transaction costs, thus the **legislative push at the EU level is seen as an important driver in the long term**. For example, the implementation of the Public Procurement Directive and eIDAS Regulation have already reduced barriers for PA1 and PA2. However, a legislative drive at the EU level in the form of a European-wide OOP regulation would be a much stronger driver, creating clear incentives for Member States to adopt the OOP.

The **Single Digital Gateway Regulation** (as proposed as of May 2017) envisages the creation of a technical system that will be used to support all of the OOP use cases (within the scope of the proposal). Although the effect of the SDGR was not explicitly discussed in the TOOP empirical stakeholder survey (most of the data gathering took place before the proposal was released), it can be interpreted as a positive development as it puts the OOP into the spotlight of policy-makers. As argued in TOOP D2.5 (2017), “the further development of the Single Digital Gateway Regulation will play a crucial role in ensuring the sustainability of TOOP outputs, in much the same way that the eIDAS Regulation has done for prior piloting experiences in relation to electronic identification, electronic signatures and other trust services”. It is recommended to research further if the SDGR and its implementing acts could be complemented with additional legal details (relating to, for example, to logging/audit/control mechanisms) as these issues are generally perceived important by the stakeholders.

## 4.2. Technical interoperability challenges

### 4.2.1. Key barriers

**Technical and interoperability barriers were perceived as very important** by the stakeholders, as potential solutions for many key issues raised in the previous section are dependent on the actual technological solution for the cross-border implementation of the OOP. Such key issues include safeguarding the privacy and data protection of natural persons, as well as protecting the legitimate interests of confidentiality and of professional and business secrecy.

The issues of **technical interoperability** (the applications and infrastructures linking systems and services) as well as **semantic interoperability** (ensuring the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties) were raised by the stakeholders. Heterogeneity of the existing ICT systems, differences in data (data quality, different data models, inconsistent definitions of data elements), fragmentation of databases and differences in data handling systems were raised. All PAs emphasised the issues of technical and semantic interoperability. Both PA1 and PA2 raised the problem of the absence of EU-wide unique identifiers for businesses and persons (this, however, is a more horizontal theme, requiring a solution by legal means as well). For PA3, data availability and accessibility is an issue.

#### 4.2.2. Recommendations

The stakeholders that participated in the study fully agreed that the realisation of TOOP calls for a **Federated OOP Architecture** that supports the interconnection and interoperability of registries at the EU level. This architecture should take care of common OOP functionality, such as electronic identification and signatures of involved actors, secure storage and information exchange between public administrations, semantic alignment of the shared information in the EU as well as mappings to national levels, publish-subscribe or request-supply mechanisms (see also TOOP D2.1 2017). However, an important conclusion was that public administrations are **generally not willing to undertake major technological and organisational changes in order to enable OOP at the cross-border level**, so a very high level of compatibility with the existing technical solutions at national and organisational levels is expected.

The stakeholders that participated in the study fully agreed that the **reuse of the existing frameworks and building blocks** should be present in the generic federated OOP architecture. The TOOP generic federated OOP architecture, as presented in TOOP D2.1 (2017), relies on frameworks such as the European Interoperability Reference Architecture (EIRA), the CEF Building Blocks and the e-SENS European Interoperability Reference Architecture, and the CEF Building Blocks are seen as drivers for European projects to deliver digital services across borders.

### 4.3. Challenges related to understanding OOP benefits and impacts

#### 4.3.1. Key barriers

**End users benefits** – administrative simplification and efficiency – is perceived as the key driver for the cross-border implementation of the OOP. Other major expected benefits include **administrative simplification and efficiency for government** and **increased service quality**, benefitting both the end users as well as the service providers. Indeed, the OOP has the potential to bring along a positive economic impact for businesses, by producing time savings and reduced administrative costs. It also has the potential to provide major administrative gains in the form of fewer calls to customer service centres, less paper mailing and mistakes, plus a faster processing of requests (see TOOP D2.6 2017; Cave et al. 2017; Gallo et al. 2014).

