

# Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle

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## ABSTRACT

Moving towards the cross-border mobility of e-Government services is a political priority of the European Union, but the provision of such services remains fragmented. This paper builds on the first research results of “The Once-Only Principle Project” (TOOP), launched in 2017 by the European Commission and 51 organizations from 21 European countries to advance cross-border e-services through exploring and testing the cross-border application of the once-only principle (OOP). According to this principle, public administrations should collect information from citizens and businesses only once and then share this information with other administrative bodies. On the basis of a literature review, survey, focus group interviews and workshops, this paper presents a preliminary take on the benefits associated with cross-border OOP, as well as the barriers and drivers that affect the emergence of OOP-based cross-border e-Government services.

## CCS CONCEPTS

•Information systems → Information systems applications; Software and its engineering → Extra-functional properties; Social and professional topics → Management of computing and information systems

## KEYWORDS

once-only principle, cross-border public services, interconnection, interoperability, benefits, drivers and barriers

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## 1 INTRODUCTION

According to the once-only principle (OOP), public administrations should collect information from citizens and businesses only once and then share this information with other administrative bodies while respecting privacy regulations and other 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 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 [1].

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, focusing 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 and public administrations in different countries would be able to share and reuse this information, respecting privacy regulations and other relevant constraints (see [1] and [2] for a more detailed overview of the project aims and activities).

To achieve this, TOOP aims to develop a generic federated architecture that supports the interconnection of national registries across state borders. 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.<sup>1</sup> The project also pays careful attention to identifying

<sup>1</sup> See <http://toop.eu/pilots> for a detailed description of the pilots

key legal principles and legal challenges in different OOP use cases. However, next to the technical and legal aspects, there are other factors that affect the adoption of OOP. These include the perceived benefits associated with OOP, but also the political context, the structural, organizational and cultural features of public sector organizations, and demand-side factors. [1] The aim of the ongoing research presented in this paper is to identify the benefits that OOP is expected to deliver, the drivers that enable or support cross-border OOP, and the barriers that may challenge this process.

## 2 METHODOLOGICAL APPROACH

This research task makes use of a combination of qualitative research methods, including literature review, focus group interviews and online surveys. The empirical data collection predominantly focuses on the perceptions and actual experience of the organizations participating in the TOOP pilots. Four steps have been taken so far.

First, a review of existing academic and policy literature was conducted to search for influential factors that may affect the cross-border implementation of OOP. Since OOP is still scarcely discussed in literature, the most notable exceptions being the EU-funded studies [3] and [4], the literature search was expanded to also involve related streams of research, extracting information on potentially relevant barriers and drivers from academic and policy studies on topics such as interoperability, (cross-border) e-government, public sector innovation and technology acceptance. The literature review consisted of two search streams: one related to the expected benefits of OOP, and the other one to the barriers and drivers that may affect its implementation. The following search engines were used: Scopus, ResearchGate, Springer, the European Commission Database, and Google Scholar. For the benefits, the key search terms included those related to OOP (and eGovernment) benefits, key performance indicators, impact, etc. For the barriers and drivers, we looked for OOP and eGovernment barriers and drivers in the fields of eGovernment, public sector innovation, public sector information systems, etc. In order to understand the drivers and barriers on the demand/user side, we also expanded the search to include literature related to technology acceptance. This resulted in a list of benefits commonly associated with OOP as well as an inventory of barriers and drivers covering interoperability issues, organizational barriers, 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.

For the second step, data was collected from pilot partners from April to July via an online survey. The questionnaire 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, yielding an overview of the main benefits, drivers and barriers, as perceived by the piloting organizations. In parallel, to gain deeper insight into the perception of pilot-specific benefits, barriers and drivers, several workshops and focus groups were carried out. First, generic benefits and barriers were discussed at the TOOP kick-off meeting in Tallinn on 26 January

2017. More in-depth 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 discussed in depth in two 120-minute sessions with some 30 pilot participants in Rome on 23 and 24 May 2017. It is important to note that real piloting activities had not yet started at the time of data collection – therefore, the results only reflect the partners' initial perception of potential challenges and obstacles.

Finally, the analysis and synthesis of the results was carried out. Based on this, a refined inventory of key barriers and drivers for TOOP pilots was compiled, while the expected benefits were integrated into the pilots' impact assessment framework as evaluation criteria.

