

Interoperability Academy Speaking
Corner
at SEMIC 2020

Pitching of Msc an PhD thesis topics

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Designing Cross-Border Services in Smart Cities of Tallinn and Helsinki

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Abstract

There are numerous factors and challenges to be considered while creating and delivering cross-border services and platforms in connected smart cities context as Tallinn and Helsinki. For the moment we will focus on improving usability¹ (efficiency, effectiveness and user satisfaction) of such services. The main purpose of cross-border services in smart cities of Tallinn and Helsinki are to provide seamless single user experiences. In order to create such ideal smart cities it's important to have human-centered approach while designing cross-border smart services in two different cities contexts. Therefore, we need to understand user needs and requirements while designing or creating current or new services, measure efficiency and effectiveness of user experiences while utilizing our suggested digital solutions and be able to achieve citizen satisfaction. In other words, creating empathy with users and co-creation helps to ideate and design smart services from user perspective then just simply digitizing and integrating cross-border services.

Another important factor for delivering cross-border smart services is to identify different approaches to effectively integrate and exchange data between Tallinn and Helsinki that will help to create seamless single user experiences and create added value of data. For example, administrative data or data generated real time via different technologies or data collected and connected real time via IoT in smart cities. Hence, in-depth user research is required to understand the impact of ubiquitous smart services on single user experiences and how we can measure and improve citizen satisfaction.

To sum up, according to ESPON policy brief² there are numerous typical obstacles that impede development of cross-border public services such as unfavorable legal and administrative framework conditions, cultural divides and one-sided scarce resources. Hence, it's important to identify possible factors and obstacles that might affect usability and seamless single user experiences of cross-border services in connected smart cities of Tallinn and Helsinki.

¹ <https://www.iso.org/obp/ui/#iso:std:iso:9241:-11:ed-2:v1:en>

² https://www.espon.eu/sites/default/files/attachments/7744%20ESP%20Policy%20Brief%2C%20Cross-border%20public%20services_4_web.pdf

Artificial Intelligence and EU policy making: What could AI do to increase citizens' participation in the policy making process without compromising transparency and accountability?

Ines Elisabeth Holzegger

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Abstract

The European Union's policy-making process is characterized by a highly top-down nature. European citizens can, nevertheless, formulate policy proposals in the form of European Citizens' Initiatives (ECIs), with so far limited success. To bring policy making closer to the citizens and increase citizens' participation, an option is exploring the possibilities new technologies, in particular Artificial Intelligence (AI) present. Ultimately, this could affect policy making, even on an EU level ('Policy Making 2.0').

In recent years, AI backed projects on citizen participation have emerged, ranging from tools supporting systems providing individualized information for each citizen to opinion mining tools. However, the potential utilization of AI in policy making raises questions and concerns in terms of transparency and accountability, two key aspects in ensuring trustworthy AI.

The Master thesis will analyze the potential Artificial Intelligence brings to citizens' participation in policy making processes through the analysis of case studies complemented with semi-structured expert interviews from a technological as well as political view point. The DigiGov-F (Misuraca, Barcevičius, & Codagnone, 2020) is used as a conceptual framework to assess the key external and internal factors of the application of AI in the selected case studies.

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The role of dynamic capabilities in the public sector for the processes of learning/developing sustainable interoperability solutions

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Abstract

In 2019, the Interoperability Academy was launched as part of the 8th work package "Supporting instruments for public administration" of the ISA2 programme (2015-2020). Aiming to overcome the digital skills gap that is seen as one of the factors delaying the adoption of digital solutions and the European Interoperability Framework, this action was created to develop digital skills in the area of interoperability for public administrations. The main objective is to develop a large digital talent pool and ensure that individuals -mostly, civil servants, but also open to professionals from other sectors- in Europe that are equipped with adequate digital skills. The action entails the set-up of an open-source online learning platform with a catalog of resources and reusable solutions (Joinup), that allows users to follow different comprehensive learning paths according to their backgrounds. Finally, the Academy considers also the organization of schools, seminars, and training sessions, as it already has shown with a couple of events during 2019. Lastly, it must be highlighted that the Academy focuses on interoperability skills and competences, but not restricted to any specific policy sector, enabling a cross-sector perspective around the central topic.