However, achieving these gains is challenging, as the implementation of the OOP has to meet many legal requirements, such as privacy, data protection and confidentiality, legal value and validity, and contain appropriate controls to ensure that the evidence is relevant and incidents can be detected and addressed (see Sections 2.3 and 4.3). **Low number of potential end users and potentially low take-up** were a clear concern.

#### 4.3.2. Recommendations

The benefits of the service towards the end users (businesses in the case of TOOP) as well as to the administrations are **expected to be clear and well communicated**. Thus,

- In the development of the OOP, priority should be given to **developing services that would benefit large number of end users/governments and/or bring considerable benefits**;
- There is a need to carry out **ex-ante impact assessments** regarding concrete services to be developed, and carry out **ex-post impact assessments** to learn and derive recommendations for further development and scaling up.

- To understand the challenges and impacts of the OOP it is also advisable to **launch further pilots** (regional or cross-EU) for the cross-border implementation of the OOP, as recommended in the Estonian Vision Paper on the Free Movement of Data – the Fifth Freedom of the European Union (2017).

## 4.4. Organisational and political challenges

### 4.4.1. Key barriers

With its focus on simplifying administrative processes for citizens and businesses, the implementation of the OOP assumes that some fundamental changes to the ways public administrations work are needed. This makes the specific organisational context of public sector actors an important source of barriers. As demonstrated by the empirical analysis, organisational barriers are felt to be the strongest in the following aspects:

- **Difficulty of change in public sector organisations.** Due to their internal complexities, public sector organisations tend to possess strong organisational inertia and a reluctance to change. This affects the extent and pace at which the OOP can be implemented.
- **Political will.** As public sector organisations are driven by political goals, political commitment to the OOP may be an extremely important driver. Currently all pilots face the risk of low political priority, which does not create strong incentives for public sector organisations to invest in cross-border OOP.
- **Multiple stakeholders and interests.** The cross-border implementation of the OOP is a careful balancing act between the interests of a number of national and transnational stakeholders whose interests are not always aligned and may even be conflicting. This challenge is particularly relevant for PA1, which involves a number of public and private stakeholders in different countries.
- **Limited resources.** OOP-related organisational and technological changes require financial and human resources. While resource constraints are not expected to inhibit the execution of the TOOP pilots, resource issues may prevent the quick scale-up of the solution to new countries and domains.
- **Organisational interoperability.** In order for cross-border OOP to be implemented, it is necessary to align different organisations nationally and across borders. It requires the public sector to consolidate their processes and act in a joined-up manner. Due to existing organisational and national differences, this may be difficult to achieve.
- **Different pricing policies.** The implementation of the OOP in the area of business registry data (PA1 and PA2) requires the harmonisation of pricing models for business information in different organisations. Due to existing differences, this is likely to be a challenge.

### 4.4.2. Recommendations

Almost none of the barriers may be overcome by simple and straightforward solutions that could be applied in the lifetime of the TOOP pilots. Therefore, two strategies should be applied simultaneously. First, the TOOP solution needs to be designed in a way that requires minimal effort and adaptation on the part of public administrations. Second, the TOOP pilots can pave the way to longer-term solutions to at least some of these barriers by setting an example of how some of these barriers may be overcome, and by providing a generic technical solution that can be reused by other



organisations and countries. Nevertheless, in order to accelerate the adoption of OOP at the European level, it is equally important to keep the OOP high on the EU political agenda. More precisely, the following steps may be helpful in mitigating the organisational and political barriers:

- **Political support** for the OOP can be built by clearly **demonstrating the benefits** of cross-border OOP implementation. Conducting pilots, such as the ones implemented in the framework of TOOP, is seen as an important way of displaying the benefits of the OOP in real-life settings.
- Political priority and stronger collaboration between EU Member States can also be enhanced by **promoting the principle on a strategic and political level** through ministerial declarations, joint action plans, etc. One important finding from the TOOP stakeholder study is that the legal obligation to implement the OOP is seen as a major political driver. Therefore, Member States' political interest in advancing OOP could also be increased by legislative initiative at the EU level.
- Some measures may also be taken to **reduce the implementation costs of OOP** for individual organisations. The federated architecture developed in TOOP aims to enable the interconnection of heterogeneous systems and architectures, which minimises the need for the substitution of existing IT systems. Costs can also be kept lower by reusing the CEF building blocks and existing interoperability frameworks (e.g. EIF).
- In order to mitigate the effect of resource limitations, the EU could provide **financial incentives** to Member States to support their efforts in developing technical readiness for cross-border OOP initiatives.
- **Organisational interoperability** of public organisations in the EU can be enhanced further by promoting the implementation of the European Interoperability Framework interoperability recommendations.