As the next step, these initial findings will be empirically tested in real-life settings based on the implementation of the TOOP pilots throughout 2018 and the first half of 2019. A second round of data collection from the pilot participants is scheduled to take place at the beginning of 2019, which will result in a refined inventory of the barriers and drivers based on the actual experience of cross-border data exchange in the three pilot areas.

## 3 RESULTS OF THE LITERATURE REVIEW

### 3.1 Expected benefits of OOP

The main benefit associated with OOP is administrative burden reduction, i.e. simplification of processes that need to be taken for a business to comply with administrative procedures (for detailed results, see [5]). The availability of digital data across borders is believed to lead to a decrease in time and costs [4] of administrative processes, but also to their uniformity and consistency [6], data interoperability [4], better data quality, reliability and validity [6].

OOP is also expected to improve the quality of public services. Service quality has several dimensions. One of them is transparency and accountability, which means that individuals and businesses can easily understand decisions and query inconsistencies [4]. Another is non-discrimination, which can be achieved by a reduction of asymmetries between the treatment of domestic and cross-border businesses in service provision [7]. Service quality can also mean ubiquitous services development, which refers to access from any platform, at any time, from any physical location [8].

Thirdly, OOP is associated with improved government efficiency. On the organizational and business process level process optimization has been defined as a main benefit for the organizational and business process aspect, which is the reduction of delays associated with data-intensive service requests [4]. On the legal level, the implementation of OOP enhances the government's ability to determine liability for accuracy and use of information (e.g. as data controller). Technically, OOP reduces the duplication of tasks [4], while the development and use of standards for data exchange [6] improves interconnectivity and increases the efficiency of data exchange. Furthermore, OOP is also believed to contribute to fraud reduction by reducing the possibility of obtaining services by means of inaccurate or

contradictory information, and by improving the government's ability to detect such attempts [4].

### 3.2 Barriers and drivers

Various studies looking at the implementation of ICT in the public sector suggest that the adoption and success of public sector ICT projects depends on a range of different factors not only related to technology and regulations but also the managerial, organizational, political and broader institutional context (see, for example, [9], [10]). For cross-border OOP, the authors have identified gaps and barriers across several categories, including legal, organizational, semantic, technical and "other" issues, the latter category involving diverse factors from lacking political will to the difficulty of measuring the costs and benefits for users (for detailed results, see [11]). Following this broad approach, our literature review examined barriers and drivers in four main categories: 1) Technology and interoperability; 2) Organizational, administrative and political factors; 3) Legal factors, and 4) Demand-side factors.

#### 3.2.1 Technology and interoperability

Some of the most challenging problems for cross-organizational information systems are associated with technical and interoperability barriers [12]. Due to its cross-organizational and cross-border nature, various technical and interoperability problems are also associated with cross-border OOP. According to [4], the existing heterogeneity of ICT systems in different countries and organizations generates barriers such as local solutions that might not meet OOP requirements, legacy systems, different approaches to handling specific types of data, lack of critical mass, and limited possibilities to develop common access tools to various data sources.

#### 3.2.2 Organizational, administrative and political barriers

As the application of OOP presumes alignment and coordination between heterogeneous organizations, a number of organizational barriers come into play. According to [3], key barriers to OOP include organizational silos and lack of communication between government departments, the complexity of change in organizational structures, working practices and cultures, and high implementation costs. The same constraints are present at the cross-border level, coupled with limited mechanisms for cost-sharing, weak political will, cultural resistance, cautious attitudes towards data sharing, and low awareness of the benefits of OOP [4]. Many of these barriers have to do with the particular constraints and complexities characteristic to the public sector (see, for example, [7] [13], [14]). In addition to organizational features, public sector organizations are strongly shaped by the legal culture and administrative traditions of the state [7] and are highly susceptible to political turbulence and external crises [15].

#### 3.2.3 Legal and regulatory factors

In the context of public sector innovation, regulations are seen to work two ways – on the one hand, rigid regulations may stifle innovation, while regulatory change can also promote innovation, for example by imposing legal obligations on administrations to implement innovative solutions [13]. With regard to OOP, the

legal context sets the rules and limits for data sharing which are essential for personal data protection. According to [3], resolving any legal obstacles and establishing a sound legal basis for OOP is one of the most important strategic issues next to technological and political issues. At the cross-border level, existing national legal frameworks not only need to allow national administrations to consume and share data but also enable data sharing and reuse across borders. Although some directives and regulations have been adopted to support interoperability at the EU level (e.g. eIDAS, Services Directive and most recently GDPR), a common legal basis at the EU level is still needed to support a genuinely cross-border OOP [4], [16].