This last point, and the fact that the Academy is aiming to address stakeholders coming from different backgrounds, stresses the importance of remembering some of the principles stated by the European Interoperability Framework and its recommendations. Attached to many of these principles (4, 5, 6, 7, 8, 10), there is underlying consideration that interoperability, besides dealing with multidimensional issues, requires organizations that can act in coordination, as well as share, learn, and adapt when facing a complex and changing environment. This leaves us the grounds to hypothesize that interoperable public services and interoperable organizations require the development of appropriate dynamic capabilities, organizational structures, as well as change integration management competencies to ensure the sustainable alignment between processes that may belong to different organizations, as well as to different policy sectors.

As interoperability has increasingly played a central role in European's Digital Agendas, as well as shown strong relations with other policy priorities, such as the sustainability and inclusive economy agendas, this research will use the concepts of dynamic capabilities in the public sector (Kattel and Karo, 2018) and mission-oriented innovation policies (Mazzucato and Kattel, 2018) to address the following question: What dynamic capabilities do public

organizations need to be able to learn/develop sustainable interoperability solutions?

Methodologically, this essentially descriptive/explorative research will be based on qualitative data collection techniques, such as interviews and possibly focus groups. Such techniques will be oriented to gather in-depth perspectives of two major groups of stakeholders: on the one hand, experts involved in the definition of the catalog of resources and materials available in the Interoperability Academy platform, as well as on the Framework of Skills and Competencies that the whole initiative aims to implement; and on the other hand, users of the platform to assess whether they expected to train on dynamic capabilities (e.g. for leadership, coordinate different actors, encourage social engagement, and to receive contestation and adapt) – and why- and whether they were able to gain training in them – and how -.

A data model for semantic interoperability between government agencies delivering tax services on the cross-agency and cross-border levels

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Abstract

Semantic interoperability is one of the most challenging aspects of the interoperability framework. Due to the decentralized nature of government agencies, lack of data standardization, lack of resources, and lack of throughout work on this aspect, most of the data between government agencies still mismatches, is outdated, missed, or duplicated. My research looks at the semantic interoperability between the government agencies delivering tax services to businesses on the cross-agency and cross-border levels. As the tax agency is one of the core agencies in any country, because it generates most of the revenue for the State, semantic interoperability of this agency with other agencies is of high importance.

In order to solve this issue, the research proposes data models for semantic interoperability between the government agencies delivering tax services to businesses. Government agencies, administrating service delivery to businesses, can use the data models to build their databases in a way that will make data exchange more accurate and efficient. This will further improve semantic interoperability between agencies and countries and also help them reach internal operational efficiency and deliver better and more efficient services to businesses.

More importantly, solutions propose an idea of the unification of public agencies by taking a holistic view of interoperability in business registration and in operations of the tax and customs agencies, unlike many studies researching interoperability in these public agencies separately. By unifying public agencies by means of semantic interoperability, it can be ensured to a greater extent that the data related to businesses and shared between the government agencies and countries is accurate and up to date. As the data is automatically retrieved from the agencies responsible for the specific data, only relevant data will be presented. As well, solutions help to reach transparency and accountability between the involved public agencies and businesses as there will be a high dependency on each other's data.

Implementation of the Once-Only Principle in the cross-border context: analysis of good practices

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Abstract

Data exchange lies in the core of eGovernment programs on both national and European agendas. Driven by the necessity to ensure data interoperability, the EU member states agreed to apply certain data policies, including standardization of data collection – such as the Once-Only Principle (OOP). Publicly announced in 2017, the OOP obliges the public administration of the EU member states to collect data from citizens and business once only, encouraging them to reuse previously submitted data. The present research investigates the cases of Belgium, Austria, Germany and France with regards to the application of the OOP policies. Based on the extensive review of literature, eGovernment reports, legislation, strategies and white papers, the study suggests a list of good OOP practices, deployed by the analyzed countries. The derived practices are mainly referring to the legislation and infrastructure in place, the extent of centralization of eGovernment initiatives, the capacity of public authorities for cooperation, societal sentiments toward the innovation and involvement of the states in European cross-border projects. The study further suggests a differentiated approach toward the applicability of the suggested OOP practices onto other states within the EU.

Opportunities and challenges for self-sovereign identity in the public sector: a case of Belgium

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Abstract

The public sector tends to follow the emerging technological advancements and this pattern also holds for identity management for citizens. The debate on "self-sovereign identity" (SSI) started in 2016, giving birth to the various theoretical and practical implementation of this concept, derived from academia, private and public sectors. Granting a user control over their identity information lies at the core of SSI, and its embodiment within the public sector domain is discussed in this research paper. In the light on a newly emerging research stream, this paper involved a single case-study, which was performed using the Belgian identity and access management system as a sample. Based on the conducted document analysis, review of the available SSI-solutions and expert opinions, this study suggested that within the Belgian context, SSI can assist reducing the administrative complexity for citizens, simplify the processes and ensure better interoperability for public administrations. Yet, given the premature state of this identity paradigm and the existing conservative culture within the Belgian public administration, SSI needs to mature and demonstrate more viable cases before any further movements can be made.