## Conclusions

The objective of this deliverable is to explore how TOOP project stakeholders perceive the key barriers and drivers for the cross-border implementation of the once-only principle. This is answered based on a literature review, survey, focus group interviews and workshops engaging the coordinators and participants in the TOOP pilot trials.

As a result of the literature review, a number of potential barriers and drivers were found, which were grouped into four main categories: 1) technical and interoperability issues, 2) organisational, administrative and political context, 3) legal aspects and on 4) factors influencing demand and technology acceptance. These factors were then discussed in more detail from the viewpoint of the TOOP pilot areas and organisations taking part in piloting, based on first hand data gathered through a survey and several focus groups and workshops.

Regarding the key barriers, it is concluded that the successful implementation of the OOP assumes a comprehensive understanding of the interlinked issues, ranging from technical to legal, organisational, political and demand-side factors. Of these, the key barriers for the OOP are associated with 1) legal interoperability and compliance with legal requirements, 2) concerns related to technical and semantic interoperability and compatibility with existing systems, 3) lacking empirical evidence and low awareness of the benefits of the OOP, and 4) the difficulty of changing existing organisational processes, information systems and service pricing policies.

In regards to **legal challenges**, the following are perceived as key barriers: ensuring lawfulness and compliance (an adequate legal basis for the OOP), legal value and validity of data exchanged, privacy and data protection of natural persons and, finally, protecting the confidentiality and business secrecy.

The TOOP Pilots' Federation Agreements govern the functionalities of the pilot area and these agreements include also limitations in terms of scoping, identification/authentication requirements, legal recognition, traceability, and revocation. While offering a way for the TOOP pilots to proceed, such agreements remain related with high transaction costs, and are only viable if all participants in a federation agree that they have a sufficient legal mandate to join such a federation. Therefore, a legislative push at the EU level is seen as an important driver in the long term to resolve this problem.

**Technical and interoperability barriers** were also perceived as very important, especially around technical and semantic interoperability. It has been agreed upon by the interviewed stakeholders that there is a need for the realisation of a federated OOP architecture that supports the interconnection and interoperability of national registries at the EU level.

However, public administrations are generally not willing to undertake major technological and organisational changes in order to enable the OOP at a cross-border level, so a very high level of compatibility with the existing technical solutions at national and organisational levels is expected. The stakeholders that participated in the study agreed that the generic federated OOP architecture should reuse the existing interoperability frameworks and building blocks.

End user **benefits** – administrative simplification and efficiency for businesses – is perceived as the key driver for the cross-border implementation of the OOP. Other major expected benefits include administrative simplification and efficiency for government, and increased service quality. Low number of potential end users and potentially low take-up were a clear concern. Thus, in the



development of the OOP, priority should be given to developing services that would benefit a large number of end users and governments and/or bring considerable benefits. Ex-ante impact assessments regarding concrete services to be developed and ex-post impact assessments to learn and derive recommendations for further development and scaling up are also needed.

**Several organisational and political factors** that act as barriers towards OOP implementation emerged as well. These relate to organisational inertia and reluctance to change, low political prioritisation of the OOP, multiple stakeholders and interests, limited resources, organisational interoperability and different pricing policies. Accordingly, the TOOP pilots need to be designed in a way that requires minimal effort and adaptation on the part of public administrations.

In order to accelerate the adoption of the OOP at the European level, further political support and legal intervention are perceived important, combined with demonstrating the benefits of cross-border OOP in various pilots. Reduction of the implementation costs of the OOP for individual organisations is also perceived important. Among other means, this could be done via the reusable federated architecture developed in TOOP and/or additional financial incentives to Member States to support their efforts in developing technical readiness for cross-border OOP.