#### 3.2.4 Demand-side factors

According to [4], demand for cross-border services can be a significant driver for cross-border OOP. However, the actual demand is strongly linked to factors such as the inflow of foreign citizens and businesses to a country, citizens' awareness of OOP, trust in data providers and re-users, and the overall maturity of digital service infrastructures. Here, research on acceptance and use of technology may offer valuable insights into the factors that affect the demand and acceptance of OOP-based solutions. Based on the Theory of Acceptance and Use of technology put forth in [17], it is important to analyze if OOP-based services will provide gains in performance and if the technical solution for cross-border OOP is perceived easy to use (and compatible with existing IT systems in different countries and domains). In addition to that, other conditions such as organizational and technical infrastructures, ICT skills or experience may facilitate adoption.

## 4 PILOT STUDY: PRELIMINARY RESULTS

In order to validate the findings of the literature review, data was collected from the coordinators and participant organizations in the TOOP pilots through an online survey, focus groups and workshops. The results confirmed the relevance of many of the findings but also highlighted some domain-specific differences.

### 4.1 Expected benefits of the pilots

The study of the pilots revealed that the most important end-user benefits are considered to be administrative burden reduction and time savings, which are both considered equally important. This is followed by improved ease of access. The end-user benefit considered of the least importance is increased number of users. The most important government benefit is increased data quality and reliability, followed by avoidance of duplication of tasks. The benefits that are considered least important are increased collaboration between agencies and fraud reduction. However, differences between the government benefits turned out to be very small. This means that, despite the small differences, all of the above-mentioned benefits are considered generally important.

### 4.2 Barriers and drivers

The study yielded barriers and drivers from all four categories examined. The most burning concerns are related to the challenge of ensuring that data sharing and reuse happens in compliance

with regulations and is able to ensure personal data protection and the confidentiality of business secret. All pilot areas also emphasized the need for a legal push by the EU (in the case of the ship and crew-certificates, by the International Maritime Organization) that would mandate and facilitate the use of OOP. Technical and semantic interoperability barriers were also perceived very important. As public sector organizations are generally unwilling to undertake major technological changes in order to enable the OOP at a cross-border level, any technical solution for OOP needs to be highly compatible with existing national and local solutions. The study also pointed to organizational inertia and reluctance to undertake major organizational changes for the sake of implementing OOP. This is partly related to the low political priority of OOP, but also the difficulty of balancing the interests of multiple stakeholders involved in the pilots (this was especially emphasized for the business mobility pilot). Quite expectedly, barriers were also seen in limited resources, low interoperability between different organizations, different pricing policies (emphasized in particular for the company data pilot), current lack of knowledge of the actual demand for OOP among businesses, and concerns about possible low take-up of the solution.

Hence, the key driver for OOP was seen in the end user benefits. Piloting organizations considered it crucial to prioritize the development of OOP in areas where the gains for businesses (mostly administrative simplification) are seen highest and where positive impacts would be demonstrable. Almost equally important are the expected benefits for public administrations (mostly government efficiency and service quality). In this context, the area of ship and crew certificates stands out for its global ambition – in order for benefits to really exceed the implementation and transaction costs in the maritime domain, OOP-based data sharing should become the norm not only in Europe but worldwide.

## 5 CONCLUSIONS

The once-only principle is a concept which is associated with three important benefits – administrative burden reduction, government efficiency and improved service quality. However, due to its fragmented implementation so far, there is a general lack of knowledge and evidence of these benefits. The barriers which prevent governments from implementing OOP in national and cross-border interactions can be found at several levels, from technical to legal, organizational, political and demand-side factors. Of these, the key barriers for the OOP are associated with legal interoperability and compliance with legal requirements, lacking empirical evidence and low awareness of the benefits of the OOP, and the difficulty of changing existing information systems, organizational processes and service pricing policies.

As the next step, these preliminary findings will be put to an empirical test in the pilots conducted in three selected areas. This will allow us to learn which barriers and drivers turn out to be the most influential in the process and what differences may exist between different domains where OOP is implemented.