Identifying Design Principles for Proactive Public Services in the Netherlands

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Abstract

The quality of governmental service provision can be increased by raising the level of proactivity of public services, however only few best practices have been identified. This master thesis will try to fill this gap by developing a framework of design principles for proactive public services in the Netherlands. Case studies of governmental service delivery will be combined with interviews of information system architects and an academic expert to provide the necessary information for the development of a mock-up of a public service with a raised level of proactivity. The design science framework of (Hevner et al., 2004) will be combined with the Principle-Based Design methodology of (Bharosa & Janssen, 2015) in order to extract principles from the design process. The main contribution of this thesis will be the developed framework of design principles for proactive public service design in the Netherlands, which could guide governmental organizations in raising the level of proactivity of their public services.

Interoperable implementation of eID into the Single Digital Gateway

Stefan Dedovic

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Abstract

In the last eGovernment benchmark of the EU (2020), it is stated that cross-border use and access of online services remains a challenge and that the mutual recognition of the electronic identification means would increase the use and access of online services (European Commission, 2020b). In the State of the Union 2020 speech, Ursula Von der Leyen addressed that EC will soon offer new European electronic identity (Ursula Von der Leyen, 2020). To address this goal, the EU has adopted Regulation on electronic identification and trust services (eIDAS, 2014), and Regulation on establishing a single digital gateway within the EU (2018). The objectives of these regulations are to recognize mutual electronic identification means of Member States and to establish one portal in which citizens of EU will be able to acquire information, to start procedures, and to ask for assistance. The citizens should be able to use their national eID for cross-border public services from 2018, and citizens would be able to use a single digital gateway for procedures from 2023. However, the research shows that the key barrier for the cross-border use of digital public services is the problem with access to procedures using foreign eID which requires identification and authentication (European Commission, 2020b). For example, only 9% of the online services that are offered are accepting foreign national eIDs. This might be the reason of the different eID experiences between countries each having the different infrastructure, philosophies and maturities regarding eID (European Commission, 2018; Lodder & Murray, 2017; Tobias Mahler, 2013). Consequently, this research aims to answer the question “What are the organisational and semantic enablers and barriers of the interoperable implementation of eID into the single digital gateway and how to achieve it?”. This research aims to present the state of the art of different eID management systems in MS (Layne & Jungwoo, 2001), to analyse the organisational and semantic interoperability within eID systems in MS (European Commission, 2017), and give strategic, tactical and operational recommendations on how to achieve interoperable implementation of eID in Single Digital Gateway of EU. To achieve this goal, the research design will be a multiple case study analysis (Yin, 2018), with case study countries defined on the DESI index in cross-border mobility as successful (Estonia), average (Belgium) and less successful (Croatia) (European Commission, 2020a). The research techniques that will be conducted are the desk research and semi-structured interviews with experts, MS officials and EU officials. The contribution that this research will have is relevant for EU and MS officials, academia, and policymakers.

Maintainable Web APIs at the Flemish Information Agency

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Abstract

Public Sector Bodies (PDBs) maintain datasets that should become queryable as an integrated knowledge graph across Europe. At the moment, however, there is no consensus on what the API of a base registry maintained by a PSB should look like.

In order to avoid, on the one hand, synchronization problems with data dumps, and on the other maintenance problems of highly specific Web APIs, an alternative approach needs to be researched that strikes a better balance between maintainability and query performance.

The Flemish Information Agency (FIA) is such a PSB that maintains and helps to maintain, base registries. Working at the FIA while pursuing a PhD I have the unique opportunity to learn from the maintenance problems this organization encounters. In order to tackle semantic interoperability between the APIs, the OSLO standardization initiative was built, reusing the European Core Vocabularies.

Starting from this work, I will now study maintainable Web APIs on top of this Linked Data, which focuses on maintainability from the perspective of cost-efficiency, scalability, and evolvability.

In the early steps of my PhD research, I am contributing to the creation of the TREE hypermedia API specification, trying to tackle the problem of evolvability. My next steps include benchmarking different information architecture designs with this hypermedia specification for query performance and cost-efficiency.