An updated overview of the barriers and drivers will be published in the TOOP project deliverable D2.8 towards the end of the project. Barriers and drivers will be revisited to reflect the experiences of the implementation of the TOOP pilots and policy recommendations will be developed based on this. Also, further input will be integrated from interrelated tasks in the project, such as work on legal aspects (T2.2), impact assessment (T2.4) and sustainability (T2.5). Further support will be provided to pilots as well as to the related tasks, especially to tasks T2.4 and T2.5.

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## Appendix I: Questionnaire on specific conditions and constraints at piloting countries and organisations

### Introduction

This questionnaire reflects certain dimensions of the organisationally local situation at piloting organisations involved in TOOP and should cover specific topics that have an impact on requirements or reveal restrictions – and additional other important topics, which are of need for the TOOP project.

The questionnaire cannot cover all possible topics, but should at least highlight the most relevant questions that have higher priority. If requirements and constraints are foreseeable, which are not covered with the given questions, it is possible to add them in a free space below each chapter:

- [1] Legal/Ethics
- [2] Politics/Organisation
- [3] Governance and
- [4] Architecture

The reason for the questionnaire is to provide a realistic baseline when setting the perimeter of ambitions and expectations about what is feasible and likely as outcome of the project.

### Objectives of the activity

- It is important to know basic requirements and restrictions from the piloting organisations at an early stage in the project to estimate the possibilities and challenges to address in the different areas of activities. The results of this survey can be seen as a basis for the ongoing work and support the alignment of WP2 and WP3. The input should be given directly by the piloting organisations (from member states) and can work as supporting or complementary material to the content produced through the application of the Agile Piloting Methodology.
- Furthermore, it is important for the piloting organisations as well, to ponder over the TOOP contents and reflect it with their own requirements and restrictions. That results in a higher awareness of the piloting organisations of the project contents and dimensions.
- The conduction of a survey on specific local requirements and – most importantly – restrictions within piloting organisations in an early stage helps the project itself. If a request on several topics is actively done out of the project to the piloting organisations in an early stage it is not easy possible to blame the project of omission of these duties afterwards.

### Start of questionnaire

#### 1. Legal and Ethical Aspects

##### Legal Aspects

- 1.1. Under which conditions would you be legally allowed **to provide your information** to a third party within the context of the TOOP project?

Information:

- No conditions – any party may receive and use our data as-is without restrictions or prior authentication (data is shared as open data)
- We need proof of the consent of any person to whom the information relates
- We need a proof of the consent of the data owner, e.g. ship or enterprise related data (please specify data owner if possible)
- We need to have a framework in place (e.g. a contract, or a framework agreement, or a letter of understanding) that covers the following topics:
  - Identification of the recipients of the data
    - identification of the organization only,
    - identification of the physical person only,
    - identification of organization and physical person
  - Limitations on the permitted use of the data
  - Exclusions of liability and/or definitions of the guarantees we provide
  - Security measures that the recipients need to implement in relation to the data
  - Rules on how to settle any disputes or conflicts in relation to the data
  - Guarantees on where our data will be processed
  - Other: please specify
- We need to get the prior authorisation of a local authority or organisation (please identify and link to any applicable procedures: ...)
- We need the data to undergo anonymisation or other modification
- We need specific permission through a change in the law (please identify and link to the law that must be changed)
- Other: please specify: ...

**Additional information:**

.....

**1.2.** Do you require any limitations on the export of this data outside of the European Union?

.....

**1.3.** Under which conditions would you be legally allowed to **use information** provided by a third party within the context of the TOOP project (i.e. taking into account that TOOP is a temporary pilot project)?