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## REFERENCES

- [1] R. Krimmer, T. Kalvet, M. Toots, A. Cepilovs. 2017. Position Paper on Definition of the "Once-Only" Principle and Situation in Europe. TOOP Deliverable D2.6. [http://toop.eu/assets/custom/docs/TOOP\\_Position\\_Paper.pdf](http://toop.eu/assets/custom/docs/TOOP_Position_Paper.pdf).
- [2] R. Krimmer, T. Kalvet, M. Toots, A. Cepilovs, E. Tambouris. 2017. Exploring and Demonstrating the Once-Only Principle: A European Perspective. In *Proceedings of dg.o '17*, Staten Island, NY, USA, June 07-09, 2017.
- [3] G. Gallo, M. Giove, J. Millard, R. Thaarup. 2014. Study on eGovernment and the Reduction of Administrative Burden. European Commission. [http://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=5155](http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=5155).
- [4] J. Cave, M. Botterman, S. Cavallini, M. Volpe. 2017 EU-wide digital Once-Only Principle for citizens and businesses. Policy options and their impacts. European Commission. <https://ec.europa.eu/digital-single-market/en/news/eu-wide-digital-once-only-principle-citizens-and-businesses-policy-options-and-their-impacts>
- [5] A.F. van Veenstra, T. Timan, P. Vermeulen, H. Congleton. 2017. Ex-ante Impact Assessment Framework (1st version). TOOP Deliverable 2.9 (confidential).
- [6] A. Zuiderwijk, M. Janssen. 2013. Open data policies, their implementation and impact: A framework for comparison. *Government Information Quarterly* 31, 1 (2014), 17–29
- [7] VJJM Bekkers, L. G. Tummers, W. H. Voorberg. 2013. From public innovation to social innovation in the public sector: A literature review of relevant drivers and barriers. Rotterdam: Erasmus University Rotterdam.
- [8] A. F van Veenstra, M.S. Marcus, J. Cave, N. Huijboom, D. Elixmann, A. Hillebrand, R. Schindler & V. Horvath. 2013. Ubiquitous Developments of the Digital Single Market. European Parliament's Committee on Internal Market and Consumer Protection, Brussels. [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/507481/IP-OL-IMCO\\_ET\(2013\)507481\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/507481/IP-OL-IMCO_ET(2013)507481_EN.pdf).
- [9] J. R. Gil-Garcia, T. A. Pardo. 2005. E-government success factors: Mapping practical tools to theoretical foundations. *Government Information Quarterly* 22 (2005), 187–216.
- [10] A. Savoldelli, C. Codagnone, G. Misuraca. 2014. Understanding the e-government paradox: Learning from literature and practice on barriers to adoption. *Government Information Quarterly* 31, 1 (2014), S63–S71.
- [11] T. Kalvet, M. Toots, R. Krimmer. 2017. Drivers and Barriers for OOP (1st version). TOOP Deliverable D2.7. [http://toop.eu/sites/default/files/D27\\_Drivers\\_and\\_Barriers.pdf](http://toop.eu/sites/default/files/D27_Drivers_and_Barriers.pdf).
- [12] A. Mocan, F. M. Facca, N. Loutas, V. Peristeras, S. K. Goudos, & K. Tarabanis. 2011. Solving semantic interoperability conflicts in cross-border e-government services. In *Semantic Services, Interoperability and Web Applications: Emerging Concepts*, IGI Global, 1-47.
- [13] H. De Vries, V. Bekkers, & L. Tummers. 2016. Innovation in the Public Sector: A Systematic Review and Future Research Agenda. *Public Administration* 94, 1 (2016), 146–166.
- [14] European Commission. 2013. Powering European Public Sector Innovation: Towards A New Architecture. Report of the Expert Group on Public Sector Innovation.
- [15] L. Rashman, E. Withers, J. Hartley. 2009. Organizational learning and knowledge in public service organizations: A systematic review of the literature. *International Journal of Management Reviews*, 11, 4 (2009), 463–494.
- [16] H. Graux. 2017. Overview of legal landscape and regulations. TOOP Deliverable D2.5. [http://www.toop.eu/sites/default/files/D25\\_legal\\_landscape\\_and\\_regulations.pdf](http://www.toop.eu/sites/default/files/D25_legal_landscape_and_regulations.pdf)
- [17] V. Venkatesh, M.G. Morris, G.B. Davis, F.D. Davis. 2003. User Acceptance of Information Technology: Toward a Unified View. *Management Information Systems Quarterly*, 27, 3 (2003), 425–478.