Information:

- No conditions – we will use information provided by a third party as-is, without further agreements or prior authentication (data is shared as open data)
- We need proof of the consent of any person to whom the information relates
- We need a proof of the consent of the data owner, e.g. ship or enterprise related data (please specify data owner if possible)
- We need to have a framework in place (e.g. a contract, or a framework agreement, or a letter of understanding) that covers the following topics:
  - Identification of the providers of the data
    - identification of the organization only,
    - identification of the physical person only
    - identification of organization and physical person
  - Limitations on the permitted use of the data

- Exclusions of liability and/or definitions of the guarantees offered by the provider of the data
- Security measures that we need to implement in relation to the data
- Rules on how to settle any disputes or conflicts in relation to the data
- Other: please specify
- We need to get the prior authorisation of a local authority or organisation (please identify and link to any applicable procedures: ...)
- We need the data to undergo anonymisation or other modification
- We need specific permission through a change in the law (please identify and link to the law that must be changed)
- Other: please specify: ...

**Additional information:**

.....

- 1.4.** Does your answer to the questions above change for any use of the data beyond the context of TOOP? I.e. would you have any additional legal requirements after the completion of TOOP, or to use the results of TOOP beyond the scope of a pilot?

.....

**Ethical Aspects**

- 1.5.** Does your data (as provided by you) contain any personal data, i.e. can it be linked to a specific person? This includes names, contact details, but also identification numbers?

.....

- 1.6.** Is the data sensitive, specifically by revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade-union membership, and of data concerning health or sex life?

.....

**2. Drivers and barriers; political, policy, administrative organisational, demand and economic aspects**

**Drivers and Barriers**

- 2.1.** Please indicate the most important drivers for your TOOP pilots. List at least **3 key drivers** – factors that enable or support the implementation of your TOOP pilot:

1. ...

2. ...

3. ...

- 2.2.** Please indicate the most important barriers for your TOOP pilots. List at least **3 key barriers** – factors that threaten the implementation of your TOOP pilot:

1. ...

2. ...

3. ...

**Political and policy aspects**

**2.3. To what extent is OOP implemented in your country?**

- OOP is implemented broadly at the national (federal) level
- OOP is implemented in certain areas or organisations at the national (federal) level
- OOP is implemented broadly at the regional level
- OOP is implemented in certain areas/organisations at the regional level
- OOP is not implemented at all
- Other (please specify): ...

**Additional information:**

.....

**2.4. Could you give examples of any best practices of the implementation of OOP in your country?**

.....

**2.5. How is OOP regulated in your country?**

- By way of legislative measures (law, decree, etc.)
  - Please specify which legislative acts/regulations define OOP: ...
  - Is there a link with other regulations (e.g. data policy, online service delivery, base registries, eID)?
- By way of non-legislative measures (strategies, green/white papers, etc.)
- By way of written guidelines or recommendations
- OOP is an unwritten rule/practice
- OOP is not regulated at all
- Other (please specify): ...

**Additional information:**

.....

**2.6. Are you aware of any existing cross-border OOP initiatives that your country has been involved in? If yes, please describe them shortly (e.g. which countries and organisations were involved, what kind of data was exchanged, who were the end users, etc.).**

.....

**2.7. To what extent is the implementation of OOP at a cross-border/European scale a political priority in your country and organisation? Please select the most relevant option for each row.**

	High priority	Moderate priority	Low priority	Not a priority	Unsure
Central (federal) government					
Regional government (if					



applicable)					
My organisation					

**Additional information:**

.....

**2.8.** How high would you consider the risk that the implementation of TOOP pilots could be compromised by political changes or withdrawal of political support in your country or organisation? Please select the most relevant option for each row.

	High risk	Moderate risk	Low risk	Likely not a risk	Unsure
Changes in central (federal) government					
Regional government (if applicable)					
My organisation					

**Additional information:**

.....

**Organizational and administrative aspects**

**2.9.** How would you evaluate the general attitude and willingness in your organization towards the following aspects of OOP?

	Very open (willing)	Mostly open (willing)	Somewhat cautious (resistant)	Very cautious (resistant)	Unsure/ no information
Sharing data with other organizations within the country					
Sharing data with other countries					
Sharing personal data with other organizations in the country					
Sharing personal data with other countries					
Changing existing organizational processes,					

procedures and structures to enable OOP <i>nationally</i>					
Changing existing organizational processes, procedures and structures to enable <i>cross-border</i> OOP					
Changing existing technological solutions (information systems, architectures), etc. to enable OOP <i>nationally</i>					
Changing existing technological solutions (information systems, architectures), etc. to enable <i>cross-border</i> OOP					

**Additional information:**

.....

- 2.10.** In your opinion, what is the likelihood that the following factors will pose challenges to your organization with regard to the implementation of the TOOP pilots?

	Very likely	Quite likely	Possible	Rather unlikely	Very unlikely
Implementation of organizational, structural and procedural changes					
Implementation of technological changes					
Lack of financial resources					
Lack of necessary skills in organization					
Lack of human resources					
Organizational culture and attitudes					
Communication and collaboration within organization					
Communication and collaboration with other organizations involved in the pilot					
Difficulty of aligning processes and procedures with other organizations involved in the pilot					
Cultural differences between organizations					
Data protection and security requirements					
Cost of sustaining the results of the TOOP pilot in the long term					

**Additional information:**

.....

**Demand and economic aspects**

- 2.11. Demand side:** How would you evaluate the demand for OOP nationally from businesses in your country? How would you evaluate the demand for cross-border OOP from businesses in your country?
- .....

- 2.12.** How would you rate the following end-user benefits from your TOOP pilot?

	Very important	Important	Nor important nor unimportant	Unimportant	Very unimportant
Administrative burden reduction					
Decreased contact with government					
Decreased information provisioning to government					
Time savings					
Cost savings					
End user satisfaction					
Increased number of users					
Satisfaction with the services					
Improved ease of access					
Increased participation					
Other, please specify...					

**Additional information:**

.....

- 2.13. Demand side:** How would you evaluate the demand for OOP nationally from government in your country? How would you evaluate the demand for cross-border OOP from businesses in your country?
- .....

- 2.14.** How would you rate the following governmental benefits from your TOOP pilot?

	Very important	Important	Nor important nor unimportant	Unimportant	Very unimportant
Efficiency					
Time savings					
Cost savings					
Increased collaboration between agencies					
Avoidance of duplication of tasks					
Increased data quality and reliability					
Increased interoperability					
Increased transparency and accountability					
Fraud reduction					
Other, please specify...					

**Additional information:**

.....

- 2.15. Supply side:** Does your country's Business Register or other Data Provider have a commercial policy regulating the distribution of data? How does this policy affect your participation in the TOOP pilot actions?

.....

- 2.16.** Which economic benefits have been recorded or would be expected from the implementation of OOP nationally?

.....

- 2.17.** Which economic benefits have been recorded or would be expected from the implementation of cross-border OOP?

.....

**Governance aspects**

- 2.18.** Please indicate the existing information security management system level (e.g. ISO27000 certification, other ISMS regulations).

.....

- 2.19.** Please indicate if reporting obligations could affect the TOOP pilots. This includes organisation boards, customers, law makers, terms of conditions...

- .....
- 2.20.** Please indicate which sustainability measures are taken into account to support successful TOOP pilot rollout and maintenance (Such as system upgrade procedures, decision making processes, operational support, established teams for the pilots. Please indicate/add others if appropriate).
- .....

### **3. Technical aspects**

#### **Data**

- 3.1.** Please indicate which registers and other data sources (requirements, restrictions, standards, ...) of your organisation will be involved in the Pilot Areas of TOOP.
- .....
- 3.2.** Are there any technical restrictions that should be considered when involving the registers / data sources of your organisations in the Pilot Areas of TOOP? If Yes, please specify which restrictions apply?
- .....
- 3.3.** Are there any technical standards that should be considered when involving the registers of your organisations in the Pilot Areas of TOOP? If Yes, please specify which technical standards should be considered?
- .....
- 3.4.** Please indicate whether the information stored in the registers of your organisation involved in the Pilot Areas of TOOP can be provided in the machine-readable format (contrasted with e.g. pdf-documents and pictures). If No, please explain which registers are affected?
- .....
- 3.5.** Will any combined data sources (instead of registers) of your organisation be involved in the Pilot Areas of TOOP? If Yes, please specify which combined data sources will be involved?
- .....
- 3.6.** Does your country have a data provision commercial policy? Does that commercial policy vary depending on who requests the data (i.e. public administration, private entity, professional, ...)?
- .....
- 3.7.** Could you explain (briefly) your national data provision business model?
- .....
- 3.8.** If your country has already implemented OOP at the national/regional level, did your country provide a specific commercial policy? Could you explain (briefly) this commercial policy if different from the national policy (previous bullet point)?

## **Architectural**

**3.9.** Are there standardized interfaces to access the required data sources / registers or can such interfaces be established?

- Which kind of interfaces are allowed/not allowed, if there is such a policy in place?
- Do specific requirements / restrictions / standards exist for interfaces to the used data sources?

**3.10.** Please indicate by the corresponding ticks which building blocks are already operated in your organisation or will potentially be operated in the Pilot Areas of TOOP:

CEF Building Blocks

eDelivery

eID

eSignature

eInvoicing

eTranslation

e-HI (Human Interface)

e-SENS Building Blocks

eDelivery

eID

Non-Repudiation and Traceability

Trust Establishment

eDocument

Semantics

Any others, please specify

...

...

**3.11.** If your organisation is a Business Register are you part of the BRIS network? On a scale of 1-5 indicate how important the re-use and extension of BRIS services by TOOP is to your organisation.

**3.12.** Please indicate specific security requirements (procedures, restrictions, etc.) that have to be met by your organisation for participating in the Pilot Areas of TOOP.

**3.13.** Please indicate which of the following testing levels, methods and procedures are compulsory in your organisation?

- Unit testing;
- Integration testing;
- System testing
  - o Installation testing
  - o Functionality testing
  - o Recoverability testing
  - o Interoperability testing
  - o Performance testing
  - o Load and stability testing
  - o Scalability testing
  - o Reliability testing
  - o Regression testing
  - o Usability testing
  - o Security testing
  - o Documentation testing
- Acceptance testing
  - o User acceptance testing
  - o Business acceptance testing
- User interface testing

**3.14.** Are there any architectural principles or restrictions that should be considered for your organisation to be involved in the Piloting Areas of TOOP? If Yes, please specify which principles or restrictions?

.....

**End of questionnaire**

**TOOP Internal Questionnaire – data protection notice form**

<b>Project title:</b>	The Once-Only Principle Project
<b>Project Coordinator:</b>	Prof. Dr. Robert Krimmer, Tallinn University of Technology, Ragnar Nurkse Department of Innovation and Governance
<b>Contact person for this questionnaire:</b>	For any data protection/privacy related questions on this questionnaire, please contact the TOOP Project DPO Hans Graux – <a href="mailto:hans.graux@timelex.eu">hans.graux@timelex.eu</a> – 0032 479 79 55 00
<b>Aim of the questionnaire:</b>	<p>This questionnaire is organised to collect feedback which is necessary to organise the execution of the TOOP project, in which your organisation is participating. Your feedback is necessary to identify the requirements and concerns of your organisation.</p> <p>Your personal data will therefore only be collected and processed incidentally, i.e. insofar as required to obtain the relevant information from your organisation, as required under the contract (the TOOP Grant Agreement) in which your organisation participates.</p> <p>We will not use your personal data in the context of this questionnaire for any other purposes than the collection, validation, completion and analysis of the requirements and concerns of your organisation. Please note that this may entail follow-up messages via e-mail or telephone.</p>
<b>Confidentiality and anonymity:</b>	No personal data obtained through this questionnaire will be disseminated outside the TOOP Project or referenced in any public communication. Statements may be attributed to your organisation in TOOP outputs (such as project deliverables), but not to you individually without your further consent.
<b>Further use of the data:</b>	Your data will be used exclusively by researchers in the TOOP Project and only for the purposes of the project. No third parties will receive your personal. Data collected will be stored for the duration of the project and 5 years after the end of the project.

**By submitting a response to this questionnaire, you confirm that you have read, understood, and agree to the terms above.**